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Inspire Policy Making with Territorial Evidence

CIRCTER – Circular Economy and Territorial Consequences

Policy Guide

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Foreword

It is my pleasure to present this interactive policy guide which aims to support policy makers at regional and city levels to develop and implement a policy strategy towards a circular economy. It has been developed as part of the ESPON applied research activity CIRCTER – Circular Economy and Territorial Consequences and uses the results and insights obtained during the implementation of the project.

A circular economy is an economy that strives to be more resource-efficient and environmentally sustainable than a linear economy. It is an alternative economic system that is based on a resource flow model with closed loops. The end-of-life concept will be replaced by restoration and waste will be regenerated as secondary resource so that natural resources can be kept in the economy as long as possible. A transition towards a circular economy does not happen by itself; it needs to be supported and encouraged by policy and planning. Regions and cities are recognised to be well positioned to carry out the circular economy transition.

The policy guide first provides a short and clear explanation of the principles of a circular economy and its benefits. The guiding part provides as a first step suggestions on how to assess the local and regional contexts needed to adopt the right policy strategies and targets. It also gives insights on how to choose the right policy strategy, define priority areas, set favourable framework conditions and how to monitor and evaluate the outcomes. Examples are used throughout the guide to illustrate the various elements.

We hope that this interactive policy guide will inspire local and regional policy makers to develop circular economy strategies to change the structure and operations of their economies and industries so that they better contribute to more sustainable economic growth in Europe.

Ilona Raugze

Director, ESPON EGTC

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Introduction

Overexploitation and growing pressure on ecosystems and natural capital, shrinking access to some raw materials and Europe's dependence on imported natural resources are an increasing problem. National, regional and local governments are realising the need to change the structure and operations of their economies and industries, and are turning to the **circular economy** (CE) model for answers.

The transition towards a circular economy is expected to bring about significant opportunities in creating **new, better-quality jobs** and contributing to more **sustainable economic growth**. The circular economy in Europe could result in overall benefits of €1.8 trillion by 2030, or twice those seen on the current development path (€0.9 trillion). It was established that by adopting CE principles, Europe can take advantage of the technology revolution and increase average disposable income for EU households by €3,000, or 11% higher than the current development path. Primary material consumption measured by car and construction materials, real estate, synthetic fertiliser, pesticides, agricultural

water use, fuels, and non-renewable electricity could drop 32% by 2030 and 53% by 2050, compared with today. Greenhouse gas emissions can halve by 2030 and drop by 83% by 2050 (Ellen MacArthur Foundation, et al 2015.)

In Europe, circular economy policy has grown out of earlier resource efficiency-related policy developments, namely its **Roadmap to a Resource Efficient Europe** (COM 2011/571) – a core instrument of the **Resource Efficient Europe Flagship Initiative** and **Europe 2020 Strategy** focusing on smart, sustainable and inclusive growth. The EU **Circular Economy Action Plan** (COM 2015/0614 final) (hereafter CEAP), adopted in December 2015 and fully completed in 2018, provides the backbone of Europe's Circular Economy Package. It outlines a series of measures and actions which aim to “stimulate Europe's transition towards a circular economy which will boost global competitiveness, foster sustainable economic growth and generate new jobs”. The CEAP includes broad instruments touching on a range of sectors and policy areas, but notably resource efficiency, waste management and innovation. CEAP has already contributed in mainstreaming the circular economy concept, outlining activities in areas as diverse as the online sale of goods, fertilisers, inno-

vation, eco-design, food waste, waste-to-energy and circular economy financing (COM 2017/33 final).

Regions and cities as pioneers of transition

Regions and cities are well positioned for circular economy transition. Their size and manageable economic ecosystems, proximity to local environmental and economic problems, as well as to local knowledge to address these problems through relevant actors are instrumental in setting tangible and stable changes. The significant role of local action was confirmed as far back as 1992 in the UN's Agenda 21. A number of regions and cities have pioneered changes towards sustainability well before national-level policies were formulated

Source: RIS3 guide on sustainable growth.

The circular economy concept has also actively penetrated the policy discourse in **Members States, regions and cities** largely due to more and more appealing benefits and political priority given to it at the EU level. A number of national governments have developed dedicated circular economy strategies and roadmaps. Policy actions to facilitate transition towards circular economy thinking have also been taken by selected regions and cities. A few have already adopted their circular economy strategies, in other cases regions and cities have been introducing CE narra-

tives in their waste, economic, agriculture, bio-economy, construction and other policies, as well as in their Smart Specialisation Strategies.

Up to now only a fraction of the full potential of the circular economy is being harnessed. While being open to endorsing the circular economy transition, most regions and cities need practical guidance and real-life examples. Yet a successful model applied in one region, while offering an interesting benchmark, would not necessarily be fully replicable in another region. Poor understanding of the territorial and spatial logic explains why territories (regions and cities) often lack perspective on where to start. **Strong policy guidance informed by genuine regional experience is needed.**

This document aims to fill that gap, helping policy makers develop policies to facilitate the circular economy transition by creating favourable framework conditions depending on the characteristics of the territory. The guidance provided here is based on analysis and insights generated by the CIRCTER project.

How to use this guide

This document aims to provide a **short overview of the circular economy concept**, suggests **actions** to be taken in incorporating the circular economy in a policy landscape, and highlights a variety of **good practices in policy making** to make it more tangible for regions and cities.

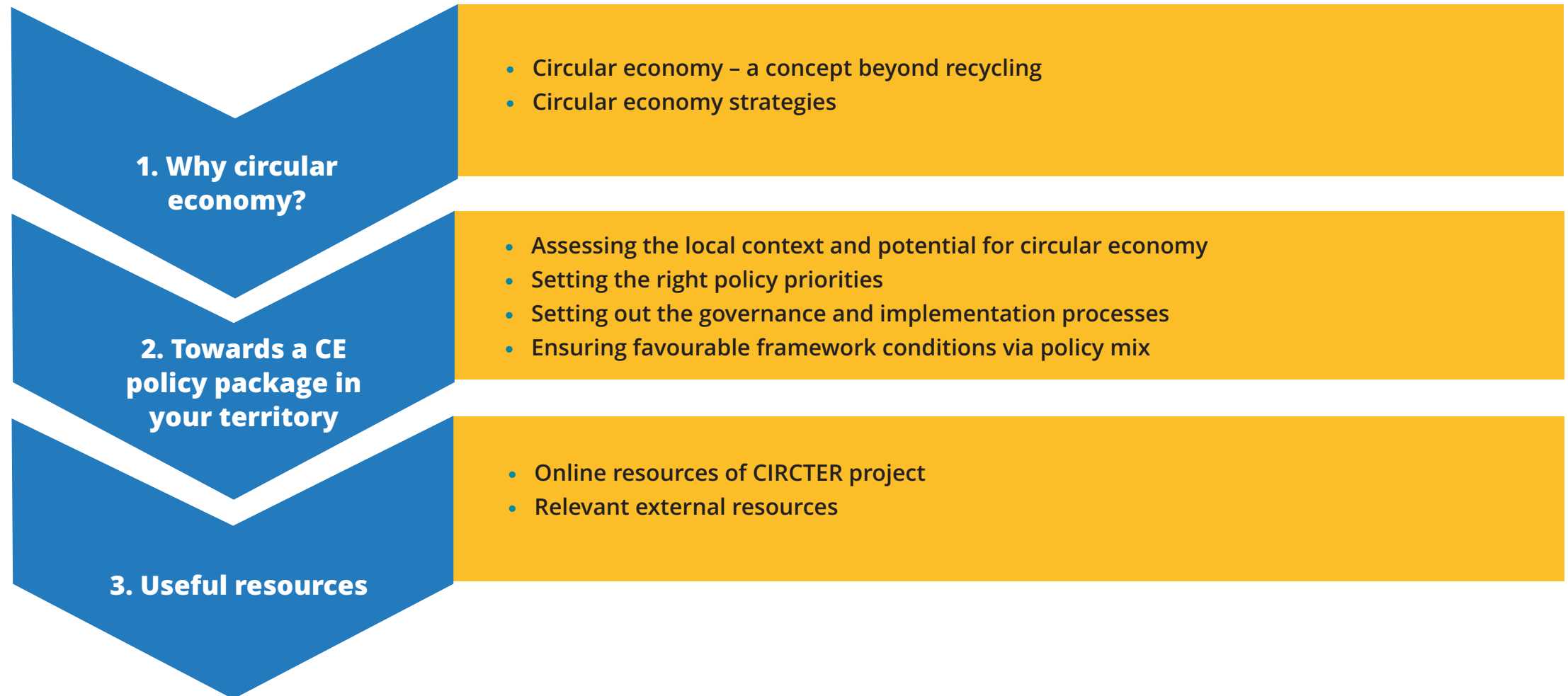
The guide primarily targets regional and city policy makers, but it is also of great relevance for businesses, innovation service providers, academia and citizens interested in the circular economy, eco-innovation, transition management and the green economy.

It has three main components, as presented in the figure below.

The first section introduces the concept of a circular economy and key activities underlying the CE model. The second section covers areas in which actions should be taken by regional and city authorities to promote the circular economy. It explains approaches and methods that can be used for assessing local potential, the industrial base, resources, opportunities for introducing

CE models, technologies, as well as examples of indicators to be used. It provides guidance on how to choose the right policy strategy, including defining priority areas and setting favourable framework conditions by deploying a well-balanced mix of policy measures, implementing them and then monitoring and evaluating the outcome. Important success factors include the right governance process and involving various stakeholders. This is discussed in detail throughout the document. The third and last section provides references to useful resources including studies, tools and guides that are available on various platforms and in online repositories.

Figure: Structure of the Policy Guide



Part 1. Why circular economy?

1.1 Circular economy – a concept beyond recycling

The basic concept of a circular economy depicts a production and consumption system that relies on the reduction, reuse, recycling and recovery of natural resources.

The circular economy has been described as *“an industrial system that is restorative or regenerative by intention and design. It replaces the end-of-life concept with restoration, shifts towards the use of renewable energy, eliminates the use of toxic chemicals which impair re-use, and aims for the elimination of waste through the superior design of materials, products, systems, and, within this, business models”*. (Ellen MacArthur Foundation 2012).

A circular economy encompasses and builds on a number of complementary approaches: eco-design, green manufacturing,

waste-to-resources, cascading use, industrial symbiosis, cradle-to-cradle, dematerialisation, sustainable consumption, functional economy, and product-service systems. These terms date back to the 1970s and are based on the core principles put forward by many thinkers and innovators, including Walter Stahel and his performance economy, John Lyle and his work on regenerative design, the cradle-to-cradle models of Michael Braungart, the concept of biomimicry popularised by Janine Benyuys or the blue economy of Gunter Pauli.

A CE model describes an alternative economic system that can underpin a future **resource-efficient and environmentally sustainable society and economy**. It offers a resource flow model with closed loops. This, in turn, calls for a radical overhaul of the production system and underlying business models to revolutionise the flow of resources through the economic system. Provided the model is effective in shifting economic activities to sustainable use, recovery and regeneration of secondary resources, it will contribute to **decoupling economic growth from resource consumption and environmental degradation**. The circular economy also makes solid business sense; keeping natural resources in the economy for as long as possible while re-

taining their economic value and technical properties.

Our understanding of a circular economy is framed in the context of the EU Circular Economy Action Plan (EC 2015), Roadmap to a Resource-Efficient Europe (EC 2011) and the Rio+20 vision of 'The Future We Want' (UN 2012), which means that it should be designed to support economic growth, well-being and jobs while at the same time reducing the environmental impacts related to production and consumption.

While the shift towards a circular economy can be supported by incremental innovations – such as material-efficient manufacturing or improved recycling technologies – it will achieve its full potential only through **systemic change** in social and economic systems.

Systemic change

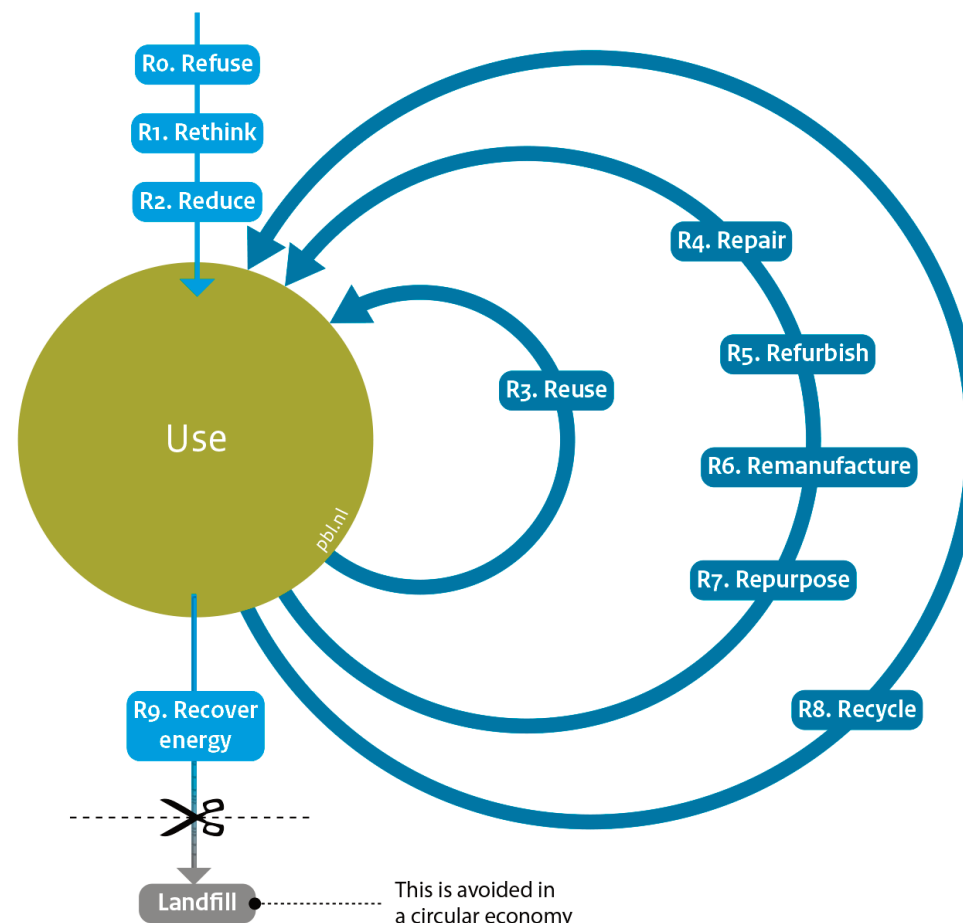
brings about radical shifts in the consumption, production, planning, policies, lifestyle, cultures, and values

1.2 Circular economy strategies

There are multiple ways of illustrating the possibilities for the circular transformation of products or services. We choose the model suggested by the PBL Netherlands Environmental Assessment Agency (2018), which defines **ten strategies** for circularity that can be used to build successful circular product and material flows across the EU: **Refuse (R0)**, **Rethink (R1)**, **Reduce (R2)**, **Reuse (R3)**, **Repair (R4)**, **Refurbish (R5)**, **Remanufacture (R6)**, **Repurpose (R7)**, **Recycle (R8)**, **Recover energy (R9)**.

Each strategy is based on making use of different business models, infrastructures, relationships with different stakeholders, and potentially also policies. At the same time, there are different drivers and barriers, which we will elaborate on later (see Figure 1).

Figure 1 Circular economy: strategies for circularity

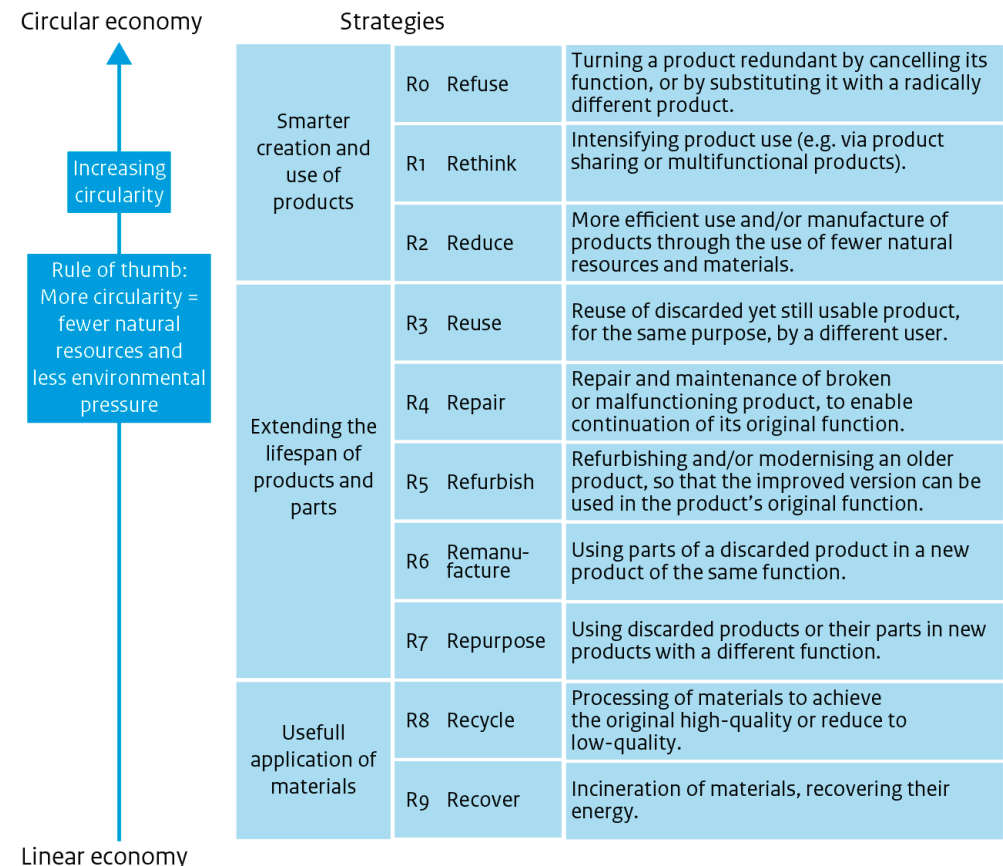


Source: PBL Netherlands Environmental Assessment Agency, 2018

The strategies can be categorised by order of their potential impact on transforming our economy towards more circularity (see Figure 2).

- Strategies that target **smarter product use and manufacture** are considered to yield the most substantial benefits by changing consumption and production patterns towards minimising the use of raw materials and resources, and reducing waste generation.
- A second group of strategies are less radical but help to reduce raw materials and resource consumption, and thus positively impact our environment by **extending the lifespan of products and their parts** (e.g by reusing, repairing, refurbishing, remanufacturing, etc.).
- The third category refers to strategies that are already widely used but show the least results in terms of solving the environmental problems we face. These include the **useful application of materials** through recycling or recovery. The following chapters provide more details on each category.

Figure 2 Circularity strategies within the product chain



Source: PBL Netherlands Environmental Assessment Agency, 2018

1.2.1 Smarter product use and manufacture

R0 Refuse: Make a product redundant by abandoning its function or by offering the same function with a radically different product. This is the most ambitious strategy, in which the goal is to completely eliminate products that have a significantly negative impact on the environment, or to replace them with alternatives that are less harmful. Examples of such strategies include:

- The EU ban-in-development for **one-use plastics**, such as straws, cups, etc.
- Government bans on the use of **plastic bags** by retailers (e.g France, Italy or Brussels city region),
- Restaurants and catering establishments that eliminate or replace **plastic straws** and plastic products from their service,
- Producers and retailers who avoid **plastic packaging**.

The large-scale deployment of such a strategy comes with the need for transformation at a socio-cultural level, as well as with the negative economic impacts on the affected sectors (e.g. producers of plastic bags). Careful consideration of the contexts in

which products are being generated and used is therefore needed.

R1 Rethink: Make product use more intensive (e.g. through sharing products, or by putting multi-functional products on the market). This strategy engages producers in a process of re-designing or 'rethinking' their products, in order to minimise the environmental footprint and reduce the amount of resources used in the production process. In rethinking the product, the entrepreneurs can test alternative business models for their products, which make use of a different consumption paradigm: leasing, sharing platforms, pay-per-use, product-service systems, and introducing multi-functional products on the market. Sharing economy business models extend the value of a single product to a larger number of consumers, diminishing the environmental impact of post-use processing, or deterring the waste of resources. Examples of businesses models taking this leap include:

- **Product as a service:** MUD Jeans lease-a-jeans scheme lets customers return jeans, which are then re-processed as vintage or recycled; the natural materials in the jeans can be easily re-used.

- **Sharing of assets:** Car-pooling, sharing of holiday houses and laundry facilities. Known examples include BlaBla car, a community marketplace that allows the sharing of longer-distance rides.
- **Industrial symbiosis:** The sharing of resources such as energy or water among industrial actors, as well as the reuse of by-products of a company's production process as a resource in another company.
- **Performance-based input sharing:** Chemical Management Services (CMS) and Integrated Pest Management (IPM) – where a chemical/pest management provider is compensated for achieving a certain standard (e.g. level of pest control), rather than for chemical volume used. The resources used in such models are managed by the service provider, therefore efficiently shared among all its clients.

R2 Reduce: Increase efficiency in product design or manufacturing by using fewer natural resources and materials as inputs. The strategy of reducing the products' ecological footprint by increasing resource efficiency can involve different levels of ambition in the transformation of the products. The Reduce strategy may

mean one-off interventions at particular points in the manufacturing process where there can be **material or resource-efficiency improvements**. Such interventions may take the form of:

- **Deploying different processes or technologies** that use less energy, water, raw materials, etc.,
- **Re-organising logistical chains and suppliers** (e.g. buying from more local suppliers).

This type of strategy can be connected to the R1 Rethink strategy,

Ecodesign for circularity

Eco-design assumes a new approach to the design of a product with special consideration for the environmental impacts of the product during its whole life-cycle. The concept has been evolving from a focus on single aspects of the product, such as energy consumption, to a more holistic, life-cycle approach. Ecodesign of a product for circular economy means that product is designed in a way that it is durable, recyclable, repairable, can be remanufactured, and can be used in shared consumption.

making use of **eco-design principles** to create value not only at a business level, but also taking into account the environmental (and often also social) impacts of manufactured products. Eco-design means looking at the entire life-cycle of the product, assessing the environmental footprint at each stage of the

production process (from sourcing of the raw materials until disposal), and seeking ways to ‘**close the loop**’ and avoid products ending up in landfill by:

- Making the products easily **bio-degradable** and only **using natural products**,
- Strategies that **prolong the products’** life and **allow multiple uses**,
- Making sure solutions such as **reuse, remanufacturing** or **refurbishment** can be easily implemented.

For instance, an European Parliament study (2017) estimated that ecodesign can save consumers an average of 332 euro a year from energy savings, compared to a non-Ecodesigned world as well as. It can also cut up to 80% of environmental footprint of the product. In addition, a study by the Ellen MacArthur Foundation found that *“designing and using durable goods, such as cars and vans, washing machines, and mobile telephones, in accordance with circular principles offers materials savings in Europe that could be worth US\$ 380 billion in an initial transition period and up to US\$ 630 billion with full adoption.”*

1.2.2 Strategies extending the lifespan of products and its parts

R3 Reuse of discarded products by another consumer. This strategy is key to supporting material flows in the economy, and advocates designing products with longer lifespans, more robust composition, and which are easily repaired. Public opinion surveys indicate that Europeans already overwhelmingly favour reuse (77% of EU citizens would prefer to repair products than replace them with new ones). A key issue is that health and safety standards for such products should be well understood by the producers and consumers.

Examples of areas where reuse of previously discarded products may bring benefits include:

- Encouraging reuse of **household appliances** or electrical and electronic equipment – for example, some organisations that facilitate the sale of second-hand electronic equipment
- Encouraging regional **textiles** companies to adopt circular strategies, as well as support systems of taking back old

clothes for recycling and/ or reuse. Reuse of textiles and clothing may bring large benefits for the environment, as the textiles industry still works in a very linear way, with a highly harmful impact on the environment.

- **Construction waste** (e.g. concrete, dry wall, plastics, ceramics tiles, metals, paper, cardboards, etc.) can be reused on average up to 90%, with proper sustainable resource management practices.

R4 Repair and maintenance of a defective product so it can be used for its original purpose, and **R5 Refurbish** to bring an old product up to date are further strategies that can be used along the same thinking lines of prolonging the lifespan of products.

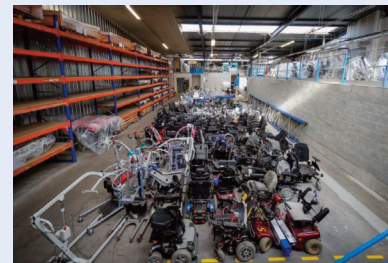
Incorporating **repair services** into the companies' product offer has started to be a more and more common business model among prominent manufacturing companies or even retailers, offering life-long guarantees or repair integrated in the after-sale services.

Companies may also consider in their strategies the design of their products as easily repairable, while not offering repair ser-

vices themselves. An example of such a product is the Fairphone, which is a modular smartphone, made through reusing materials, and designed to be easily repaired.

Further options are the development of specialised **repair shops**, or encouraging repair cafes in the neighbourhoods. Recent trends also reveal the emergence of decentralised, grass-roots approaches to making and fixing products in 'tech shops', 'fab labs' or 'repair cafés'. These local, citizen-led initiatives often incorpo-

Good practice example: Envie Autonomie, France – Reuse, repair, refurbish in the social sector



Envie Autonomie has a free collection service for disused wheelchairs, walking frames, and other technical aids and equipment used for mobility, hygiene, autonomy, etc. Some 5,295 so-called 'technical aids' have been collected from private individuals and care facilities, hospitals, shelters, etc. The initiative helped to create 11 jobs in

Trélazé, France, since 2015. The technical aids collected are first sorted according to their condition and precise quality criteria. When they are not reusable, the equipment is dismantled for spare parts and, as a last resort, the materials are recovered and recycled. Reused and refurbished devices are thoroughly cleaned and resold at 30% to 50% of the original price, with a one year guarantee for parts and labour. The equipment can be sold to individuals or establishments.

Source: [French Ministry for Ecological and Solidarity Transition, 2018](#)

rate an educational element in their programme. Thus, they deliver positive social and environmental benefits, such as improving social cohesion or providing jobs or training to unemployed people or workers from disadvantaged communities.

R3 Reuse, R4 Repair and **R5 Refurbish** as drivers of economic and social benefits. There has been an increasing number of examples of social enterprises and cooperatives that gather artisans and smaller manufacturers that reuse materials in production. Specific benefits can include:

- An increase of 1% added value thanks to economic activities extending product longevity yields a €6.3 billion gain. An increase of 1% of final consumption of goods and products from the EU represents €1.6 billion. Combined, economic growth in the European economy comes to €7.9 billion,

Companies can influence the lifetime of a product by developing and designing it in a way that it is durable, repairable or refurbishable. Well established repair service companies are other key players in ensuring durability and repairability.

R6 Remanufacturing or using parts of a discarded product in new products with the same functions and **R7 Repurposing** or use of discarded product or its parts in a new product with a different functions. Remanufacturing is defined as “a comprehensive and rigorous industrial process by which a previously sold, worn, or non-functional product or component is returned to a ‘like-new’ or ‘better-than-new’ condition and warranted in performance level and quality” (Remanufacturing Industries Council, 2017). Some of the product categories that are most frequently remanufactured include aircraft components, automotive parts, medical equipment, engines, printing equipment etc.

Remanufacturing has been used as a strategy in a diverse range of products and companies, and has the potential to support economic growth through new businesses and job-creation. A study estimated that the market for remanufactured products amounted for US\$43 billion in 2011, supporting 180,000 jobs, with a quarter of the production being developed in SMEs . However, for instance, while companies have free take-back policies for their used products such as cartridges, which can be re-manufactured, take-up by customer is rather low. In the case of cartridge remanufacturing, it appears that only 35% of them bring back the car-

tridges, highlighting the need policy and regulations to incentivise companies to manufacture their products for longer life, and develop more schemes to mobilise the customers to return used products. Other drivers may stem from public or private organisations supporting procurement of remanufactured products.

1.2.3 Useful application of materials

R8 Recycling: Treating waste to generate secondary raw materials as inputs for processed materials. Recycling is a well-established eco-industry for processing materials (already considered waste) to obtain new materials of different quality levels (depending on the technological process applied). In the EU, the Waste Framework Directive sets a target of 50% of selected materials in household and similar waste to be recycled by each EU Member State.

R9 Recovery: Incineration of materials with energy recovery. Incineration of materials is a waste-treatment technology, based on the combustion of waste that is used for energy recovery. It is one of the last waste management resorts used before landfilling. As

the EU's 7th Environmental Action Programme states, the goal has been that by 2020, 'energy recovery [is] limited to non-recyclable materials', while moving to finding other solutions for safely using waste as a resource and limiting landfilling to residual waste (non-recyclable and non-recoverable).

It has to be noted that these two strategies focus on the product end of life stages (i.e. waste processing), do not motivate reduced or alternative consumption and rather keep business as usual on the production and consumption stages.

Furthermore, the solution proposed in R9 Recovery (incineration) has been shown to have negative impacts on the environment, releasing toxic emissions which pose health threats to the population in the neighbouring areas.”

Part 2. Towards comprehensive policy strategy for a circular economy in your territory

Integrating a circular economy vision into regional and local policy landscapes is not a straightforward process. It depends on the structure of the national economy, and the policy mix should be adjusted to the local needs and conditions in each territory. Indeed, creating a circular economy does not result from a single, stand-alone policy intervention. It requires multi-sectoral, multi-stakeholder, multi-objective approaches, and has to address multi-systemic changes. There are always winners and losers, in resource exploitation, production, retail, consumption, and end-of-life management; policy needs to understand and address the losses, while finding ways to encourage the wins more consistently.

It is acknowledged that there are significant economic, social, regulatory and infrastructural barriers to preventing the transition to a circular economy. Most challenges are systemic in nature and

cannot be overcome by individual organisations alone. Introducing new business models, for example, requires managerial capacities and technical skills within a company, but the major challenges usually lie outside a single organisation. **Existing lock-ins within the entire economic system** are based on unfavourable regulatory or policy frameworks, networks organised around vested interests, risk-averse organisational models or value systems underlying choices and practices of producers and consumers.

The principal task of policy is to help overcome the systemic lock-ins and other challenges hindering the circular economy transition. Therefore, policy also needs to be based on a **systemic vision** on how to reach the goal. Clear targets (often quantitative) set for the region or a city further reinforce the vision and strengthen the commitments of public entities and other stakeholders.

Targeting **policy support on specific areas** means being able to identify, select and support activities aimed at resolving challenges for which public intervention is likely to yield the best results. Working with selected stakeholders, using co-design

principles, and deploying a portfolio of policies to provide a **protected innovation space** for actors exposed to the highest risk are all recommended.

Many earlier studies show that local sustainability efforts are seen as a result of **various success factors** such as the personal involvement and motivation of leading politicians; networking, co-operation and communication among stakeholders; long-term commitment to the strategy and fortification through legislation, policy measures and roadmap documents, for instance; participation of local stakeholders including citizens; and inter-regional learning and diffusion of best practice.

Figure 3 summarises and refines the main areas for action in building a circular economy transition strategy. These points are addressed in the following sections:

Section 2.1 Assessing the local context and potential for a circular economy

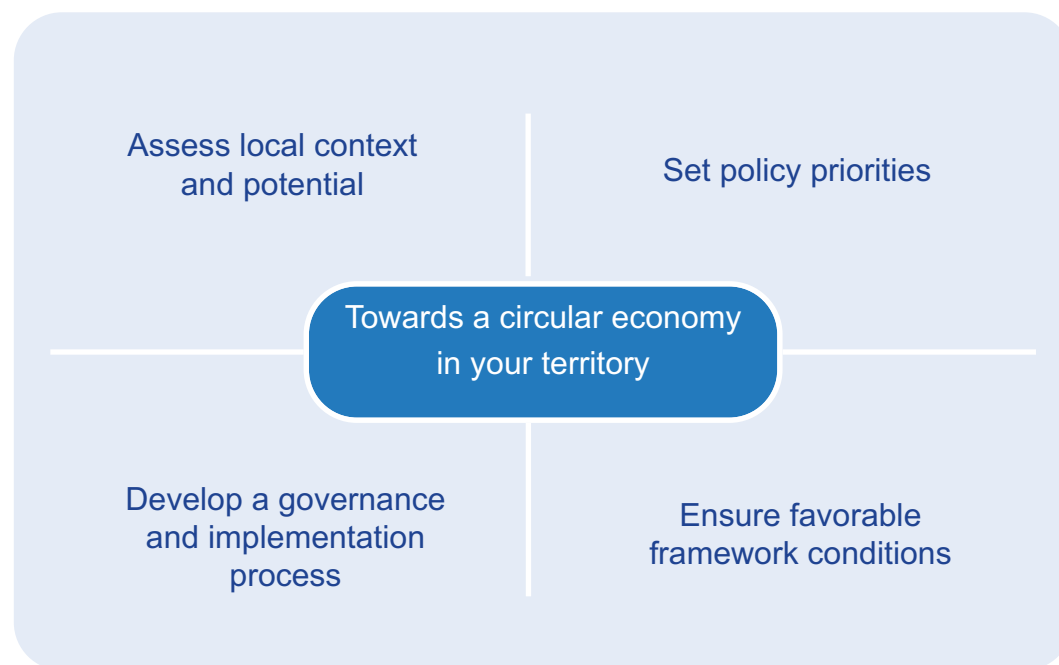
Section 2.2 Setting the right priorities for the strategy including targets and vision

Section 2.4 Setting the governance and implementation by in-

volving stakeholders

Section 2.3 Ensuring favourable framework conditions via setting a coherent policy mix

Figure 3 Building blocks for transition to circular economy



Source: authors

2.1 Assessing the local context and potential for circular economy

Policy recommendation from CIRCTER

Cities and regions should make use of the territorial capital, which includes natural resources, social capital and institutions. They hold significant assets that are key building blocks on the road to a circular economy. The capital varies across territories in its economic role and how much it can be leveraged to foster transition to the circular economy. An ability to realise the potential of the territorial capital depends on a number of factors including policy, institutions, political will and the financial context.

Circular economy models differ depending on the functional area of the economy; on the properties and availability of natural resources used to deliver a function or a service; and on different dynamics and time scales in different territories.

Before pursuing any action, it is important to analyse the local potential, resources and capabilities that can be instrumental in achieving the vision. It is also necessary to analyse the potential obstacles, winners and losses that economic players may experience.

Assessment of the local context

Table 1 provides a framework for assessing local context and circular economy potential, where analysis of each element (listed in Column 1) is guided by specific questions (listed in column 2). The assessment results can further be presented in a report format which will be a mix of qualitative and indicator-based analysis (as guided in Column 3).

A diverse set of data and information collection methods and sources can be used including desk research of existing relevant studies and reports; analysis of territorial and national statistics; benchmarking against international statistics; and consultation with stakeholders (interviews, focus groups, surveys, workshops). It is often helpful to involve experts who can support in-depth research covering specific questions and elements.

Table 1 Framework for assessing the local context and potential for CE

Assessment elements	Guiding questions	Presentation of the assessment
A. Resource endowment, consumption and efficiency performance of a region/ city	<ul style="list-style-type: none"> • What are the natural resources (water, timber, minerals, etc.) in your territory? • What ecosystem services does or could your territorial economy rely on (recreation, soil formation, water purification)? • What is the performance of the region/city in terms of resource productivity/ efficiency? • How dependant is it on the import of resources (raw materials, energy resources, etc.)? 	<p>Present indicators of material and energy resources and describe ecosystem services that support economic activities in your territory.</p> <p>Present indicators on resource/water/energy productivity (GDP/domestic material consumption, GDP/ water consumption, GDP/gross energy consumption).</p> <p>If available, add indicators on resource efficiency in companies/SMEs (e.g. from local/national surveys).</p> <p>Import dependency indicators: in volumes or euros of resources imported VS exported.</p> <p>Analyse and describe how the region/city compares to others in the above indicators, and whether the import dependency creates potential risk for the local economy.</p>
B. Potential in specific industries/ economic sectors	<ul style="list-style-type: none"> • What is the existing and emerging potential for activities that will encourage circularity in <ul style="list-style-type: none"> • specific industries/sectors and • the wider economy? 	<p>Based on the expert analysis and consultation with stakeholders, define and describe whether any CE activities (R0-R9) are appropriate in the local industries.</p> <p>If available, present indicators on waste streams from each industry.</p>
C. Agglomeration-related potential	<ul style="list-style-type: none"> • Is there a ‘critical mass’ for circular activities to benefit? E.g. are there compact cluster of industries that can potentially benefit from resource sharing, exchange, efficiencies, symbiosis? • Can the existing agglomerations/proximities (urban, industrial, etc.) potentially offer “closing material loop on the territory” 	<p>Complement analysis on industries (above) with the qualitative review of potential from industry agglomeration, proximities based on expert analysis and consultation with stakeholders.</p> <p>Identify the industrial clusters in the territory, collect and present their views on potential resource sharing, exchange, collaboration.</p>

Table 1 Framework for assessing the local context and potential for CE (cont.)

Assessment elements	Guiding questions	Presentation of the assessment
D. Accessibility conditions/ infrastructure	<ul style="list-style-type: none"> Is the region/city well connected internally and with other locations with which resource and side stream exchange can be set up? Is the existing transportation and logistics infrastructure sufficient for potential CE activities and projects? 	<p>Accessibility and logistics infrastructure review can be done as part of the industry analysis.</p> <p>Additional consultation with stakeholders will help to map all logistics infrastructure connecting the region/cities internally and with other territories and industrial/economic zones.</p>
E. Capabilities of businesses and knowledge organisations	<ul style="list-style-type: none"> What are the capabilities and competitive advantages of local industries and SMEs in areas related to the circular economy and sustainability? What is the existing expertise and knowledge in the region, including research and innovation (R&I) capacities such as those within universities, which relate to circular economy, eco-innovation and sustainability? How dynamic is the local entrepreneurial environment in relation to developing circular businesses? Are there any new businesses, start-ups, business models? 	<p>Based on expert analysis and consultation with stakeholders, define and describe whether local industries and SMEs have the necessary knowledge and expertise to start CE activities, and whether there are CE technology providers.</p> <p>Describe if local academic organisations have been dealing with CE-related R&I activities, and if they have any projects, publications, patents.</p> <p>Describe if there are any start-ups focusing on CE innovations.</p> <p>Present the opinion of local experts and stakeholders on innovation and entrepreneurship environment in the region/city.</p>
F. Potential winners and losers	<ul style="list-style-type: none"> Who are the potential winners? How should we mobilise them? Who might face losses, and how we should address them? 	<p>Based on expert analysis and consultation with stakeholders define and describe the companies and industries that will benefit from adopting CE approaches and industries that can potentially reduce their role (e.g. waste management companies with traditional technologies).</p>
G. Already existing circular economy policies	<ul style="list-style-type: none"> What policy measures are already in place to support circular activities (e.g. for any of R0–R9 spectrum)? Are they showing results and impact? 	<p>Based on an inventory of the policy measures, list and describe policy measures addressing CE activities in the region/city/country. Describe briefly if they are demonstrating positive results and impact.</p>

Source: authors' elaboration

Each piece of information presented in the territorial context analysis can be used towards later strategic planning steps. Table 2 below summarises these contributions to further steps in the planning of strategy and actions

Table 2 Feeding the assessment results into further planning steps

Assessment elements	Contribution to further steps in the planning
A. Resource consumption and efficiency	This information can be used as a baseline for monitoring future progress (often on an aggregated level).
B. Current status of circular economy-related practices	Can be used as a baseline in monitoring future progress. Existing practices and technologies (on R0-R9) can be a basis for replication and wider appli-
C. Potential in specific industries	In further planning, these can be the key basis on which priority industries/sectors are selected
D. Agglomeration related potential	In further planning, these can be the basis on which the strategy and actions are chosen, namely on possible synergies, resource sharing and exchange. It can also be used for potential knowledge diffusion and in speeding up learning and spill-overs among businesses in close proximity.
E. Accessibility conditions /infrastructure	This information can help to define which strategy and actions are chosen, namely on possible synergies, resource sharing and exchange.
F. Capabilities of businesses and knowledge organisations	This information can be used as a baseline in monitoring future progress. In further planning, these can be the basis on which the strategy and actions can build.
G. Potential winners and losers	These will be needed in securing the support and engagement of potential winners (businesses, citizens, NGOs), and to prevent problems and resistance by potential 'losers'.
H. Already existing circular economy policies	This information can be used as a baseline in monitoring future progress. Successful policies can be a basis for replication or offer lessons for next actions. Analysis of less successful policies can offer lessons on how to do things better, how to improve/revisit these policies.

Source: authors' elaboration

Analysis of driving and hindering factors

In addition to knowing the contextual situation in the territory it is also important to understand what can hinder or intensify the circular economy transition in order to efficiently address the barriers and build on existing drivers in the envisaged strategy and actions.

The widely applied framework for analysis of barriers and drivers differentiates factors of economic, regulatory, socio-cultural/behavioural and technological/knowledge origin. Examples of B&D that can hinder or support the CE transition are presented in Table 3. This format can also be applied in the actual analysis of B&D by policy makers aimed at kick-starting initial insights on where actions are needed and identifying existing drivers to build on.

For example, one can go on mapping of each type of B&D existing in their regions following the table 3 template and typology presented there and fill in column 2 with the identified barriers and column 3 with the identified barriers.

Table 3 Typology and examples of barriers to, and drivers of, CE transition

Types of barriers and drivers	Some examples of the CE drivers	Some examples of the barriers
Economic	<ul style="list-style-type: none"> • economic savings • profit increase • new market/business opportunities • high prices for imported or raw materials • attractive prices for circular products and services 	<ul style="list-style-type: none"> • no or limited returns from investment • limited market for recycled products • lack of funding/investment sources for CE businesses or initiatives
Regulatory	<ul style="list-style-type: none"> • charges, taxes on unsustainable/harmful activities • high charges for waste/high landfill taxes • tax benefits for green activities • ban of specific products (e.g. single use plastic) 	<ul style="list-style-type: none"> • subsidies for traditional polluting/inefficient activities (e.g. for coal, water and energy costs) • Rigid 'end of waste' criteria preventing repurposing waste streams for recycling, reuse, remanufacturing, etc.
Behavioural/ socio-cultural	<ul style="list-style-type: none"> • high awareness of consumers • CSR culture in companies • strong entrepreneurial culture 	<ul style="list-style-type: none"> • low awareness of consumers • old-fashioned mindset in companies/leadership • lack of entrepreneurial spirit
Technological/ knowledge	<ul style="list-style-type: none"> • qualified staff and R&I capabilities • availability/access to innovation and testing facilities 	<ul style="list-style-type: none"> • lack of experts in areas related to CE in a region • lack of R&I capabilities in companies/universities • poor or lack of research, testing, piloting infrastructure

Source: authors' elaboration

SWOT analysis is another useful tool for assessing circular economy potential and analysis of barriers and drivers. While it might not provide in-depth research and data-based analysis, this method offers a quick overview of the situation in a brainstorming session where stakeholders could contribute. Its advantage is that

stakeholders and policy makers are largely familiar with its structure and logic. A template and guiding questions of SWOT analysis is presented in Table 4 and can be directly applied in the process.

Table 4 Template and guiding questions for SWOT analysis with focus on CE development in a territory

	HELPFUL in transiting to CE	HARMFUL in transiting to CE
<p>NOW and INTERNAL</p> <p>Currently experienced factors attributed to a region/city</p>	<p>Strength</p> <p>What does the region/city already have that they can build on shifting to CE?</p> <p>e.g. top-level experts in CE, good practice examples in sectors, commitment of the local business</p>	<p>Weakness</p> <p>What is currently missing or weak in a region/city that prevents it from starting the transition process?</p> <p>e.g. lack of funds, lack of experts in CE, absence of technologies</p>
<p>ENVISAGED and EXTERNAL</p> <p>factors that can influence the process</p>	<p>Opportunities</p> <p>What benefits and opportunities does the CE model promise?</p> <p>e.g. new jobs, less dependency on the importer resources</p>	<p>Threats</p> <p>What threats can be envisaged that are beyond the control of the region/city?</p> <p>e.g. budget cuts, unfavourable national policies/regulations, political instability on a county level</p>

Source: authors' elaboration

2.2 Setting the right policy priorities

Recommendation from CIRCTER

Transition to the circular economy is complex and requires the introduction and enforcement of coherent policy landscapes on all governance levels, ranging from the strategic to the operational. Policies should address all stages of the product from material sourcing to disposal and secondary material treatment. Similar types of policies should be adapted to different sectors of the economy and their specific value chains.

Defining priority areas

Assessment of the local context allows the areas with the highest potential to be defined. This in turn helps in defining the priority areas for further development. Such areas usually depend on the economic sectors or industries. A good starting point is to consider the producing sectors, as they typically have the largest direct material footprint.

The **two main criteria to prioritise sectors** in a circular economy initiative are the sectors' role in the national economy and their resource profile (EMF 2016):

- Role in the national economy: size (and growth) measured by share of GVA (gross value added), contribution to employment (and growth), international competitiveness.
- Circularity potential: material and energy intensity, volume of waste generated, share of waste landfilled/incinerated, high-level estimate of scope for improved circularity.

Additional selection criteria can also be applied based on, for example, territorial and national priorities; associated environmental problems needing urgent actions; availability of data; sectors' relative receptiveness to the circular economy'; or big potential for 'low-hanging fruit' offering quick results. The prioritisation among longer list of sectors can be based on a semi-quantitative approach to score these parameters, and aggregate them into overall scores for sectors. This could, for example, be a numerical, traffic-light-based ranking, or a product of several numerical rankings.

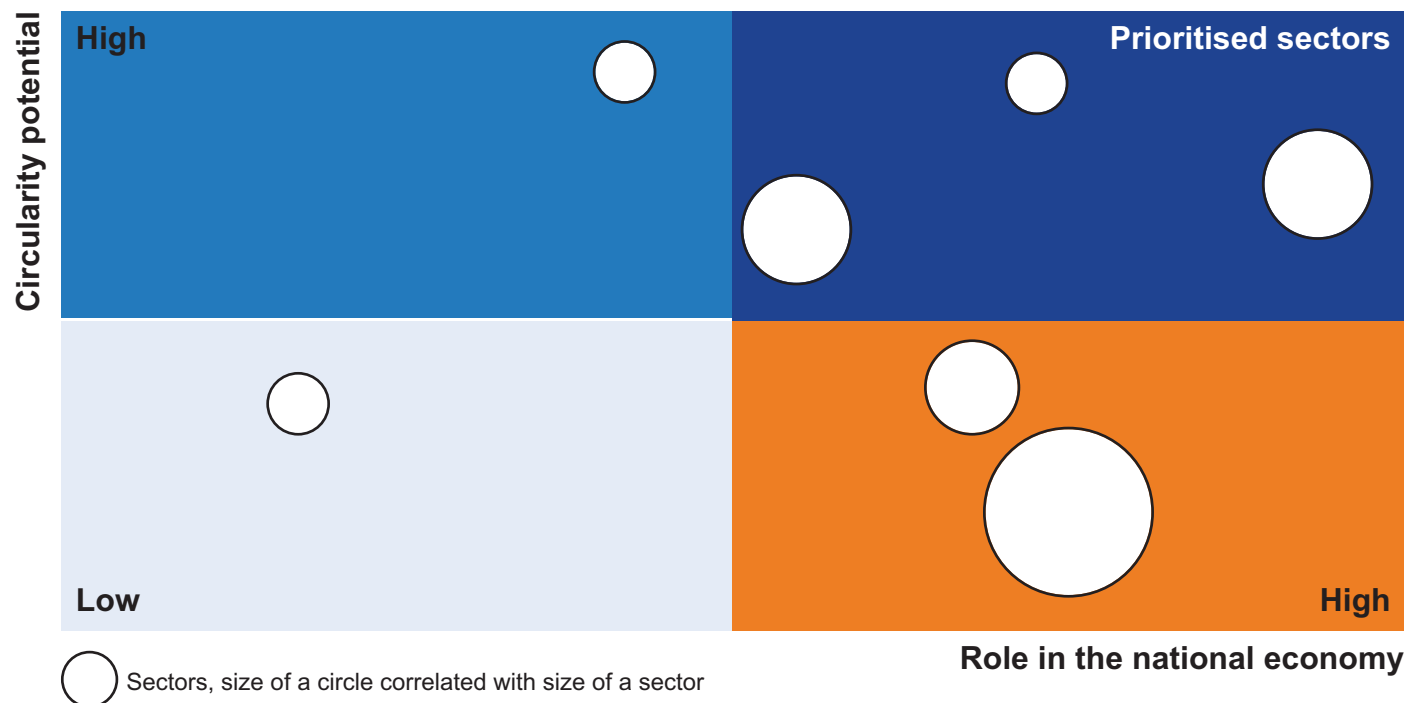
Defining vision and targets

Developing a long-term circular economy vision and targets for a region or a country gives a clear 'signal to act' (and direction to take) to industries, the public sector and citizens.

Analytical evidence should be used to depict a comprehensive vi-

sion for a region or city on where it should be in terms of circular economy developments by a specific year. An example of the vision for the circular economy (at national level) is the one from WRAP – the Waste and Resources Action Programme, UK.

Figure 4 Framework for sector prioritisation based on the two criteria



Source: Ellen MacArthur Foundation, 2016, Toolkit for Policy Makers

WRAP's vision for the UK circular economy to 2020

Their vision proposes four key ways of realising savings to the economy:

- **lean production** (i.e. making goods with a lower material requirement)
- **reducing waste** in manufacture and commerce
- reducing the amount of working **products thrown away**
- **goods to services** (i.e. increasing the use of leasing)

WRAP's vision for UK's economy by 2020 assumes (compared to a 2010 baseline):

- **30Mt fewer material inputs** into the economy
- **20% less waste produced** (50Mt less waste)
- **20Mt more materials recycled** back into the economy

The headline 30Mt fewer materials going into the economy is close to WRAP's 2010 research *Securing the Future: The Role of Resource Efficiency*. This identified potential savings of 38Mt for selected materials by 2020 based on quick win resource efficiency actions. This included several materials considered as being of strategic importance, such as rare earths. The 20% less waste produced is about 50Mt less waste. **This will require ambitious waste prevention plans from all nations** to set

Targets are normally part of a vision and typically include (EMF 2015):

Quantitative circularity targets. The targets can be set using existing indicators or by developing new metrics. For example:

- Cut food waste by a third until 2025, as set in Scotland – Circular Economy Strategy 'Making Things Last'
- Increase the share of reusable waste from 14% to 44%, as set in Maribor – The WCYCLE strategy (Slovenia)

Qualitative circular targets such as to be the 'best in Europe' in waste prevention or recycling, or becoming a 'world leader' in remanufacturing. For example, one of the targets in Scotland's CE Strategy states:

- We want Scotland to be an international leader in the efficient use of biological resources. While reducing waste is our priority, we want to maximise the value from biological resources which would otherwise end up in lower value uses or as waste.

Furthermore, the circular economy can contribute to many 'common' policy objectives (economic, social, environmental) and the targets set in the circular economy strategy can be linked to these objectives (e.g. create X jobs in circular economy businesses).

2.3 Setting out the governance and implementation processes

Policy recommendation from CIRCTER

With regards to territories, policies need to be analysed from both a design and implementation point of view. Policies differ in their contribution to CE transition and their capacities to trigger radical behavioural changes in companies and among citizens.

Defining the governance of circular economy strategy development and implementation processes is key to ensuring that things move from ideas to actual results.

There are three key steps to start the process in the region, and gather support:

- **Who are the key partners and stakeholders to work with and why?**
- **How can the stakeholders be mobilised for the circular economy? What's in it for them?**
- **How can collaborative action and effective implementation best be organised?**

Once the governance and implementation structure is set up, it is important to add a fourth key step and **set-up a monitoring and evaluation system** for the circular economy. A framework for checking and reflecting whether the strategy implementation is on track, and for mechanisms to monitor and evaluate its results.

Implementing policies towards building a circular economy model requires the participation of many different types of stakeholders. This is particularly true for implementing a coherent strategy, when a wide range of actors should be involved, including local businesses, NGOs, social enterprises, consumers/citizens, academic and research centres.

2.3.1 Who are the key partners and stakeholders to work with and why?

The mapping of the regional and local circular economy opportunities might have already identified specific flagship projects, actors driving circular economy initiatives, as well as sectors with potential for resource efficiency improvements and transformation.

This step is important in identifying different types of stakeholders to cooperate with and involve in the strategy definition process. The circular economy concept cuts across all types of sectors, and affects lifestyles, production and consumption behaviours in many ways. This is why it is key to take a system-wide approach, and take any opportunity to cooperate with different stakeholders who can promote CE initiatives.

The private sector has a fundamental role to play in the circular economy. As providers of products and services, as well as in many cases sources of pollution, SMEs and larger companies located in the region need to be among the first to benefit from becoming more resource efficient or entering new markets with their eco-innovative products and services.

At the same time, the circular economy can also be a boundless source of innovation. Developing an **entrepreneurial ecosystem** around the circular economy by encouraging business support facilities to work with would-be entrepreneurs and innovators of green products and services can be a route to success. Establishing cleantech incubators, or fostering cooperation between industries and green start-ups, or involving universities in developing programmes in this field are ways of mobilising stake-

holders in favour of the circular economy.

In addition, distributing the benefits of the circular economy across **the wider population** has become increasingly important. **Urban communities** in 'makerspaces' or similar grass-roots activities, educators, academic and knowledge providers all play a key role in amplifying positive messages and demonstrating the benefits of the circular economy and sustainable practices, and in mobilising more citizens.

Government and public agencies can become enablers of the circular economy and open up the platform to deeper cooperation on circular economy projects for the regional stakeholders. Governments can also facilitate the learning and development processes of shifting production and consumption towards circularity by providing funding sources and improving regulations.

Potential roles of the stakeholders are in no particular order:

- **Local circular economy champions** who can be motivated to showcase the benefits of the circular economy and are proof that such solutions work. These personalities may come from city administrations (e.g. mayors or city managers), the business sector, or academic and associa-

Figure 5 Stakeholders' roles in the circular economy

STAKEHOLDERS	ROLE IN CIRCULAR ECONOMY
Local champions	Goodwill ambassadors Community mobilisers
Public sector allies	Key implementation partners Improve framework conditions
Sectoral representatives	High impact on economy and environment Target sectors for transformation
Eco-industries	Capitalise on their infrastructure Strengthened roles in promoting CE
Entrepreneurs	Direct beneficiaries of the strategy Can be activated for the circular economy
Business support structures	Key allies for circular economy promotion Service providers to local entrepreneurs and
Academia and knowledge providers	Knowledge generation on local CE features Assessments and advice
Educators	Teach the circular economy principles Mobilise the young and lifelong learners
Investors	Mobilise finance for CE Develop new financing models
Grassroots	Demonstrate benefits to citizens Reach out to all citizens

Source: authors' elaboration

tive sectors, and are in general active in the community life. They can become '**goodwill ambassadors**' and have a snowball effect on mobilising the regional community, as well as provide insights into the key actions to take to expand the circular economy in the region.

- **Public-sector allies** include economic- or environment-related departments of regional and city administrations who play a key role in the decision-making and implementation phase of the circular economy strategy. Once the strategy is decided, they can progress in the process of improving framework conditions for the circular economy in the region, identifying funding sources, and improving understanding of potential regulatory issues in specific circular economy projects.
- **Sector representatives** of specific industries, business leaders and businesses who are part of the target sectors identified as key for enhancing circularity in the region, often due to their negative environmental footprint in linear economy models.
- **Eco-industry representatives** such as waste-management service providers and recyclers, who might be poten-

tially affected by the reduced waste generation and need to be included and become aligned with the circular economy goals of the region. Their existing infrastructure may be adapted or refreshed in line with improved material chains according to circular economy principles.

- **Entrepreneurs, makers and individual shapers** as potential stakeholders who can be activated to incorporate circularity principles in their activities and be at the vanguard of transforming the economy to a circular model.
- **Business support structures** such as chambers of commerce, clusters, start-up hubs, incubators, living labs, entrepreneurship clubs, etc. who could develop new programmes to support circular economy initiatives.
- **Academic-sector** representatives who can help to build the knowledge base for the region on circular economy activities and assess the impact of potential options for the strategy orientation.
- **Education stakeholders** who can be mobilised as part of the wider process of awareness-raising among the population, and building 'circular economy consciousness'.
- **Investors** need to be made aware of the different logic in

which circular economy projects may function. While profits are not excluded, the time lag to profit might be larger. However, their sustainability might be longer as well. Investors can be key partners for making circular economy projects happen. Developing new financing models can thus play a significant role.

- **Grass-root initiatives** including neighbourhood organisations and all manner of citizen associations who are motivated to promote sustainability in their region and city.

There are several ways of mobilising stakeholders to promote circularity. Ideally, the process can be carried out in a step-wise fashion, going through several stages of strategy-definition, as described below. The process described below assumes the responsibility for initiating the stakeholder mobilisation first lays with the regional agency or city hall. However, other stakeholder constellations may arise depending on the local context, including the existence of private initiatives of local champions.

Table 5 Options for stakeholder mobilisation along strategy development and implementation phases

	Stages	Aims of each stage	Ideas for action	Who
Coagulating support and early stakeholder mobilisation	Define leadership	Ensure stewardship of the process Ensure ownership Ensure clear roles	Take responsibility Define team Understand resources available (internal and external)	Regional agency/city hall
	Involve stakeholders in analysis stage	Gain hands-on understanding of problems Understand positions and policy options	Interviews Brainstorming Studies on the local context Visioning and prioritisation workshops	Regional agency/city hall Local experts and facilitators, including commissioning studies from academia and knowledge providers Further public-sector allies Eco-industry representatives Business associations Educators
	Build consensus around CE priorities	Obtain agreement and endorsement of the CE priorities	Workshop facilitation Dialogue Public consultation Political processes	All

Table 5 Options for stakeholder mobilisation along strategy development and implementation phases (cont)

	Stages	Aims of each stage	Ideas for action	Who
Set framework for effective governance and implementation	Define teams and action groups	<p>Deepen the understanding and action planning in specific sectors and themes</p> <p>Build communities for action</p>	<p>Initiate and coordinate working groups to tackle the CE in different sectors</p> <p>Initiate and coordinate working groups tackling horizontal challenges e.g. education for circular economy</p>	Regional agency/city hall together with representatives of each type of stakeholder split into working groups
	Roadmap for action	<p>Obtain a full overview of the steps to be taken with the stakeholders</p> <p>Set a time line for action</p> <p>Allocate resources</p> <p>Facilitate tracking of the implementation</p>	<p>Consolidate the actions and resources (to be) deployed for the circular economy</p> <p>Involve key stakeholders in drafting it and taking on leadership</p> <p>Ensure allocation of resources</p> <p>Publish online and communicate it to the regional com-</p>	Regional agency/city hall together with representatives of each type of stakeholder split into working groups
	Develop platforms or networks for actions	<p>Set the framework and governance for action</p> <p>Space for information exchange</p> <p>Community-building</p>	<p>Organise forums and regular meetings for exchanges</p> <p>Develop thematic networks or general circular economy business networks</p>	<p>Regional agency/city hall</p> <p>Leaders of the stakeholder working groups formed in the previous step</p> <p>Potential for establishing a circular economy action governance board</p>

Table 5 Options for stakeholder mobilisation along strategy development and implementation phases (cont)

	Stages	Aims of each stage	Ideas for action	Who
Implement, communicate and monitor	Communicate your plans	Information exchange Build awareness on the circular economy goals	Develop a communication campaign Go on social media and mobilise citizens Use influencers and local leaders as message multipliers Work with community-led initiatives to reach out to citizens	Circular economy action governance board delegates PR responsibilities
	Monitor and evaluate	Understand the progress of implementation Learn from what works Understand what and how to improve	Set up indicators for progress Develop a user-friendly monitoring process, based on evidence and data Commission an independent evaluation, to understand the results and impacts of the strategy and how to plan for the future	Circular economy action governance board delegates responsibilities for monitoring and evaluation or commissions study

Source: authors' elaboration

2.3.2 How can stakeholders be best mobilised to create regional alliances to promote circular economy?

Who: Regional agency/city hall

What: Define leadership and structure the regional cooperation on circular economy

Stewardship from a dedicated leader who can take the responsibility and allocate resources to drive the CE strategy definition process is a key success factor. Furthermore, depending on the regional context, the leader should build a team or a **task force** at the level of the regional government, to support the day-to-day coordination of the strategy development process. The members of the coordination team can be **'change agents'** and develop cooperation with the regional stakeholders to make circular economy happen.

This phase is also useful to **understand what are the resources available in-house and externally**. Even a small team with backing from external stakeholders can secure enough resources from external public or private stakeholders to ensure the CE initiative has sufficient momentum to carry it through the next steps of the process.

Mobilisation of stakeholders in Brussels

Brussels' Regional Plan for a Circular Economy (RPCE), adopted in 2016 as part of the Brussels regional Strategy 2025, is a flagship CE initiative in Belgium's capital. It established an innovative governance structure for stakeholder engagement, which enabled both top-down and bottom-up involvement in defining the plan and implementing it.

The governance of the RPCE is structured around the following elements:

- The **steering committee** is composed of representatives from the three ministries in charge of the RPCE, the region presidency, regional ministries associated with the initiative, and the 11-chapter coordinators within the respective administration of the RBC (e.g. Bruxelles Environnement, Impulse.brussels, Brussels Economy Employment, Actiris, Bruxelles Formation, VDAB Brussel, Innoviris, Citydev, Finance.Brussels, Agence Bruxelles-Propreté, the Brussels Office of Planning, the Port of Brussels, Atrium, Bruxelles Mobilité, the CIRB, as well as the Economic and Social Council).
- The **RPCE Coordination Committee** is the **daily management unit** at Bruxelles Environnement that organises the concrete implementation of the PREC.
- Management and implementation of actions, and regular reporting of their progress.
- A **framework mechanism for the emergence of new proposals Structures for enhanced cooperation between governments and with the professional federations** to improve the effectiveness of the circular economy strategy
- A **platform for networking and exchange between actors** to share information and boost stakeholder engagement.

Source: CIRCTER case study on Brussels region

Who: Regional agency/city hall together with academia or knowledge providers, and sectoral representatives (business sector, eco-industries, education, etc.)

What: Involving stakeholders in the analysis stage

Mobilisation of stakeholders can complement the analysis of the regional context for circular economy developments. Collecting evidence and working with knowledge providers is key in order to obtain the right fundamentals for kick-starting the circular economy journey of your region.

The evidence to be collected should ideally provide information about the region's **performance along specific circular economy indicators**. At the same time, it is important to **map the existing circular economy initiatives** from the public and private sector, and the **options for policy interventions** that may be introduced. Consultation with specific stakeholders can be useful in this respect, either through informal discussions, as well as through group meetings or workshops.

Inclusive development process results in the inclusive CE strategy in Scotland

The **Scottish Circular Economy Strategy** represents a traditional approach to sectoral involvement. The Strategy itself structures its actions along priority sectors. Leading up to the Strategy, a public consultation and a series of workshops, seminars, media releases and sectoral reports were conducted to increase interest and stimulate public debate.

Responses to this consultation significantly helped shape the Strategy. Implementation was in turn guided by collaboration between key players such as Zero Waste Scotland and sector-specific innovation centres (e.g. the Industrial Biotechnology Centre (IBioIC), the Construction Scotland Innovation Centre (CSIC) and Oil and Gas Innovation Centre (OGIC)).

This comprehensive approach geared towards mobilising various sector-partitioned actions was considered a significant factor of success. Through targeted activities across sectors and Scottish cities, both the particularities of industries and communities were addressed. Additionally, the Strategy focused on engaging a skilled workforce capable of dealing with the specific requirements that circular systems require. The Scottish Strategy was thus presented as more inclusive than in other parts of the UK.

Source: CIRCTER Case Study Scottish Circular Economy Strategy

Who: Regional agency involving all stakeholders

What: Building consensus around the circular economy priorities of the region

Engaging the regional stakeholders in dialogues is fundamental to the circular economy transition. This can be done in one-to-one discussions, group discussions with different organisations, but also in **workshops** with key stakeholders, where the results of the analysis can be presented and feedback on the next steps collected. This would be a useful way of validating the findings of the initial analysis and problem definition stage.

Launching a **public consultation** can be useful to help understand that the views of different stakeholders are useful inputs to the strategy definition process.

Workshop participants can include a select group of representatives of the public sector, academia and business-support organisations who have a global view of the regions' performance in the circular economy field. The workshop can help gather consensus on the overarching problems that need to be tackled through public interventions in the region to promote the circular

economy.

Involving the leadership of public administrations such as regional governors, mayors or prefects would give more weight to the priority setting process. Of course, depending on the regional context, the outcomes of this stage can be further subjected to the regional or local political legislative processes in city councils, or regional councils, which can provide the final endorsement of the strategy. Ownership of the strategy and gathering **political buy-in** is key, as the strategy is intended to be connected with clear policy actions and funding means.

2.3.3 How can collaborative action and effective implementation best be organised?

Regions have several options on how to mobilise stakeholders towards taking on roles and collaborating in order to put in practice the circular economy strategy. The public sector alone cannot be the sole implementer, as the circular economy challenge spans organisational, sectoral and often geographical boundaries as well. The following sections provide ideas on how to **move from goals to actions to results**.

Who: Regional agency/city hall together with representatives of each type of stakeholder split into working groups

What: Define teams and action groups

Depending on the conclusions reached in the first phase and the sectors identified as holding the highest circularity potential in the region, the stakeholders that need to be mobilised belong in a majority of cases to those areas. The formation of action groups or collaboration teams would be a solution, in case specific economic sectors may need deeper analysis, and priorities need to be deepened.

As a follow-up to the first phase, sectoral industry associations, clusters and businesses can begin a deeper analysis and discussion of opportunities for circular business and for transitioning to circularity. Such working groups also help share knowledge on circular business models, and spark opportunities to collaborate on e.g. valorising secondary waste streams, or improving resource efficiency.

At the same time, it may also be possible to develop horizontal working groups, focused on specific policy priorities such as

green public procurement, education, financing or encouraging an entrepreneurial ecosystem for the circular economy. These working groups can develop deeper needs analyses, and calibrate policy options and follow-up actions for their specific themes.

Such working groups can be further engrained in the governance structure of the strategy implementation, along the thematic or sectoral policy lines. Depending on the resources available and the regional context, units from the regional agency, business associations, academia or other stakeholders can take the lead in specific working groups and drive the implementation of the actions.

Good practice example of Maribor Circular Economy strategy development

The Maribor Strategy was initially inspired by one major challenge: re-using the waste, surplus energy and wastewater generated by one sector as a resource commodity for another sector (following re-processing). Solving this issue required the integration of concerted waste management processes into the city's energy and water supply systems. A significant lever for strategy implementation was the mobilisation and federation of public utility companies within a city-level circular waste management strategy. All in all, the strategy was implemented along six selected sectors (pillars). This association of interests was then embodied by the establishment of a new institution: the Wcycle Institute Maribor (IWM).

The Municipality, the public utility companies and newly-established IWM, together with the business sector, identified 20 joint-collaboration projects for the coming years. The Wcycle Institute is the main piece of the multi-stakeholder CE approach as a platform where the utility companies can speak about general strategy and the projects. There are monthly discussion

and exchanges of documents. Thanks to the Institute, every company is aware of what the others are doing.

The Maribor approach has been considered truly innovative as a bottom-up, cross-sectoral solution for re-using material, energy and aquatic waste. It represents a crucial mind-shift with regard to the management of public utility companies.

Source: CIRCTER case study on Circular Economy Strategy of Maribor Region, Spain

Who: Circular economy governance board formed of regional/local stakeholders

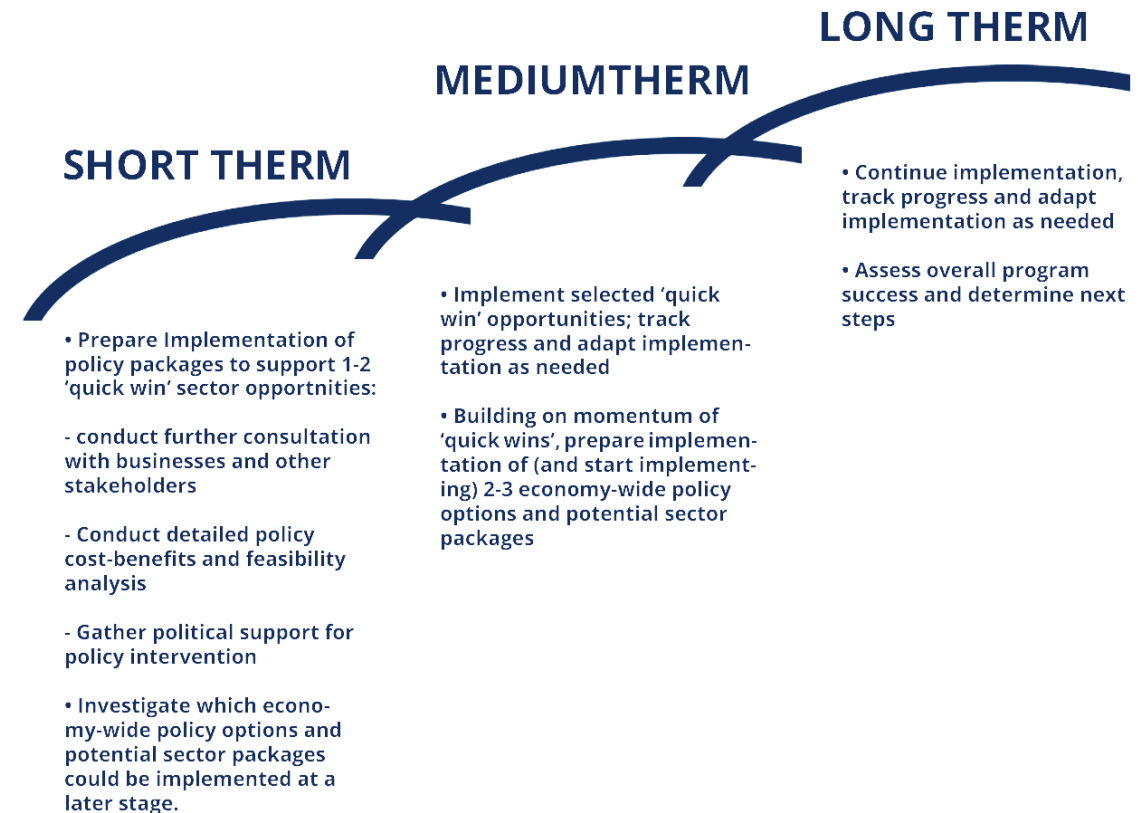
What: Develop a roadmap or an action plan

Once the strategic priorities have been set, and sectoral or thematic work groups are set up to develop own sector-specific action plans; it is important to define an overarching framework for actions to **bring the results of all the groups into a consolidated format.**

The roadmap to implementing the strategy may **build a time line for short-term, medium-term and longer-term actions**, capitalising on quick-wins in the medium term, and implementing wider scoping actions in the longer term (see Figure 6).

Building a mechanism for monitoring and evaluation is key to understanding how the strategy delivers clear benefits to the region.

Figure 6 Outcome: example of a roadmap



Source: Ellen MacArthur Foundation, 2016, Toolkit for Policy Makers

Who: Regional/local circular economy governance board

What: Develop action-driven platforms or networks

Keeping the momentum and enabling further cooperation to grow organically is another success factor for reaping the rewards of the CE strategy-making process.

Circular economy actions require cross-sectoral cooperation, which can be fostered through networking and personal connections across organisational silos in the region. This is why establishing a forum for dialogue, networks and partnerships, as well as online and especially offline meeting platforms is recommended. These platforms can serve as a tool for maintaining the dialogue, facilitating ideas and information exchange, as well as for tracking progress on the implementation. They are also a great tool for community-building around the circular economy, which can further positively influence behaviours and mindset change.

Good practice example of the Scottish Circular Economy strategy development

The Scottish Circular Economy Business Network (SCEBN) has been established as a follow-up of the Scotland's Circular Economy strategy. Its goal is to support and 'develop business-led initiatives to promote the opportunities of a more circular approach' by providing a platform for engaged and innovative business leaders to help build responsive and networked supply chains in Scotland.

The founding members of the network include public-sector and non-governmental organisations, such as Scottish Enterprise (SE), Highlands and Islands Enterprise (HIE) and Scottish Environment Protection Agency (SEPA), and Zero Waste Scotland.

Source: CIRCTER Case Study on Scotland's Circular Economy Strategy

2.3.4 Communicate your plans

Who: Media and digital influencers delegated by the circular economy governance board

What: Communicate your plans

Working on the circular economy and making this known also requires changing the mindsets and behaviour of citizens and businesses as producers and consumers. This is a challenging task. Making use of communication campaigns, marketing techniques, or even social media engagement can be a way to reach all citizens and encourage them to take up the proposed greener habits. Also working with media and digital influencers can be a mobilising factor, which can promote the concepts and new lifestyle choices through the traditional media, or their online activities (e.g. blogs, vlogs, etc.).

This kind of outreach is boosted when local leaders and grassroots or community-led initiatives take up the messages of the regional circular economy strategy and amplify them in their own activities. Working with them is recommended not only as part of the strategy definition, but also as part of the communication activities.

Greener Scotland – Climate Change Campaign

The environment is seen as a complex issue and many Scots believe they are doing all that can be expected of them to help, and many believe that recycling household packaging is doing their bit. However, a survey carried out on behalf of the Scottish Government has found that around half of Scots acknowledge that climate change is an urgent problem, 8 in 10 Scots say they could do more to care for the environment.

Unfortunately being aware of the climate change problem does not always lead to action and for many Scots adopting greener lifestyle choices is perceived as being much harder than the reality.

To encourage people to take up greener habits, The Scottish Government launched a climate change campaign **to shift the attitudes and behaviours of more Scots to make better lifestyle choices** for tackling climate change. The campaign focuses on four accessible behaviours: washing clothes at 30°C; leaving the car behind and walking shorter journeys; avoiding and recycling food waste; turning down the thermostat dial by 1°C.

Source: [Scottish Circular Economy Strategy](#)

2.3.5 Set up a monitoring and evaluation system for the circular economy

Who: Responsibility delegated by the circular economy governance board to regional authority/city hall or a different stakeholder and/or independent provider

What: Monitoring and evaluation activities

Once the strategy's objectives, targets and main actions are set, the next step is to define clear indicators to monitor and track their progress in reaching set goals, outputs and results.

This section provides resources to understand how to better define indicators for circularity in your region and examples of how other regions have embedded a monitoring system in their strategy and action plans.

There are different ways to track progress. Monitoring can be embedded at the strategic level or the programme level. The Table 6 below provides examples of indicators that could be embedded in the CE strategy progress tracking, referring especially to the short-term results and outcomes, which can be seen on a medium- to long-term time frame. They provide a starting point

for the defining a solid monitoring system, but the table is by no means comprehensive.

Table 6 Examples of indicators for circular economy strategies

Ecological	<p>Number and funding of projects for the supply of urban green spaces</p> <p>Number and funding of projects dealing with circular bio-economy</p>	<p>Improved access to green spaces</p> <p>Increased population of species</p> <p>Improved ecological features of natural habitats where interventions took place</p>	<p>Biodiversity increase per square kilometre</p> <p>Soil quality improved</p> <p>Improved ecological features of natural habitats in the region</p>
Emissions	<p>Number and funding of projects dealing with GHG emissions reduction</p>	<p>CO2 reduced</p> <p>GHG emissions reduced</p>	<p>Air quality improved</p>
Waste as a resource	<p>Number and funding of projects dealing with using waste as a resource, recycling, reuse, industrial symbiosis, or urban mining</p> <p>Number and funding of projects dealing with using waste as a resource, recycling, reuse, industrial symbiosis, or urban mining</p> <p>Number and funding of beneficiaries involved in projects dealing with using waste as a resources</p>	<p>Recycling and preparing for reuse of household waste</p> <p>Amount of biodegradable waste sent to landfill</p> <p>Percentage of recycling and reuse of construction waste</p> <p>Tonnes of waste diverted from landfill</p> <p>Amount of food waste reduced</p> <p>Amount of precious and rare earth metals mined</p> <p>Amount of precious and rare earth metals reused</p> <p>Precious and rare earth metals reused</p>	<p>Air quality improved</p> <p>Environmental footprint of households improved</p> <p>Environmental footprint of companies improved</p> <p>Environmental footprint of public sector improved</p>

Table 6 Examples of indicators for circular economy strategies (cont.)

Circular business models	Number and funding of companies helped to adopt circular business models	Number of companies having introduced circularity in products or services after the programme Increased turnover from circular business models	Reduced eco-footprint of products, processes, companies Gross value added of circular businesses Increase in turnover, revenues, return on investment
Energy	Number and funding of projects dealing with energy and efficiency improvements Number and funding of projects dealing with energy and efficiency improvements	Energy efficiency improvements made	Reduced consumption of energy Renewable energy consumption
Water	Number and funding of projects dealing with wastewater reuse	Volume of wastewater reused Water use efficiency improvements made	Water use efficiency Water quality
Productivity	Number and funding of companies helped to improve energy/material efficiency	Number of companies with improved energy/ material efficiency properties Number of SME acquired EMAS/other eco-certificates	Increase in resource efficiency or productivity, percentage savings
Financial	Number and funding of public-privately funded circular economy projects	Investments leveraged for circular projects	Improved availability of finance for circular economy projects

Table 6 Examples of indicators for circular economy strategies (cont.)

Jobs	Number of jobs created in circular economy through the projects	Number of jobs created or maintained in circular economy	Number of persons employed in circular/green sectors
Research and innovation	Number and funding of research and innovation projects funded in the field of circular economy Number of cooperations between academic and private sectors on circular economy	Number of eco-patents filed Number of publications on eco-innovation submitted to journals	Application of eco-patent in product Popularity or sales of the new product in local market Start of spin-off(s) based on the R&D project/initiative
Knowledge	Number and funding of programmes providing education on circular economy (to students, lifelong learners, SMEs etc.)	Number of students trained in circular economy topics Number of SMEs received training in resource and energy management	Knowledge enhanced for circular economy
Social	Number of social projects supported Funding for social projects dealing with circular economy	Access to green areas Access to improved waste management facilities Percentage of population engaged in community-led local initiatives dealing with circular economy	Improved quality of life percentage of people with improved access to a sustainable and better infrastructure Level of awareness of circular economy topics Positive attitudes towards circular

Source: authors' elaboration

2.4 Ensuring favourable framework conditions via policy mix

A transition to a functional circular economy model with stable economic activities, circular practices that are applied by households, public bodies and businesses cannot be driven solely by a strategy and plans.

What is needed are the favourable framework conditions to facilitate this transition. The role of the city and the regional government is key in building these framework conditions and it could be done by setting a diverse mix of policy measures that can spur demand and foster supply in the circular economy.

What are the framework conditions?

Framework conditions for CE are defined by policies, regulations, fiscal and other measures, socio-cultural openness of people and business, availability of infrastructure for CE activities (recycling, reuse, repair, remanufacturing), as well as by entrepreneurial, innovation and R&D capabilities.

2.4.1 Building policy measures mix

The right mix of government policies is critical in building a solid framework for circular economy transitions. This includes **policy instruments** to incentivise or regulate resource efficiency (waste reduction, recycling, reuse, remanufacturing, etc.), create demand for sustainably-designed products and resource-saving services, and to support resource saving and eco-innovation in SMEs.

The scope of policy measures to support innovations for the circular economy, resource saving and sustainable design can be quite wide. Many traditional innovation-support instruments can be adapted to support eco-innovation based on circularity. Table 7 below presents various types of policy measures that can be adopted to support the circular economy from various perspectives.

It is important to consider which types of territorial policy measures that are most relevant to the governance level, and which instruments can only be implemented on a national and/or international level. For example, introducing regulatory and fiscal instruments is a national government competency and the role of

local governments is to enforce them. At the same time, the policy portfolio of regional and city authorities can include many other instruments including supporting local initiatives, increasing awareness, voluntary measures, etc. The Figure 7 below indicates the need for coherent (vertical and horizontal) policy measures to be set at various levels of governance.

Depending on the local context and nature of the economic activities, various sets of policy measures can be deployed. Furthermore, design of policy measures can be adapted to the rural or urban context of the territory, e.g. funding or advisory schemes can be thematically focused depending on the priority sectors identified for the CE strategy.

Policy recommendation from CIRCTER

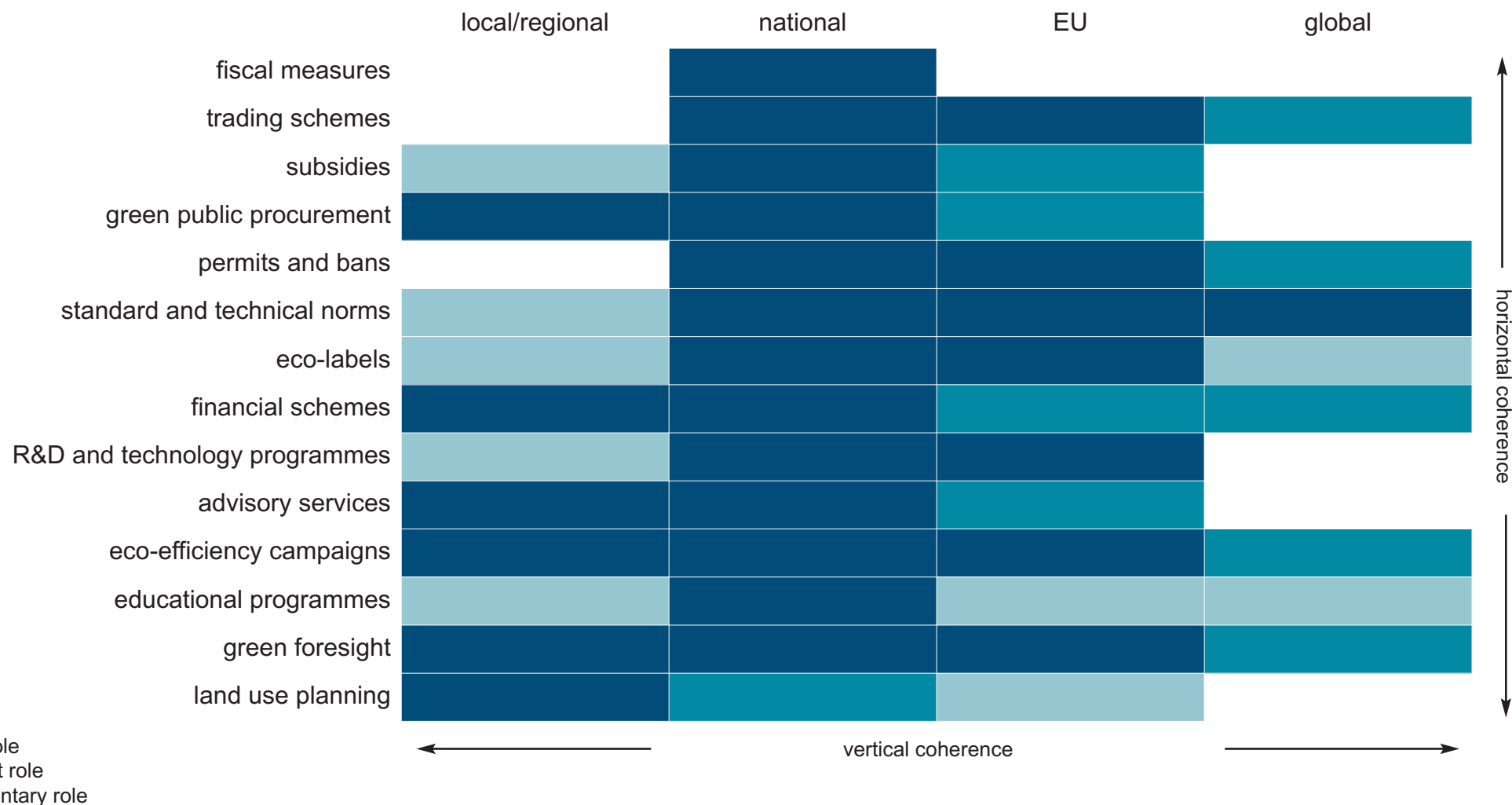
There is no striking difference between policies which could be deployed in different typologies of CIRCTER regions. However, rural regions are more suited to hosting bioeconomy policies and business models, changes in food production, while urban regions are more apt to deploy different collaborative methods, municipal waste management, new business models for repair and reuse, etc.

Table 7 Policy measures to support the circular economy

Categories of policy measures	Examples of policy measures	Level of governance
Regulatory instruments	Directives and regulations (e.g. on waste recycling, producers responsibility, eco-design, take-back, transparency in material chain and responsibilities, etc.)	<i>global, EU, national, regional/local</i>
	Codes and standards e.g. for products, quality, recycled material content, packaging, emissions, as well as for triggering innovation prior to setting new minimum performance limits	<i>EU, national</i>
Economic instruments	Fiscal instruments and incentives, e.g. charges and taxes for waste, incineration, landfill, tax relief for circular activities	<i>national</i>
	Direct funding including, loans, subsidies, grants for projects, business, infrastructure	<i>EU, national, regional/local</i>
	Demand pull instruments, including public procurement, eco-vouchers	<i>national, regional/local</i>
	Market based instruments, e.g. 'cap and trade' etc.	<i>EU, national</i>
Research and innovation support	Funding for R&D in CE-related themes (e.g. direct or competitive grants)	<i>EU, national, regional/local</i>
	Pre-commercial /R&D procurement	<i>national, regional/local</i>
	Providing R&D infrastructure	<i>national, regional/local</i>
	Innovation voucher schemes for SME on CE-related innovation	<i>national, regional/local</i>
	Support to innovation incubators focusing on CE-related areas	<i>national, regional/local</i>
	Support programmes and incentives for R&D personnel	<i>EU, national, regional/local</i>
Information, education and networking support	Advisory services and information provision (to companies, start-ups, customers, technology adopters, etc.)	<i>national, regional/local</i>
	Professional training and qualification and skills enhancement courses, i.e. in material chain management	<i>national, regional/local</i>
	Support networking via matchmaking, technology platforms	<i>EU, national, regional/local</i>
Voluntary measures	Performance label for products and services	<i>EU, national</i>
	Negotiated agreements (public-private sector)	<i>national, regional/local</i>
	Guarantee for product durability, repair	<i>national, regional/local</i>
	Public or unilateral voluntary commitments (by private sector)	<i>national, regional/local</i>

Source: CIRCTER project

Figure 7 Policy coherence assurance



Source: based on Reid et al. 2012

2.4.2 Examples of policy measures to support the Circular Economy

Examples presented below have been sourced from various studies, reports, news, as well as from analysis within the CIRCTER project (Annex 6).

Regulatory instruments

Regulatory measures are one of the most important policy instrument that can be very effective in achieving specific targets or results. The circular economy addresses, above all, the environmental challenges that require strong state intervention. Therefore regulatory instruments such as bans can be instrumental in promoting transition toward the circular economy. Mandatory take-back schemes for packaging targeting waste/pollution, banning unsustainable products or materials, etc. can be applied both on local or national levels.

France – Law banning plastic cups, plates and cutlery

In 2016, France became the first country to pass a law banning disposable utensils in an attempt to build a more sustainable economy. Starting in 2020, most plastic cups, plates and cutlery will be totally banned. The only exception will be for disposable items made from biodegradable substances.

The decision follows the country's total ban on plastic bags in 2015, in accordance with the Energy Transition for Green Growth Act which aims to transform France into "an exemplary nation in terms of reducing its greenhouse gas emissions, diversifying its energy model and increasing the deployment of renewable energy sources."

Source : [French Ministry of Ecology and Solidary Transition](#)

Lessons: introducing regulatory bans can generate resistance from the main stakeholders and significant economic actors, e.g industry, consumers. It is therefore important to have an open process of consultation on the new laws, as well as awareness-raising about the problem that new laws intend to address.

Quality codes and standards for recycled, remanufactured, repaired products are of increasing concern for consumers. Regulatory measures seek to promote products made of secondary materials, and ensure the quality of these products, their processes, content, etc. A well-established and successful case for this comes from the Netherlands and concerns the reuse of demolition and construction waste materials in road-building projects.

Regulating quality of the recycled aggregates from construction and demolition waste (C&DW) in the Netherlands

The main driver for recycling in the Netherlands is the solid framework of legislation banning the landfilling of many waste streams including C&DW. The safe use of recycled materials in road construction (and other applications in or on soil) is regulated by the Soil Quality Decree, which sets limit values for leaching. Furthermore, several pieces of legislation (for instance concerning asbestos) assure that only non-hazardous inert waste arrives at recycling facilities. During the acceptance process at the gate of the recycling facility, a final check is performed to monitor incoming waste.

The requirements for use of materials in road construction are laid down in a national guideline, the Standard RAW Provisions. Recycled aggregates meet all requirements for safe application in road construction because the processing of good-quality recycled materials starts well before demolition. Furthermore, by requiring the use of mainly recycled C&DW instead of virgin materials from riverbeds or quarries in public road construction tenders, a large and steady market has been created. Today, close to 100% of waste from construction-and-demolition is recycled in the Netherlands.

Source: [International Federation for Recycling](#)

Lessons: Ensuring quality of the secondary material is important in building consumer trust in the circular economy.

Economic instruments

Direct funding including loans, subsidies and grants for projects, business and infrastructure is a commonly used instrument across countries applied by governments of all levels. Regions and cities can adapt funding instruments to support business- or citizen-led initiatives that can directly or indirectly facilitate uptake of circular economy practices.

Brussels government circular economy funding programmes

Brussels government has launched several calls for projects which promote circular economy uptake from various angles and by targeting different actors. One example is a call for projects for financing and incubating circular solutions, assigning grants for very small enterprises in sustainable food, eco-construction, personal care, ICT, waste and resources, and the energy and creative sectors. Another call for projects focuses on supporting innovation through mobilising cooperation between research actors and practitioners, with the financing of several projects on green technology, circular business models, and resource efficiency.

Source: CIRCTER case study

Lessons: It is important to assess the context that can inform the needs and problems in designing funding programmes. Furthermore, combining the funding programme with other action streams, such as capacity building, training and market sub-strategies, has proven to achieve more sustainable results.

Using **fiscal incentives** or promoting specific types of businesses or investment in economic activities is rather popular in many countries. Governments have started to explore the use of these instruments to support green economic activities: for example, fiscal incentives to incorporate clean technologies in the production process are now available in the Netherlands, UK, Basque Country, etc. Regions and cities, within their local taxation system, can apply fiscal incentives to promote investment in circular businesses and technologies.

Fiscal deductions for environmental improvements in the Basque Country

Companies in the Basque Country that invest in environmental improvement projects benefit from a 15% corporate tax rebate. Companies that invest in equipment related to the so-called 'List of Clean Technologies' receive a 30% rebate. The List approved by the regional authorities prioritises 92 technologies because of their contribution to resource efficiency and environmental benefits. Examples include radio-frequency identification (RFID), vacuum evaporator-crystallisers, plastics and non-ferrous metal separators, briquetting press, etc.

Source: CIRCTER case study

Lessons: Deploying tax incentives does not only provide benefits to existing companies that improve their environmental performance, but also boosts the attractiveness of the regions for potential newcomer cleantech companies.

Green public procurement (GPP) is not a new instrument in the EU, as it has been used for over two decades, but it is gaining momentum following updates to the regulations covering socially responsible, including green, procurement practices. The process for setting common GPP criteria was rolled out following the Communication ‘Public procurement for a better environment’ (EC 2008). Until now GPP criteria have been developed for 21 categories of products and services, to facilitate the inclusion of green requirements in public tender documents. While the adopted EU GPP criteria aim to reach a good balance between environmental performance, cost considerations, market availability and ease of verification, procuring authorities may choose, according to their needs and ambition level, to include all or only certain requirements in their tenders.

In Europe, there are pioneers in circular procurement whose examples can be replicated or serve as an inspiration. Many of these procurers have already been sharing their experience and lessons with other Member States. The European Commission GPP platform (<http://ec.europa.eu/environment/gpp/>) offers many insightful resources, good practices and guidance on how to innovate towards circular procurements.

Procuring circular catering services for a school in Latvia

In 2018, Plavīnu in Latvia set out to improve its school catering contract through the inclusion of a number of requirements aimed at fostering circularity. Plavīnu Municipality is responsible for the Plavīnu Gymnasium, a school with 410 pupils and 77 members of staff. The Municipality wanted to secure good-quality catering for a reasonable price. As such, the procurement criteria were designed to include aspects such as nutrition and health, organic products, seasonal fruit and vegetables, waste minimisation and environmentally friendly transportation. The new catering contract is now free of single-use dishes, includes requirements for the contractor to minimise waste (through analysis and then reduction), and measures to monitor the origin and quantities of organic products. Examples of technical specifications in the call included:

- The service provider sorts waste according to the waste manager’s instructions (biological, packaging, other).
- The service provider regularly (twice a year) carries out an inventory of waste generated in the kitchen and catering, analyses it and agrees with the contracting party on an action plan for waste reduction.
- The customer determines the use of surplus food.
- The service provider shall inform clients about the most important actions for the prevention of food waste (educational notes, etc.).

Source: [GPP platform](#).

Lessons: Expertise and knowledge from the INTERREG project Circular PP (<http://circularpp.eu>) was fundamental for the Municipality of Plavīnu to increase its capacity in circular public procurement schemes.

Introducing re-use, refurbishment and redesign in procurement in Wales

An example of Circular procurement from Wales showed how Public Health Wales (PHW) when moving to a new office decided to adopt a new mindset when procuring for the design and supply of office furniture, equipment and floorings. PHW recognised that they already owned a large amount of quality furniture and fittings, and that with some cleaning, refurbishment and redesign, these items could be repurposed and combined with other new or re-used furniture in a cohesive and functional style.

The suppliers were invited to provide offers which would meet the client's functional design and supply needs, without specifying how these should be met, thus leaving room for creativity and innovation. Social enterprises were encouraged to participate. The winning bid was from a consortium which included a sustainable office design service, a furniture manufacturer and a community interest company, with specific objectives to support low-income and long-term unemployed people in areas of high social deprivation. As a result out of all furniture used in a new office 45 per cent of items were re-used, 49 per cent of items were remanufactured, and only 6 per cent of items were sourced from new stock.

Source: [GPP platform](#)

Lessons: It is possible to break a cycle of using new products only. Repaired, refurbished products can mean good quality as well. By working differently with suppliers – including social enterprises – outstanding results can be achieved. Dialogue and communication with suppliers throughout the process can help to reach mutual understanding, shared values and commitments that benefit all parties

Research and innovation support

In strategic policy making across many countries and regions it is recognised that research and innovation (R&I) are important drivers of economic growth. This is translated through diverse R&I support instruments ranging from grants for stimulating research and demonstration projects, to innovative start-up incubation and university-industry collaboration schemes. Following a similar logic, many new products, services and inventions can help in the transition to a stable circular economy model, and therefore it is important to support R&I activities in related topics.

Funding schemes for R&I in CE-related themes can be set up as direct or competitive grant programmes, as well as in combination with support activities for building networks and cooperation, as presented in the example below.

SIR centre of excellence to increase innovation in remanufacturing

The Scottish Institute for Remanufacture (SIR) is backed by the Scottish Funding Council and Zero Waste Scotland. Hosted at the University of Strathclyde, SIR is a pan-Scotland centre of excellence to increase innovation in remanufacturing. They aim to do this by stimulating and co-funding collaborative projects that address industry challenges, enabling companies to increase reuse, repair and remanufacture in their manufacturing operations.

If innovation or the latest technology could help a company's remanufacturing operations, SIR can match it with the right academic experts from universities across Scotland and through a matched-funding model fostering collaborative projects that apply knowledge, expertise and specialist equipment to operational improvements for Scottish businesses. SIR funding of £5,000 to £50,000 per project is available.

- SIR pays for the cost of a researcher's time on the project.
- Companies match the SIR contribution through staff time, equipment or equivalent.
- The partner university contributes the indirect and estate costs (FTE costs) for the researchers on the project.
- Alternative funding can be investigated for projects with partners outside of Scotland.

Source: [The Scottish Institute for Remanufacture](#)

Lessons: Circular economy benefits are not always obvious to businesses, which makes knowledge-sharing by research organisations about opportunities and how to harness them very important. Special funding programmes for cooperative R&I can generate far-reaching value-added for businesses.

Innovation vouchers are small lines of credit provided by governments to SMEs for purchasing services from knowledge providers; normally a research organisation with a view to introducing innovations (new products, processes or services) in their business operation. The purpose of an innovation voucher is to stimulate knowledge transfer and act as a catalyst for the formation of longer-term, more in-depth research-industry relationships. The circular economy qualifies for support under innovation voucher programmes, however few examples of CE-focused regional schemes have been implemented. Example from the Polish Małopolska region presented below has a broader thematic focus, but offers insight how to go about using innovation vouchers for CE.

Małopolska innovation voucher programme

The Małopolska region in Poland enjoys relatively high R&D expenditure, but according to its Regional Operational Programme description innovative projects by regional companies and access to the capital are both limited. The Małopolska innovation voucher scheme encourages micro-, small- and medium-sized enterprises headquartered in the Małopolska region to take advantage of research and/or innovation services offered by research service providers in Poland. An annual announcement of the call for proposals is issued with several (monthly) cut-off dates. The submitted applications are processed on a first-come, first-serve basis. The current range of qualified contracted services covered under the scheme is:

- applied and experimental R&D services;
- industrial design services;
- feasibility studies for R&D projects;
- market studies/pre-commercialisation studies;
- norm compliance/certification services;
- intellectual property rights-related services.

Source: [Baltic TRAM](#)

Lessons: Once having a clear understanding of the traditional innovation vouchers programme model it is relatively straightforward to design one that focuses on specific topics like circular innovations.

Start-up movements have proved to be an important source of innovation, economic opportunities, potential for prosperity and competitiveness in a region or city. Following this trend, it can be promising to promote sustainability and circular economy innovations. Support in rolling out **innovation incubators and accelerators** focusing on sustainable solutions and businesses is gaining interest across a number of countries and regions. Existing practices can already offer examples to follow and lessons to the regions and cities who planning their own start-up support programmes.

Paris support programme to innovation incubators focusing on CE

Paris&Co is the agency for economic development and innovation of the city of Paris. It is a non-profit association founded by large private industrial groups (Ecofolio, E.Leclerc, Veolia, Vicat) and supported by ADEME and the city of Paris. The overall goal of Paris&Co is to foster collaboration between start-ups and well-established industrial companies by working through sector-specific innovation platforms. Through the Paris&Co programmes, start-ups benefit from coaching schemes, networking, market exposure, and access to expertise, but no direct financial support. Partnerships with larger groups give more visibility and weight to the start-up's initial services. Two support programmes exist: one at incubation stage, the other for more advanced participants. Partnership with the city of Paris does make incubators eligible for the Paris Innovation Incubation funds.

Paris&Co's most recent innovation platform was launched in 2017 with a call for tenders targeting start-ups operating in ecodesign, sustainable supply, product-service systems, responsible consumption, product longevity, and waste management (collection and treatment). This new platform is dedicated to solving circular economy challenges and it is a part of the wider Paris&Co 'Sustainable City' programme.

Source: [Paris&Co](#)

Lessons: Focusing on circular economy activities via special calls mobilises the business ideas that would otherwise have limited chance of success. In helping start-ups, regions and cities need to foster a wider ecosystem with incubators as just one element of the system.

Information, education and networking support

While the circular economy is becoming a popular topic in the policy discourse, many businesses and citizens still have narrow understanding of it and lack perspectives on opportunities it can bring. Many also have limited understanding of the implication of rapidly evolving policies. Increasing general awareness and technical knowledge among these actors is therefore important. Setting up or strengthening advisory services and improving the information available on various technical or non-technical aspects of the circular economy, related legislation, etc. is a priority. The target beneficiaries of such services could be companies, start-ups, customers, technology adopters, and others. Professional training, certification and skills enhancement courses (e.g. in material chain management) are other instruments that can boost knowledge and readiness of the companies and citizens to undertake circular activities.

CIRCO – teaching manufacturers to go circular in the Netherlands

CIRCO ‘Creating business through circular design’ is a project to inspire and help the manufacturing industry to ‘go circular’ using a circular design approach. CIRCO is funded by the Dutch Ministry of Infrastructure and Water Management. The project provides:

- Circular business design tracks – three one-day workshops that take place within a period of two months.
- Circular design class – one-day training course.
- Information and discussion sessions ‘next steps live’ – focuses on the latest policy and business news related to circular design in specific sectors.

The target group for these activities is businesses, entrepreneurs and researchers. Three-quarters of the participation cost in the training activities is subsidised by the state.

Source: [CIRCO project](#)

Lessons: Local initiatives aimed at increasing the capabilities of business in circular design are very helpful in preparing for the upcoming changes EU eco-design regulations and new market needs.

Consulting SMEs on resource efficiency measures through material audit in North Rhine-Westphalia, Germany

While many large companies are making major efforts to increase their resource efficiency, SMEs often lack capacity to undertake the same exercise. This is why the regional government of North Rhine-Westphalia (NRW) provides targeted support for SMEs through the PIUS-Check initiative.

The PIUS-Check support measure was launched by the NRW Ministry for the Environment and is managed by the Effizienz-Agentur NRW (EFA). The EFA promotes cleaner production methods in SMEs and has developed a toolbox with a range of consultancy services including material consumption audits. Its goal is to outline the potential for operational savings in production cycles and to work out solutions to achieve these savings by performing a process-oriented material flow analysis. The SME involved is then shown two or three possibilities to improve their resource efficiency within just nine days. The total cost of an audit is between €10,000-15,000. Up to two-thirds of the cost is covered through a special state programme. EFA also assists SMEs in applying for funding for the audits. The total time spent on the PIUS-Check from the initial meetings to the planning of the potential measures is six to nine months.

Source: [Effizienz-Agentur NRW](#)

Lessons: Small and micro-enterprises in traditional production sectors often have limited experience of circularity principles. They also typically lack perspective on what is working less efficiently in their production line. Targeted support for such enterprises unlocks untapped potential for economic savings.

The circular economy is about creating synergies and sharing know-how among various players in the local economies. Therefore the special programmes and support measures focused on **networking, matchmaking and technology platforms** are seen to be important in fostering circularity in a territory. Special focus has been on industrial symbiosis models which work best in confined territories and agglomerations of industrial entities. Through valorising the wastes, excess energy and heat, and using them as inputs in other company's processes, industrial symbiosis models help to cut or avoid waste and bring resource and monetary savings to all parties involved.

Unlocking the potential of industrial symbiosis via networking in Sicily

The ENEA Environmental Technologies Technical Unit initiative to unlock the potential of industrial symbiosis in the Sicily region of Italy involves a complex set of complementary activities. These include data collection (extensive exchanges with local stakeholders to collect data and identify companies that could validate the approach), the development of an online platform to analyse material and waste flow and identify potential matches for waste reuse, and the preparation of guiding documents to operationalise such matches. The platform is the central tool in this project.

Starting from a database of almost 2,000 companies, and a validation exercise carried out during two meetings in Catania and Siracusa, ENEA identified potential matches for more than 80 SMEs, for 400 output resources and almost 180 input resources, totalling 690 potential matches (by company/material).

Source: CIRCTER project

Lessons: In addition to the technical aspects of the development and use of the platform as an online tool, stakeholder outreach turned out to be a critical activity to create a collaborative environment based on reciprocal trust. Finding strong local partners, trusted by companies, was necessary because there was little to no awareness about the advantages of a CE, and hence there was little interest and no explicit commitment at the regional and local level. Awareness-raising activities did help considerably, also through collaborations with local chambers of commerce and branches of the confederation of Italian industries

Voluntary instruments

Voluntary instruments can also play an important role in promoting sustainable and circular practices. Such instruments can take various forms, ranging from product and organisation **voluntary labels and certifications**, **guarantees** for product durability and repair, **negotiated agreements** between businesses and public authorities, as well as public or unilateral **voluntary commitments**.

Performance labels and certifications are increasingly being used to distinguish between products and services, which also contribute to the circular economy transition. Labelling schemes are among the most widely used measures to encourage product choices that meet environmental and/or social criteria that go beyond regulatory compliance. They assure consumers that the labelled product/service is sustainable. In turn, market pressure created by consumer demand for labelled products is expected to encourage producers and service providers to offer products which meet growing demand for sustainable products and services.

Sweden's Miljönär label promotes reuse and repair

Sweden's waste management and recycling organisation (Avfall Sverige) launched the Miljönär label in 2015. This ecolabel aims to promote reuse and repair, and to extend product life in order to reduce waste. The label is awarded to businesses, such as shoe repair or second-hand shops, which re-use products by giving them a second life instead of selling new products.

The website, miljonar.se, contains a map marking all of the Miljönär-labelled organisations in the country and provides tips on how to reduce waste volumes.

Source: Avfall Sverige

Lessons: Continuous monitoring and work of the state agency with the repair- and reuse-based businesses across the country has both boosted the initiatives' outreach and increased consumer confidence in labelled organisations and their products.

ReMade in Italy – recycled content certification

The ReMade scheme aims to promote recycling in the manufacturing sector through independent, third-party certification. ReMade in Italy evaluates products made from pre-consumer or post-consumer material diverted from the waste stream. It measures the percentage of recycled content for the purpose of making an accurate claim in the market. In this regard, it also represents a useful tool for public administrations and companies, to identify the recycled products for 'Green public procurement', now mandatory in Italy by law (Legislative Decree 50/2016). ReMade in Italy's certification scheme displays a deep understanding of the industrial processes involved in the production of recycled products in various categories (building, street furniture, office furniture, school equipment/fittings, textiles, etc.).

Source: ReMade in Italy

Lessons: Among the biggest challenges in tools promoting recycling and repair is a lack of trust in and low consumer demand for the resulting products. Certification of the quality of such products has proven to be an effective tool to deal with this trust barrier.

Deposit-refund systems for bottles and cans have already proven their effectiveness in encouraging recycling and complementing existing curbside recycling programmes, while reducing energy consumption and littering. Such systems assume collection of a monetary deposit on beverage containers (refillable or non-refillable) at the point of sale; when the container is returned to an authorised redemption centre, or to a retailer, the deposit is partly or fully refunded to the redeemer (presumed to be the original purchaser). With growing concern over plastic waste and the need to divert it from landfill and stop littering, container deposit refund systems are increasingly seen as one of the key solutions. Close to half of the Member States have introduced deposit refund systems of different formats and scope for beverage containers. These systems have started inspiring new deposit refund models similar to those for reusable coffee cups described in the example below.

RECUP – deposit system for reusable coffee cups, 23 German cities

RECUP is a deposit system for reusable coffee cups that has reached at least 23 cities and over 850 sites across Germany. Coffee drinkers pay a €1 deposit for their coffee cup, and can return it to be washed and resold at any partner café across the country. The robust cups are made from a sustainable material, free from BPA and other harmful substances, use a universal lid size, and can be reused up to 500 times. This system avoids significant volumes of waste generated from single-use coffee cups. Furthermore, as coffee cups are layered with polyethylene, they are difficult to recycle and are often incinerated in Germany.

The deposit system was launched in 2017 by entrepreneurs with extensive support by the city authorities in Rosenheim and Munich. The system is said to be inspired by the deposit system for reusable bottles and came after the German media gave significant coverage on the negative impact of single-use take-away coffee industry in the autumn of 2016.

Source: [reCup GmbH](#)

Lessons: The public-private partnership approach used in this case was a key factor in its success: interest and commitment from city authorities, their support in increasing public awareness about single-use beverage cups helped to launch and grow the scheme.

Part 3. Useful resources

3.1 Online resources of CIRCTER project

- The final report of CIRCTER project includes the following relevant annexes:
Annex 3 on measuring circularity in territories
Annex 5 on the case studies
Annex 7 on policies
Annex 8 policy fiches
available at <https://www.espon.eu/circular-economy>

3.2 Relevant external resources

Studies and reports

- Eco-Innovation Observatory (EIO, 2018) ECO-INNOVATION OF PRODUCTS: Case studies and policy lessons from EU Member States for a product policy framework that contributes to a circular economy, Biannual Report 2018
- EIO (2014). Eco-Innovation: Enabling the transition to a resource-efficient circular economy. Funded by the European Commission, DG Environment, Brussels.
- EIO (2016). Policies and Practices for Eco-Innovation Uptake and Circular Economy Transition, EIO bi-annual report
- EEB (2018). Towards an EU Product Policy Framework contributing to the Circular Economy: EEB proposals for discussion at the EU Circular Economy Stakeholder Conference.
- ESPON (2018) Possible Territorial Futures, Final Report Volume D – Place Based Circular Economy, <https://www.espon.eu/territorial-futures>
- CEPS (2015). The Circular Economy: Barriers and Opportunities for SMEs, CEPS Working Document, Rizos V., Behrens A., Kafyeke T., Hirschnitz-Garbers M, Ioannou A. No. 412/ September 2015
- ICLEI (2017). Public procurement for a circular economy: Good practice and guidance. Prepared by ICLEI for the European Commission. Available at: http://ec.europa.eu/environment/gpp/pdf/cp_european_commission_brochure_en.pdf
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- OECD (2016). Extended Producer Responsibility - Guidance for efficient waste management. OECD, Paris.

Practical and policy guides

- Toolkit for policy makers, <https://www.ellenmacarthurfoundation.org/resources/apply/toolkit-for-policy-makers>
- Circular Design guide: <https://www.circulardesignguide.com/methods>
- Circularity Indicators for businesses
- Connecting Smart and Sustainable Growth through Smart Specialisation, A practical guide for ERDF managing authorities
- Connecting Smart and Sustainable: Growth through Smart Specialisation - A practical guide for ERDF managing authorities, available at https://ec.europa.eu/regional_policy/sources/docgener/presenta/green_growth/greengrowth.pdf

Videos

- What is a circular economy? Video by the Ellen MacArthur Foundation, link: <https://www.ellenmacarthurfoundation.org/circular-economy/concept>
- The Circular Economy. Series of Videos by the World Economic Forum, link: <https://www.weforum.org/about/circular-economy-videos>
- The Circular Economy: A Simple Explanation | Cillian Lohan | TEDxYouth@EEB3, link: <https://www.youtube.com/watch?v=cbm1MCTobVc>
- Policy Instruments to Drive the Circular Economy – Is There a Role for Primary Resource Taxation?, link: https://www.youtube.com/watch?v=_cuYdwNHqYM
- Circular Economy Package [Policy Podcast], link: https://www.youtube.com/watch?v=H_-6kznOuBk

- How tax can save the world | Femke Groothuis | TEDxUtrecht, link: https://www.youtube.com/watch?v=_BbeFLkNkAg
- New Nordic Business Models for a Circular Economy, Link: <https://www.youtube.com/watch?v=rO0LtgCKx7c>

Web platforms

- European Commission Circular Economy Stakeholder Platform: <https://circulareconomy.europa.eu/platform/>
- Interreg policy learning platforms on Resource Efficiency and Energy Efficiency, <https://www.interregeurope.eu/policylearning/>
- Eco-Innovation Action Plan: https://ec.europa.eu/environment/ecoap/frontpage_en
- Ellen MacArthur Foundation: <https://www.ellenmacarthurfoundation.org/>
- Circular Economy Club www.circulareconomyclub.com
- Circular Economy Toolkit <http://www.circulareconomytoolkit.org/index.html>
- CircE projects <https://www.interregeurope.eu/circe/>

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Policy Guide

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