GENERAL GUIDELINES FOR INTEGRATED CIRCULAR ECONOMY STRATEGIES AT LOCAL AND REGIONAL LEVEL

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INTRODUCTION

It is believed necessary for the current dominant economic model of a linear economy[1] to evolve, or even change, for multiple reasons.

The world population has doubled to 7 billion since the 1960s and is projected to continue growing. Looking ahead, the global population may indeed increase by more than a third by 2050, reaching 9.6 billion[2] and the middle class may increase from 27 % of the world population of 6.8 billion in 2009 to 58 % of more than 8.4 billion in 2030[3]. The demand of products and services and thus the need of resources to make them will therefore increase in levels that our planet has never known, while the planet's resources are limited.

Moreover, extraction and production processes impact on the environment. It is for instance estimated that about 50% of extracted material become waste at the extraction phase[4]. This could become worse and worse as we tend to extract resources from less concentrated ores due to increased demand. Besides the impact on material resources, extraction and production impact on energy and water consumption as well as on pollutant emissions. Inefficient waste management also impacts on energy and the environment.

In parallel, the repartition of resources is inequal in the world, some critical material resources like rare earths[5] being mostly concentrated in a limited number of countries from which the European Union is heavily dependent. Indeed, the EU imports more than 90 % of its rare earth metal needs from countries like China. China is in particular the biggest producer of 14 of the 20 raw materials identified by the European Commission as being critical because of risks of supply shortages and their impact on the economy[6]. This insecurity in terms of supply is one of the causes of the increasing price volatility of critical raw materials, weakening industry sectors that are dependent on importations.

The European Union faces an economic crisis hurting local jobs and companies. The growing rate of unemployment and competition at all level (between companies, but also between regions, countries, etc.) are sources of instability. In general, there is also a need to increase or even recreate bounds between individuals and the various stakeholders in our society.

The concept of circular economy covers, as it will be explained in the present guidelines, various routes meant to solve, to a certain extent at least, this diverse range of problems. In parallel to the private sector initiatives, public authorities should coordinate, support and promote the ecological, economic and social change brought about by circular economy.

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[1] Linear economy is defined as an economic model where resources get extracted, products are manufactured and consumed, and what is left is considered as waste and is disposed off.
[2] UN (2013), World Population Prospects: The 2012 Revision
[3] Homi Kharas (2010), The Emerging Middle Class in Developing Countries, OECD Development Centre
[4] European Topic Centre on Sustainable Consumption and Production, What is waste?
[5] Rare earth elements are a group of 17 speciality metals used in high-tech products like smart phones and wind turbines.
[6] Communication from the Commission on the review of the list of critical raw materials for the EU and the implementation of the Raw Materials Initiative, SWD(2014) 171

ACR+ strives to support local and regional authorities in being ambitious with regard to circular economy and wishes, therefore, to help them to adopt aspiring circular economy strategies. This is why ACR+ decided to develop a specific Working Group on Circular Economy Planning for cities and regions. Under the banner of "Circular Europe Network" (CEN), the group gathers ACR+ members committed to improving their resource use and conservation strategies and strengthening the sustainable development of their territory.

The present document aims at explaining the potential role of local and regional authorities, and at developing guidelines to help them draw up integrated and efficient circular economy plans. Even though acknowledging the broader concept, these guidelines focus mainly on materials, considering that it is difficult for local and regional authorities to encompass all topics at once and since material resources represent the core element of circular economy.

The guidelines will attempt to clarify the circular economy concept (Part 1) and propose key steps and elements to include in a local or regional circular economy strategy (Part 2).

The present document should serve as a set of first guidelines in the subject, particularly for the members of the Circular Europe Network, and is intended to be completed with examples of best practices to set such strategies, as well as concrete cases of circular economy.

Part 1: CLARIFYING CIRCULAR ECONOMY

1. WHAT DOES "CIRCULAR ECONOMY" MEAN?

1.1. Basic concepts

The concept of circular economy refers not only to recycling but to the 3Rs (**Reduce, Reuse, Recycle**), and goes beyond the problematic of waste; that is to say, circular economy implies "loops" management of all material and energy resources, including biotic resources such as biomass, water and biodiversity, so that the overall consumption of these resources is reduced, and they are used and re-used in an optimal way.

Indeed, circular economy cannot be understood only as recycling, since it is not technically possible to put back 100% of secondary raw material in the resource and product loop and if consumption continues to rise recycling will not be enough to cover 100% of the needs and there will always be a need of virgin material. The whole concept of circular economy should preferably lead to an absolute decoupling between socio-economic development and resource use by initiating business models allowing for less materials use and more services offered.

Consequently, it can be argued that the circular economy concept stresses the importance of covering the whole life cycle of a product ("**life-cycle thinking**"). It goes without saying that, by definition, circular economy stands in opposition to "linear economy", characterised by the simple chain of "extract – produce – consume – dispose of".

The notion of circular economy aims at finding a new economical paradigm integrating environmental preoccupations (particularly, dwindling of certain resources), and therefore makes way for "**new business models**", i.e. a deep transformation of production and consumption models.

The characteristic of a circular economy is also the aim to create loops in the loop, meaning to combine a set of loops in order to minimise resources consumption and put back by-products and waste as secondary raw material in the process at each stage of the circle.

In that perspective, the "new business models" require to think in systems and in cascades, as underlined by the Ellen MacArthur Foundation[7]:

- Thinking in systems, where flows and stocks are of crucial importance, but also the relationships between the various stakeholders.
- Thinking in cascades, where additional value from products and materials can be created by cascading them through other applications.

[7] Ellen MacArthur Foundation - The circular model, an overview

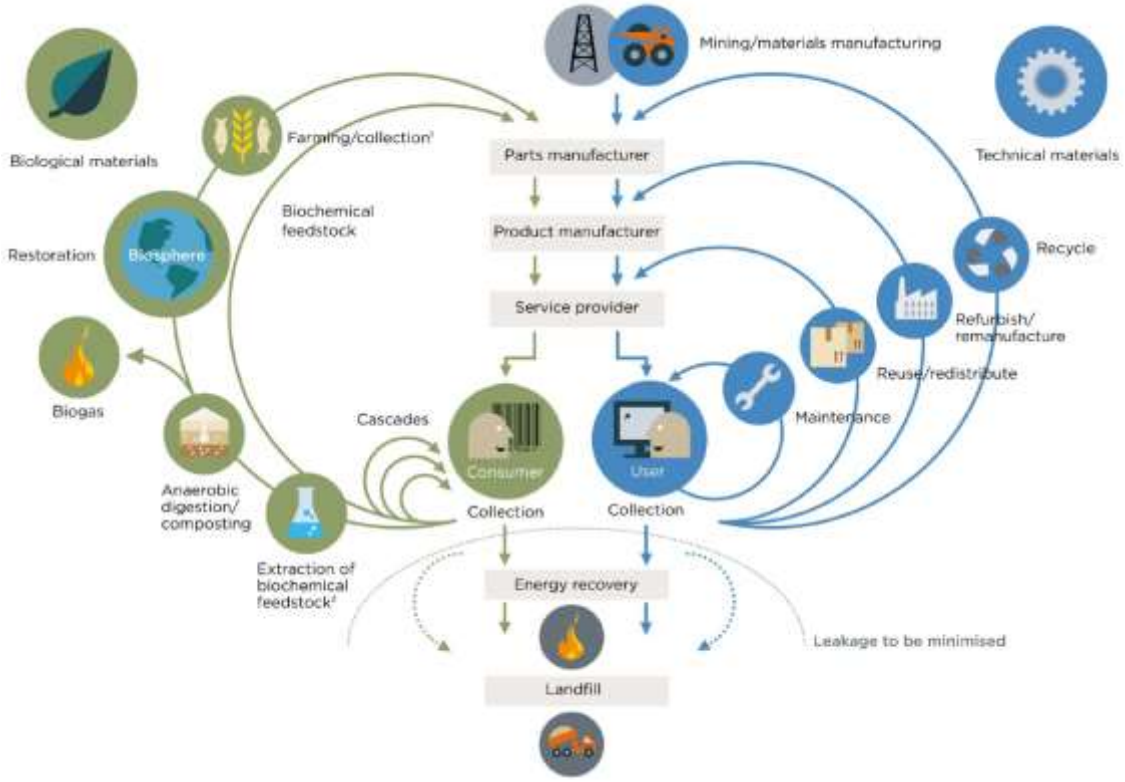


Figure 1: Circular economy system diagram (Source: Ellen MacArthur Foundation circular economy team)

In fact, circular thinking should be interpreted as giving precendence to **short economic cycles**, where circular economy brings about a potential for employment generation or even re-localisation of economic activities on local or regional level.

It should be stressed that, from our point of view, it is important to combine the circular economic development (or one departing from "stocks") with absolute reduction of resource extraction. This goes in line with the definition of circular economy adopted by the French Parliament in October 2014: "a responsible and efficient use of natural resources and primary raw materials."

To sum up, the crucial elements of the circular economy definition are as follows:

- Economy which respects the "Reduce, Reuse, Recycle" hierarchy;
- Economy based on "life cycles thinking", aiming at limiting resource consumption and wastage;
- Economy likely to generate new production-consumption models, as well as local employment.

1.2. Objectives of circular economy

Circular economy has as its immediate objective a rational management of all resources (material resources, energy sources, water and land use being the main issues).

In the European context, it has a clear link with resource efficiency, important for both environmental and socio-economic reasons.

According to the "Resource Efficient Europe" initiative[8], published in January 2011, a number of objectives are to be pursued simultaneously:

- "boost economic performance while reducing resource use;
- identify and create new opportunities for economic growth and greater innovation and boost the EU's competitiveness;
- ensure security of supply of essential resources;
- fight against climate change and limit the environmental impacts of resource use."

These objectives are recalled in the 7th Environment Action Programme of the European Union: "Live well, within the planet's ecological limits"[9].

In general, the promotion of circular economy is part of the economic recovery in the face of a multi-dimensional crisis and gives the opportunity to reconcile environmental and economic stakes. One could even view it as a search for a new economic model, aiming at "human well-being on a limited planet". In other words, as one of the levers to contribute to sustainable development.

POTENTIAL GOALS OF CIRCULAR ECONOMY, TO BE CLARIFIED, PRIORITISED AND/OR COMBINED:		
Economic	**Social**	**Environmental**
New value chain Eco-innovation New business model Reindustrialisation	New jobs, new skills Relocating of activities at local level Human well-being / quality of life	Less resource consumption and wastage Waste prevention (all waste actually being considered as secondary raw material) Fewer negative environmental impacts

[8] Roadmap to a Resource Efficient Europe (COM(2011) 571)
[9] For more information, visit the European Commission's website: http://ec.europa.eu/environment/newprg/index.htm

2. ON WHAT PRINCIPLES SHOULD A CIRCULAR ECONOMY STRATEGY BE BASED?

All circular economy strategies developed by cities and/or regions should be inspired by certain fundamental principles. It is suggested to always refer to the following four principles, keeping in mind that the list is not exhaustive. It is also important to keep the public debate open while elaborating the strategies.

- The multi-R hierarchy,
- Territorial hierarchy,
- Shared governance,
- Integrated planning.

2.1. The "multi-R" hierarchy

The hierarchy to be applied in waste management has progressively been consolidated by the European Union[10]. The Waste Framework Directive 2008/98/EC adopts the 3R principle (Reduce, Reuse, Recycle) and integrates it in a five-level hierarchy, as illustrated below:

1. **PREVENTION**
2. **PREPARING FOR REUSE**
3. **RECYCLING**
4. **OTHER RECOVERY** (particularly energy recovery)
5. **SAFE DISPOSAL**

Figure 2: Waste hierarchy pyramid (Source: ACR+)

It is a priority order which should be obligatorily respected "in both legislation and policy", unless it can be demonstrated that another hierarchy is justified by a life cycle thinking.

The 3R concept (Reduce, Reuse, Recycle) can also be extended into a "Multi-R" hierarchy in the context of an optimal circular economy policy.

In fact, the management of a product which produces waste, as well as the management of all natural resources from which products are manufactured, should be based on a series of "R" actions put in a hierarchical order.

[10] For an overview of the European waste law, we invite you to consult ACR+'s book entitled "Municipal Waste in Europe", published by Victoires Editions in 2009.

The graph below illustrates the "Multi-R" hierarchy, which should be respected by the different actors of the products and services chain, and which should be favoured by public authorities, particularly local and regional ones.

Figure 3: Multi-R approach diagram (Source: ACR+)

In practice, even within some of the "R actions" mentioned above, it is necessary to consider a certain hierarchy. For instance, in the recycling sector: the kind of recycling which consists of recovering and reusing the material to manufacture a product similar to the one that is being recycled (thus allowing for the reproduction of such recycling process a large number of times) should be favoured, as opposed to other ways of using the recovered material which will limit the possibilities for its subsequent recycling (i.e. downcycling). Even more, when possible, the recycling phase should give the opportunity to make a product with a better quality or for a better environmental value than the original (i.e. upcycling).

2.2. Territorial hierarchy

Figure 4: Territorial hierarchy diagram (Source: ACR+)

Circular economy, which objective always is to close the loops at all stages of the value chain, should aim at being developed in short cycles as much as possible. In fact, short chains often deliver high impacts, both environmental (for example, lower CO_2 emissions coming from transportation) and social (employment and local human relations).

Moreover, it is on local and regional level that we find authorities whose scope of competence touches the relevant stakeholders (in sectors such as permitting, funding, organising, awareness raising), and which are thus in a position to give the circular economy a concrete form.

Figure 5: LRA waste & resource related competences (Source: ACR+)

Consequently, it is important to work at an appropriate level of intervention: in other words, to introduce policies for sustainable cities (featuring e.g. eco-neighbourhoods) and regions, before considering the national and international level. Indeed, a regional or urban territory, due to its size and geography, usually boasts a great number of natural resources, for which it is possible to plan a "short" loop (or local) recovery. It also often includes very good practices at the very local level that could easily be replicated or put in contact to have a stronger and larger impact.

It goes without saying that no two regions or cities are identical from the point of view of natural resources. Furthermore, the competences of regional and local authorities differ significantly. It is also true that certain actions related to circular economy simply cannot be carried out on a small scale, and/or are further justified on a "supra-regional" (i.e. national or international) level. This is related both to the limits of the competence of LRA in some cases (for instance with regards to product taxation that is rather designed at national level rather than at local or regional level) and to economic rationality for the management of certain types of products and waste (for instance with regards to the size of the plants and when a minimum quantity of available material is needed). However, in spite of these differences, priority should always be given to short cycles.

2.3. Shared governance

Shared governance is necessary at all levels of the value chain, as well as in the elaboration of a territorial strategy of circular economy, including the stages of conception, implementation and follow-up. In fact, a successful development of circular economy implies contribution from all stakeholders active in the chain (e.g. product designers, mining operators, producers, distributors, consumers, collectors of end-of-life products, recyclers, etc). In addition, actors that can have a direct influence or be directly impacted by the circular economy strategy should also be involved (e.g. residents in the concerned area, local authorities in charge of proper implementation, academic establishments, financial institutions, etc.).

It is up to public authorities to organise a balanced participation of all these stakeholders, or even to coordinate and facilitate the creation of a "public-private forum", which would contribute to the co-creation of eco-innovative actions based on synergy and complementarity.

For reference, **the following interesting examples** could be considered:

- The "Plan C" platform, created by the Flemish Region (Belgium), is organised in Working Groups managed by different types of stakeholders;
- The inclusive approach implemented in the Region of Nord-Pas-de-Calais (France) by the Regional Council and Chamber of Commerce and Industry, whose objective is to elaborate a "Master Plan" involving different stakeholders, as well as to create a permanent Orientation Forum (engaging decision-makers from various sectors, such as policy, economy, social, university, associations, etc.);
- The Employment-Environment Alliance, initiated by the Brussels Capital Region (Belgium) as a participative initiative allowing all stakeholders active in the field, both public and private, to identify the needs of their sector and propose actions to meet these needs.

In addition to such participative strategies, the territorial actors should also be able to access information on the available resources (e.g. maps of C&D material), as well as on their needs and those of their peers (e.g. by promoting contacts between producers and recyclers of product components). Such transparency requires a relationship based on trust and cooperation rather than competition. Here too public authorities have a role to play, especially when it comes to facilitating the access to information or acting as an intermediary, given their neutral status with regards to sensitive information.

2.4. Integrated planning

Planification and implementation of circular economy needs to consider all policy instruments available, as well as all themes related to circular economy at the level of local and regional authorities.

Policy instruments include legal and economic instruments, as well as measures related to research, education and communication. More details are provided later on (section 5). These instruments are often managed by different services or bodies within the local and regional public authorities that do not talk to each other. The goal is therefore to put them all around the same table and optimise the use of these potential instruments.

Spanish Basque Country is an example of such multi-instrumental policy approach to circular economy. The region implemented simultaneously:

a) Market based instruments
- Public procurement taking into account criteria in favour of sustainable and recycled materials
- 30% tax reduction for companies for the procurement of clean technologies
- Discount vouchers for certain purchases

b) Legal instruments
- Specific conditions for activity permits (pro-recycling, anti-landfilling)
- End-of-life criteria for products

c) Research and development instruments
- "Eco-Products" R&D Programme
- A public-private Eco-design Centre
- Specific projects promoting circular economy

d) Communication and education instruments
- Trainings in New Business Models
- A permanent dialogue, open to all stakeholders in the value chain (e.g. the IHOBE public organisation, supporting SMEs in all life cycle stages).

What applies to instruments also applies to the themes covered by circular economy. Indeed, circular economy aims at reconciling economical, social and environmental issues and therefore the services dealing with them must cooperate, even if one of them takes the lead of the coordination work.

The aim is to integrate a number of elements, all closely related to sustainable development. This does not mean, however, that all thematic areas should by definition be dealt with in the same way.

With relation to the environmental aspect, it is important to identify all negative impacts (related to both pollution and resource depletion) which could possibly be generated by the life cycles of products or services. Ideally, the waste problematic should be considered as a material resources issue. Moreover, other themes such as water, land use, biodiversity and, last but not least, energy, should be addressed. Comprehensive life cycle analysis (LCA) is complex and not easy to implement by LRA. Therefore, the advice is to start with assessing the impact on material resources of local and regional activities and in a later stage to consider impacts related to climate change, water, energy, biodiversity, land use and air. Indeed, a critical change to be made is the evolution of a "waste" plan to a "material resource" plan, at the same time creating a link with the usage of other resources (water-energy-land use).

When it comes to social and employment issues, circular economy aims at promoting local change and focuses on activities providing local employment. It is particularly the case in the "traditional" domains of collection, repair and remanufacturing, but also in more innovative sectors like the ones related to product-service systems (where product ownership is replaced with service). Circular economy also has a social role by providing education and access to professional training both for very technical education (e.g. in relation with eco-innovation and eco-design) and for activities requiring a lesser level of education. Among others, social and solidarity economy is traditionally a key sector for supporting social insertion and employment creation adapted to the circular economy.

From an economical point of view, the local and regional setting should favour the development of small and medium enterprises, as well as the exchange of services and materials among complementary enterprises. The focus on SMEs is justified by the fact that they usually represent most of the economic activities at local and regional level but they do not necessarily have the understanding or the means to orient their activities towards circular economy practices. The objective would be to encourage cooperation among the enterprises, as opposed to mere competition (e.g. via group purchasing of more sustainable goods, resource or competence sharing for technical expertise, clustering of complementary activities, etc.). New technologies are another key element both for improving products' end-of-life management, as well as for finding new solutions extending the use of resources and at the same time reducing the need for new resources.

It is important that the "strategic planning" of circular economy bases on an explicit integrated policy vision, and is reflected in a specific document. Among other things, a link should be drawn with other planning documents which could touch upon the subject of circular economy, such as local waste prevention and management programmes, "energy-climate" plans, Agenda 21 programmes, or land settlement plans.

3. WHAT ARE THE KEY AREAS OF INTERVENTION?

The scope of public authority intervention depends, of course, not only on their specific competences, but also on their own interpretation of circular economy.

However, as a general rule, besides priority sectors mentioned below, there are three domains through which local and regional authorities can boost circular economy[11]:

- Material resources management;
- Sustainable consumption;
- Sustainable production.

3.1. Material resources management

In a circular economy, material resources that are embedded in a product cease to be wasted to become a resource again (or "secondary raw material"). In view of this, the principal focus is on material resources, keeping in mind other environmental topics, such as water, energy, land use or biodiversity. Consequently, recycling seems like a natural key area of intervention. Moreover, a clear link should also be made to issues such as waste prevention, systemic eco-innovation and strategic management of raw materials, which should be considered as a priority.

Waste prevention

Waste prevention is obligatory according to the European law. It is an essential mean to preserve material resources.

Even though the Directive 2008/98/EC does not provide specific targets for waste prevention, it does require Member States to elaborate prevention plans or programmes (which should have been done by 12 December 2013). These programmes should set appropriate specific qualitative or quantitative benchmarks "for waste prevention measures adopted in order to monitor and assess the progress of the measures" [12]. In accordance with this legal obligation, a number of countries (Spain, France, Italy, and Portugal), regions (Catalonia, Ile-de-France, the three nations of the United Kingdom) and cities (Paris, Barcelona) have set quantitative objectives for waste reduction, which constitutes a strong signal in terms of strategic and operational orientation of the different measures available.

In practice, waste prevention includes three levels of intervention: the first one – to avoid, the second – to reduce, the third – to reuse products. These three levels of intervention have been widely illustrated in the work of ACR+, especially through its Waste Prevention Database, as well as the European projects Pre-waste and Miniwaste.

[11] It is to be noted that the order to presentation of these three domains does not necessarily reflect a hierarchy between them. For instance, recycling is mentioned in section 3.1 on material resources management, while reuse and preparing for reuse are mentioned in section 3.2 on sustainable consumption.

[12] For a detailed commentary on the scope of this provision, please see "Les nouvelles obligations juridiques européennes relatives à la prévention des déchets" (BODART, BONNET and HANNEQUART) in La Gestion des Déchets, CEDRE, 2012

Systemic eco-innovation

Besides preventing waste, it is important to reduce all negative environmental impacts related to resource use. Consequently, all sorts of pollution should be taken into consideration, as well as the fact that natural resources are limited. In this process, it is useful to resort to Life Cycle Analyses and the calculation of the ecological footprint of human activity.

The promotion and support of eco-innovation should take place not only on a product / technology level, but it should be systemic. Systemic eco-innovation is defined by the European Commission as one which aims at complete decoupling of economic growth and resource use, and one which generates advantages both economic and environmental.

"Raw Material" strategy

It is a fact that not all raw materials are available in unlimited quantities and/or are renewable, neither are they distributed equally around the planet. Consequently, it is up to each territorial community to elaborate a strategy in the face of the scarcity of resources, taking into account the availability of local resources, the community's own strategic resource dependency vital for its economic growth and the existence or opportunitities for local prospect. The objective being to replace as much as possible primary raw material (not always available on the territory) by secondary raw material.

Moreover, differentiated policies should be implememented taking into account the toxicity of some raw material, in order to limit on the one hand extraction and use of raw materials containing hazardous substances and on the other hand specific territorial storage and treatment of raw material containing hazardous substances.

Recycling

In the context of limited resources, recycling is a key intervention area for local and regional authorities. Indeed, recycling has a significant potential for economic activity and employment, as well as numerous environmental advantages, also from the point of view of energy.

Recycling (and preparing for reuse) is subject to obligatory targets. The Framework Directive 2008/98/EC states that preparing for reuse and recycling of waste materials such as at least paper, metal, plastic and glass from households and similar should reach at least 50% by 2020. For construction and demolition waste, this target is elevated to 70%. The current review of EU waste legislation will most likely lead to an increase of these targets.

Other directives also set quantitative objectives, as illustrated in the table below:

Flow	Deadline	Recovery target	Recycling target	Collection target
Packaging	2009	60%	55%	
			55%-80% (glass 60%, paper 60%, metal 50%, plastics 22,50%, wood 15%	
End-of-life vehicles	2015	95%	85%	100%
WEEE	2006	70% (80%)	50% (0%)	Min. 4kg per capita per year
	2009/11			85% of waste arising (2012 recast)
Batteries	2011		50% to 75% efficiency	
	2012			25%
	2016			45%
Bio-waste diverted from landfills	2006	Reduction to 75% of the 1995 level		
	2009	Reduction to 50% of the 1995 level		
	2016	Reduction to 35% of the 1995 level		
Construction and demolition waste	2020	70% reuse, recovery and recycling		
Municipal waste	2015			Selective collection of at least paper/metal/plastic/glass
	2020		50%[13]	

However, beyond the need to recycle more, circular economy calls for a smarter and more qualitative recycling. It means that waste streams should be prioritised considering their resource efficiency at local level, in other words with regards to the local raw material strategy. Also, as has already been mentioned, recycling should aim as much as possible at favouring solutions providing products and services that will have a better impact than the original.

3.2. Sustainable consumption

Eco-consumption

Eco-consumption can be understood in different ways: temperate consumption, aiming at limiting the purchases to the satisfaction of the needs of an individual (no over-consumption) or the consumption of eco-efficient products or services, meaning whose production, use or end of use or

[13] The European Commission accepts four different calculation methods when considering this target:
- 50% recycling for paper, glass, metal and plastic
- 50% recycling for paper, glass, metal and plastic, and other household or similar waste streams
- 50% recycling for all household waste
- 50% recycling for all household waste and all similar waste streams

life have a smaller impact than that of other products (for instance, rechargeable, recycled or recyclable products, dismantlable or bio products, etc.).
Eco-consumption can also aim at true behaviour evolution towards sustainability, and thus could include the substitution of products with services or even the satisfaction of needs through immaterial consumption rather than the material one.

Public authorities, including those on local and regional level, have an important part to play in order to promote such consumption in particular through eco-labels or dissemination of information on eco-products or eco-behaviour.

Examples of eco-labels:

- European Ecolabel
- Blauer Engel
- NF Environnement
- ISO 14020 guidelines

Reuse and preparing for reuse

Reuse means to use again a product in the same way for which it was initially meant to be used, or for other purposes as long as there is no re-processing of the product. The Directive 2008/98/EC includes reuse in waste prevention, while at the same time it describes as "preparing for reuse" such activities as control, reparation or cleaning – all of which allow for direct transformation of waste into product. In practice, reuse and preparing for reuse very often refer to activities carried out by the same actors, although direct reuse between individuals or groups should also be considered.

Member States are required to promote both reuse and preparing for reuse. This can involve encouraging the creation of reuse and repair networks, but it also includes economic instruments, criteria for public procurement, quantitative objectives and more.

The cities and regions' decision-makers are particularly well-positioned to support markets for second-hand products, typically where actors of the social and solidarity economy sector are active. Other support from public authorities can take the form of partnerships for waste or product collection for reuse purpose (e.g. door-to-door or via specific containers in civic amenity sites).

It is important to note that consumers opt for reuse for two main reasons: the consumer looks for a cheaper product of equal quality, or they search for an original product, in line with the current trends. These two differing motivations call for different approaches, particularly in terms of messages sent to the consumers.

Examples of social and solidarity economy actors:

- RREUSE Network
- Ecological Recycling Society
- Ressources

Collaborative economy

This model refers to an optimisation of use (or even production) of a product or service through sharing. Among other things, it questions the reality of a need and the necessity of satisfying it with material resources. Collaborative economy covers several areas: collaborative production (facilitating design and production of physical goods through DIY activities, fablabs and makerspaces), collaborative consumption (people connecting to swap, rent, borrow, give or trade goods and services), collaborative knowledge development (open source and open knowledge, to give access to knowledge, data, source code or designs) and collaborative financing (funding projects via crowdfunding & person-to-person banking).

At the level of consumers-citizens in particular, collaborative economy refers to exchanges of goods and services, free of charge or paying, including for example DIY tools sharing, carpooling, private letting, shared gardens and collective urban vegetable gardens, etc.

When consumers become themselves producers, traditional economic patterns are left behind. Local and regional authorities should, therefore, provide a framework for such activities, especially with relation to the rules on competition or public health, yet at the same time without halting or limiting the emergence of these activities.

Examples of collaborative economy platforms and projects:

- Ouishare
- Collaborative Consumption.com
- European Sharing Economy Coalition

3.3. Sustainable production

Eco-design

Eco-design aims at integrating all the environmental factors already in the product or service conception process, in order to reduce the environmental impact of such product or service at all stages ranging from production (also considering the extraction of raw materials) to distribution to use to end of life.

This includes reducing the use of non-renewable resources and increasing the use of renewable resources (while taking into account their reproduction rate), increasing the life of products and, finally, anticipating the possibilities for reuse and recycling.

In other words, companies should make sustainable development one of their key strategies, so that they can “produce better with less” or even “produce in a loop”.

It should be noted that eco-design is a most upstream phenomenon but does not necessarily have an impact at the final stages of the process: for instance, it is impossible to guarantee that a product conceived as recyclable will indeed be recycled (this depends on consumer behaviour in the post-

consumption phase and on the availability of collection and recycling schemes). Local and regional authorities should, therefore, take a step further and promote eco-designed products and services, as well as take the appropriate measures to maintain them in the cycle once they are discarded.

Some key references for eco-design:

- William McDonough, Michael Braungart (2002), Cradle to Cradle: Remaking the Way We Make Things (ISBN 0-86547-587-3)
- Royal Society for the encouragement of Arts, Manufactures and Commerce (2013), Investigating the role of design in the circular economy, The Great Recovery
- Eco-innovation observatory
- Orée, The eco-design of products & services platform
- Wuppertal Institute, Design Guide

Function-oriented business model

Function-oriented business model (or product-service systems) aims at substituting a product ownership with a service acquisition, having as a consequence to limit the extraction of resources. It implies that the company remains the owner of goods, which are put at the customers' disposal, as, for instance, when consumers pay for the photocopying service instead of buying a copying machine; when they use a transportation service (e.g. public transport, car sharing, etc.) instead of owning a vehicle; or when they use cleaning services instead of buying a washing machine.

As the producers keep the ownership and responsibility of the products, they are thus encouraged to make long-lasting products, which are easy to disassemble, repair and reuse. On the other hand, as services are difficult to relocate, this model is an opportunity to fight social and environmental dumping resulting from uncontrolled globalisation.

Some key references for function-oriented business model:

- UNEP, Product Service Systems & Sustainability
- Wuppertal Institute, Leasing Society
- NOVUS method

Territorial symbiosis

Territorial symbiosis should be understood first and foremost as cooperation among enterprises in the area of resource management ("industrial ecology"), then as the concretisation of synergies among enterprises based in the same territory ("industrial and territorial ecology"). keeping in mind that these synergies could go as far as sharing certain infrastructures or external services.

Industrial ecology unveils synergies between different economic activities: it ensures, for instance, that waste or by-products from one company can become another company's resource.

A reference model here is the experience from Kalundborg in Denmark, basing on the development of a thick network for the exchange of water, energy and byproducts from industrial activities, all in the same area (industrial park).

Moreover, the optimisation of production technologies and processes can also be envisaged at the level of a group of companies, not only at the level of an industrial park.

Following the approach of industrial and territorial ecology (ITE), the main resource and energy streams in a territory should be analysed, in order to foster new ways of cooperation between stakeholders, as well as to pool certain services and equipment (such as logistics or transport).

A key characteristic of ITE is the transition from competition to cooperation. The success of an ITE initiative bases on the necessity to rethink the relation between different industry actors, ensuring their access to data on material flow, and allowing for fair sharing of value among the stakeholders within a sector or cycle. Local and regional authorities can facilitate this process, particularly by playing the role of an intermediary in the area of information flow, preserving the most sensitive information.

Some key references for territorial symbiosis:

- Marian Chertow (2000), Industrial Symbiosis: Literature and Taxonomy
- NISP - National Industrial Symbiosis Programme
- French ministry for the environment, Industrial and territorial ecology

3.4. Priority sectors

Apart from discussing the general areas of intervention through which local and regional authorities can promote circular economy, it is also important to identify certain priority sectors.

These priorities will, of course, depend on the environmental and socio-economic characteristics of the territory in question. Even so, at the city and regional level, two sectors seem particularly worthy of attention: food and construction. This is explained by the environmental impacts[14] caused by these sectors, as well as the possibilities to act on a local scale (with short cycles). For both of these sectors transport is an essential criterion to make them a priority. More specifically, there is almost always an offer and a demand for food waste at the local level, while for construction and demolition the growing distance between extraction sites and construction sites is a key factor and has an important influence on prices.

[14] According to the European Environment Agency, 32 % of the waste generated in the EEA, countries is from construction and demolition activities, 27 % from mining and quarrying (Source: EEA - The European Environment State and Outlook 2010 – Update 2012). Moreover, the impact is not only related to the large volumes of waste that are generated but also the potential hazardous substances that are embedded in this waste.
Besides, around one third of the food produced globally is lost or wasted, representing a substantial loss of other resources such as land, water, energy and labour (more key facts and figures are available on the EWWR factsheet on food waste impacts).

In addition to the above mentioned reasons, acting on **construction and demolition** can be justified by the following motives:

- Resource and energy use[15],
- Volatility of commodity prices,
- Resource constraints (especially for wood and timber),
- Stricter landfill requirements,
- Higher energy efficiency and materials targets/ standards for buildings,
- Competing uses for materials.

Figure 6 Construction cycle in circular economy

In the construction sector, it is not only important to optimise the construction and demolition waste management (through on-site sorting or recycling), but also to consider such alternative solutions as restoration, as well as to evolve as much as possible towards a good maintenance of buildings, and even towards eco-designed buildings for deconstruction, based on local resources.

Local and regional authorities usually control the awarding of contracts or construction and environmental permits, which will significantly influence the sector. Besides, sustainable construction plans or strategies could also be envisaged, with the cooperation of all stakeholders active in the field.

In the **food sector**, the necessary changes are many, and concern all levels of public authority, including cities but also rural areas. Motivation to act on sustainable food can come in particular from:

- Food scarcity and security,
- Land use requirements for food provision and impacts on biodiversity,
- Competing uses for materials (e.g. energy),
- Greenhouse gas (GHG) emitted and pesticides applied in production of food, especially that which is wasted,
- Potential resource efficiency gains,
- Raw material security (phosphorus),
- Environmental impact of food waste,

[15] Buildings are responsible for 40% of energy consumption and 36% of CO_2 emissions in the EU – Source: European Commission

- GHG emissions from landfill.

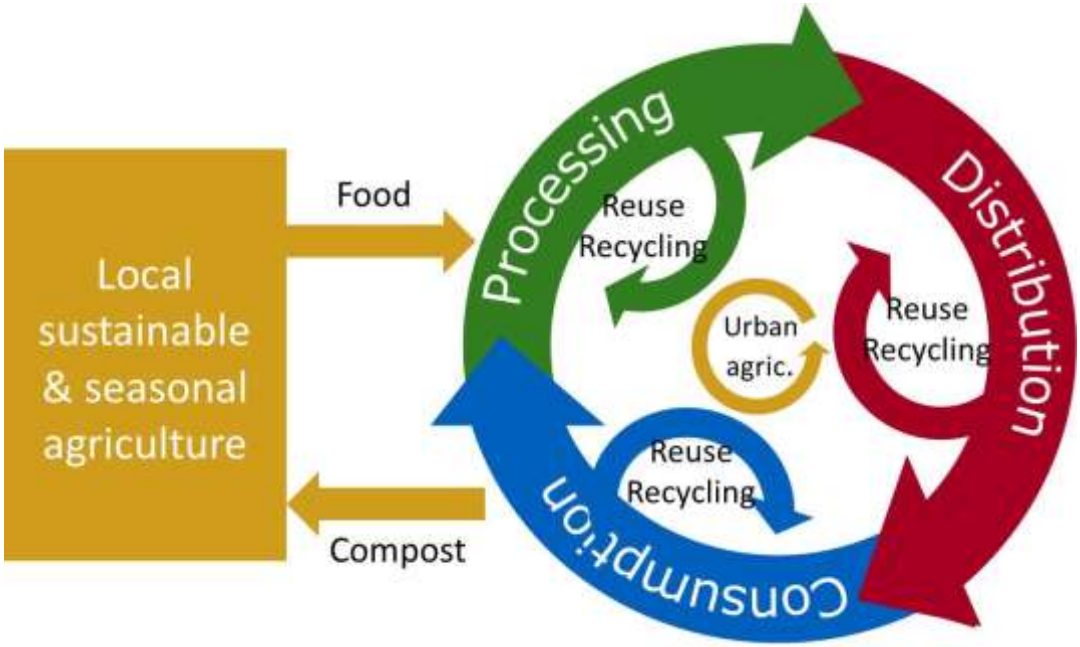


Figure 7 Food cycle in circular economy

Local and regional authorities should encourage a more sustainable agriculture (organic with fewer chemical products). They furthermore have a key role in raising awareness and promoting behaviour change among both producers and consumers. It is also within their competence to license transformation and distribution activities, promote home gardens and consumption of local and seasonal products, develop sustainable cantines, fight food wastage or recover bio-waste through composting or anaerobic digestion.

Part 2: CIRCULAR ECONOMY PLANNING IN PRACTICE

4. WHAT (FIRST) FUNDAMENTAL INITIATIVES SHOULD LOCAL AND REGIONAL AUTHORITIES TAKE?

4.1. Develop a cross-sector approach at the political and administrative level

Both on a city and regional level public authorities are usually splitting responsibilities for economic, social and environmental issues between different services or administrations. For the purpose of moving towards a circular economy, a close cooperation between those services and admnistrations is highly recommended.

In fact, various links can be found between the policy-makers responsible for "economy-environment" and other policy-makers, working e.g. in the field of research and development, vocational training, public information, etc.

Even when leaving the private sector out of the equation, it should be noted that the desired transversality concerns not only politicians but also civil servants and technical experts. And so, under the responsibility of senior political representatives (mayors or their deputies, ministers, secretaries of state) there are many public organisations among which such transversality should be developed.

The challenge of transversality could emerge even within the same administrative entity: for example among such services as planning, legal assistance, public procurement, communication and or cartography, etc.

Example of a political-administrative organisation, favouring the cross-sector approach:

Since 2003, in the Aquitaine region (France), the Directorate for Sustainable Development has worked closely with centres for the development of economy and innovation, and for agriculture and vocational training. In fact, a recruitment procedure for circular economy took place within the Waste Service. At the same time, a cross-sector administrative working group was created.

4.2. Identify potential stakeholders

It is important to bring together, as early as possible, all stakeholders concerned in the process of developing a circular economy. At the early stage of planning, all potential stakeholders sould be identified:

- Actors exploiting natural resources, both material and energy;
- All producers (who market, manufacture or import/export products)
- Actors who commercialise or distribute products;
- Actors that take part in collection and processing of waste, in particular recyclers;
- The entire sector of consumption, especially consumer associations or ones in charge of protecting the environment in general.

Stakeholders can also be identified by value chains: the methodological guide "Regional Strategies for Circular Economy in France" [16] (published by ADEME in partnership with ARF, i.e. the Association of French Regions) discusses a series of actors, at the same time defining five different value chains: eco-designed products, waste recovery, reused products and waste, products/services consumed in a collaborative way.

In order to ensure a clear and smooth cooperation between all services, it might be useful that a local or regional public authority is officially in charge of the coordination, promotion and follow-up of the circular economy strategy.

Examples of coordinating structures[1]:

- The Ellen MacArthur Foundation (UK)
- Plan C (Flemish region, Belgium)
- IHOBE (Basque Country, Spain)
- Zero Waste Scotland (UK)
- Circle Economy (The Netherlands)
- Fundación para la Economía Circular (Spain)
- IREN (Italy)
- The French Circular Economy Institute (France)

[16] http://www.presse.ademe.fr/wp-content/uploads/2014/11/Guide-strategie-eco-circulaire-FINAL.pdf

4.3. Identify parallel policy actions in progress or planned

A circular economy policy should be conceived in opposition to a linear economy but also as a continuation of the idea of rational waste and environment management, as well as of certain socio-economic orientations.

Consequently, diverse already-existing initiatives and policy instruments should be identified, as a base for a further strategic consideration. It is particularly important to take into account the already-existing strategic and operational plans which have a direct or indirect link to circular economy; this should help to properly position the new strategic planning.

A special interest should be taken in the actions already implemented in the area of prevention, reuse and/or recycling of waste, but also, more generally, actions in favour of a good management of natural resources.

Furthermore, existing measures and actions should be considered in the field of research and development, public procurement, economic incentives for natural resources management, as well as in the area of products and services.

Finally, the main political impulses for an “alternative” economic development should also be analysed or, in other words, for a low-carbon economy and a sustainable production and consumption.

This inventory work should be carried out with the principal “Multi-R” intervention areas and “new business models” in mind.

4.4. Establish a diagnosis of the territorial metabolism

It is advisable to prepare a rather detailed description of the industrial and socio-economic reality already existing in the area, before the systematic and integrated planning for circular economy begins.

In order to do so, information need to be gathered on the main streams: materials, energy, water and biodiversity, both on a global and sectorial level. A baseline study of a “(regional or urban) metabolism” could help obtain a complete picture of principal territorial resources, as well as the input/output of natural resources, raw materials and products. Such metabolic approach should be limited to the essentials necessary to identify the strengths and weaknesses of the territory in question from the point of view of the “circularity” of its economic development.

Reference studies of Industrial Territorial Metabolism:

- Brussels Region (1977 and 2014)
- Geneva Canton (2003)
- Paris Region/Ile-de-France (2007 and 2013)
- Bourgogne Region (2014)
- The city of Lille (2007)
- The city of Lisbon (2009 and 2014)

A number of maps should also be established, focusing on the streams with the most strategic meaning for the local economy. The existing economic sectors should be clearly identified, paying heed to whether they are strongly developed or weak. Finally, the sector of social economy and services should also be considered.

An example of such stream mapping in an urban context is the **city of Amsterdam** (The Netherlands). The city elaborated a circular economy plan (2011-2014), basing on "systemic maps" for water and nutritive elements, as well as for energy and agriculture: these maps give an overview of the possibility of evolution with the help of both already-existing and new initiatives.

4.5. Gather information on experiences from similar territories

Draw inspiration from others, keeping in mind local specificity: this is the main orientation of the ACR+ statutes, and of the work carried out by the association ever since its creation. In other words, even if two cities or regions are never identical, it does not mean that a local or regional authority cannot learn a great deal from another authority's experience.

This is also the case while developing an integrated policy for circular economy, and even if at present good practices are not exactly numerous, a number of interesting initiatives from cities and regions should be closely examined.

A first inventory of such reference cases has already been drafted by ACR+, examining the case studies from the strategic point of view, as well as from the point of view of implementation. The following table illustrates a list of territories already engaged in circular economy strategies (more information will be provided in the database which is currently being developed). The ACR+ working group entitled Circular Europe Network will continue to share information and experiences.

Inventory of cities and regions engaged in circular economy:

- Aquitaine Region (FR)
- Alsace Region (FR)
- Amsterdam (NL)
- Basque Country (ES)
- Bilbao (ES)
- Brussels-Capital Region (BE)
- Catalan Region (ES)
- Eindhoven (NL)
- Ferrara (IT)
- Flemish Region (BE)
- Genova (IT)
- Île-de-France Region (FR)
- Lazio Region (IT)
- Limburg Province (NL)

- Malaga (ES)
- Malmö (SV)
- Nord-Pas de Calais Region (FR)
- Oporto (PT)
- Paris (FR)
- Provence-Alpes-Côte d'Azur Region (FR)
- Rhineland-Palatina Region (DE)
- Rotterdam (NL)
- Scotland (UK)
- Stockholm (SV)
- Växjö (SV)
- Vienna (AT)
- Wales (UK)
- Walloon Region (BE)

4.6. Organise co-creation

As already discussed above, shared governance is a fundamental principle to be followed in the development of circular economy. All the indexed stakeholders should be invited to play their part in the journey towards circular economy. In order to do so, structures for concentration or participation should be organised already at the stage of elaborating an integrated circular economy plan.

Structures open to all individuals as well as specialised working groups for directly concerned actors should be considered. Concretely, stakeholders can cooperate either within a general working group gathering all actors (but usually, to e effective, such general group requires a certain knowledge of the participants about each other), or within smaller thematic groups gathering actors that are not used to talk to each other.

A good practice comes from the **Nord-Pas de Calais region** in France. Enriched by Jeremy Rifkin's ideas, the region set up a governance involving at different levels all institutional and economic actors present in the region:

- an "Orientation Forum", chaired by the Chamber of Commerce and Industry and the Regional Council, consisting of about fifty members, including representatives of professional organisations, employees' unions, higher schools and universities of the region;
- a Steering Committee, animated by the World Forum Lille Institute and the CCI (Chamber of Commerce and Industry), consisting of "technicians" designated by the CCI and the Regional Council;
- eight working groups, co-piloted by the CCI and the Regional Council, in charge of contributing to the Master Plan and gathering regional, national and European experts, as well as enterprises operating in Nord-Pas de Calais.

5. WHAT INSTRUMENTS TO USE? WHICH TRANSVERSAL AND THEMATIC MEASURES?

The answer to this question will of course differ depending on the size of the urban or regional entity in question, and its competences. Having said that, it is possible to draw up a list of instruments and measures to which local and regional authorities should resort as much as possible.

5.1. Potential instruments

The instruments at the disposal of local and regional authorities should be classified depending on their role and target (prescriber, consumer, facilitator, etc.).

In theory, four types of instruments could be distinguished:

- **Political and legal instruments:** planning and objectives, contract awarding, urban development and environmental permits;
- **Economic instruments:** constraining (taxes, variable charges/PAYT, EPR systems) or positive (subsidies, tax reduction);
- **Instruments related to the acquisition and dissemination of information:** communication and awareness-raising, education and training;
- **Technical instruments:** organisation and implementation of waste collection (and sometimes processing), internal activities related to research and expertise (e.g. impact studies, etc.).

According to their competences, local and regional authorities should optimise their circular economy policy, using a combination of all the potential instruments.

5.2. Cross-sector measures

Regulatory cross-sector measures

Framework regulations should be considered, if possible:

- **An integrated legislation on "waste and material resources"**, including in particular ambitious targets for prevention, reuse and recycling, as well as a separate collection obligation concerning the main material fractions[17] and the obligation to set up waste priorities with regards to the territory's available resources.
    - Plans or strategies coordinated for the big sectors (material resources, energy, construction, water, food, etc.), with the support of methodological tools for their development and monitoring. For instance, the Flemish Region (Belgium) developed a political strategy focusing on resources, the Flemish Materials Programme. The 2013-2020 Catalan Programme (Spain) covers waste and resource prevention and management (PRECAT20). Concerning local prevention programmes, it is interesting to consult the methodology developed within the Pre-waste project.

There is also a particular need for a clarification or even adaptation of the public procurement rules, in line with the concept of circular economy. It is to be noted that the European legislation related to public procurement has been subject to a review in 2014. The European Commission published various guidance material and criteria on green public procurement.

[17] See for instance the list of fractions mentioned in the R4R Project methodology

Case studies of green public procurement[1]:

- Stockholm (Sweden) – for IT equipment
- Badalona (Spain) – for school materials
- Dunkerque (France) – for recycled paper
- Ferrara (Italy) – for organic food in school canteens and detergents in public offices

Cross-sector economic instruments

Firstly, all the already-existing taxes and subsidies should be reconsidered from the point of view of circular economy and redefine them, according to the competences of local and regional authorities.

In theory, three categories of taxes and fees (i.e. on products, on waste collection and on processing facilities) should be revised from the point of view of circular economy. In particular, it is recommended that the waste processing facilities be taxed according to their contribution to the objectives of circular economy (for example, taxation according to the waste hierarchy and in particular a higher tax on landfilling than on incineration, a restrictive framework for the awarding of "green certificates"[18], etc.). It is more difficult to tax products on a local or regional level (for example, tax on plastic bags[19]) but taxes or fees on collection are conceivable (for instance, PAYT). On the other hand, tax reductions could be used to favour behaviour promoting circular economy (for example, the Catalan region allows for a tax reduction on incinerated or landfilled residual waste when a bio-waste selective collection system is implemented by the municipality).

Examples of a successful implementation of PAYT:

- Flemish Region (Belgium);
- Schweinfurt (Germany);
- Besançon (France).

A modulation following the waste hierarchy should be introduced in the case of the amounts set for the contributions towards the Extended Producer Responsibility organisations[20].

In fact, should the budgetary powers allow it, the creation of a public and/or public-private fund should be considered to support circular economy projects. Another example of such support

[18] "Green certificates" are a tradable commodity proving that certain electricity is generated using renewable energy sources, including waste to energy sources.
[19] For more information on this specific subject, consult the ACR+ report available online: http://acrplus.org/index.php/en/virtual-library/viewdownload/11/54
[20] However, such modulation is normally not in the competence of LRA, but rather of national authorities. Additional information about EPR is available on the EPR Club website.

measure is the creation of a subsidy for social and solidarity economy actors, varying depending on the performance, which is already the case in the Belgian Brussels-Capital Region.

Technical cross-sector measures

Depending on their competences, local and regional authorities should examine the possibilities of promoting research and development in the area of resource efficiency and, more generally, circular economy. Certain projects could be co-financed by the European R&D programme on systemic eco-innovation[21].

Examples of cities and regions using R&D in circular economy:

- Aquitaine Region (FR)
- Bilbao (ES)
- Flemish Region (BE)
- Hannover (DE)
- Limburg Province (NL)
- Nord-Pas de Calais Region (FR)
- North Rhine-Westphalia Region (DE)
- Rhineland-Palatinate Region (DE)
- Stockholm (SV)
- Vienna (AT)

It should also be noted that it is up to local and regional authorities to ensure an efficient collection of materials, particularly from households. This implies introducing selective collection of the main waste streams, either door-to-door or in the form of bring banks or civic amenity sites[22].

Measures linked to training and information

As for informing the public and/or enterprises on circular economy, the organisation of public debates or a widespread public consultation before initiating a territorial strategy can help involving new partners and generating ideas and new opporunities.

It is also vital to carry out information campaigns (general or targeted) on sustainable resource management, aimed at various types of stakeholders. Here, the European Week for Waste Reduction offers not only a European framework, but also support and an inventory of good practices for national, regional and local initiatives, focusing on citizens in their everyday life (in the office, at school, at the supermarket, etc.).

[21] Additional information is provided on the European Commission's website dedicated to the Horizon 2020 programme

[22] The R4R Project provides a list of good practices in the area of separate collection of municipal waste

An actual Circular Economy Information Centre could become a reference point for local actors interested in learning more on the opportunities in store for their city or region.

Besides such general information sources, online platforms listing and mapping CE actors in general is a particularly useful measure, like it is the case in Ile-de-France region for local reuse actors.

Finally, it is also important to include the circular economy principles in vocational trainings' curricula, as well as in higher technical and university education programmes. The following table gathers various interesting initiatives in the area of training in circular economy.

Examples of circular economy trainings	
Organisation	**Contents**
• PLAN C (Flemish Region, Belgium)	• "Masterclass Circulair Ondernemen" (4 months, interactive)
• CFDE (Centre de Formation en Environnement Industriel, France)	• Three two-day-long trainings
• Nicolas Hulot Foundation	• "Les Ateliers de la Transition" / "Transition Workshops" (2 days, collective intelligence)
• Cergy-Pontoise University (France)	• Master in Environmental Siences. Urban and Industrial Areas
• Politecnico di Milano (Italy)	• Master of Sciences "Product Services System Design" (2 years)
• Haute Ecole of Venlo (The Netherlands)	• "Cradle to Cradle Masterclass" (5 days)
• Twente University (The Netherlands)	• "Master in Industrial Design Engineering"
• Bradford University (UK)	• Master of Business Administration "Innovation, Enterprise and Circular Economy" (3 levels, 2 to 6 years)
• Blekinge Institute of Technology (Sweden)	• "Master of Science in Sustainable Product-Service System Innovation" (1+1 year)
• Ellen MacArthur Foundation	• MOOC (Massive Open Online Course) • Fellowship Universities Network: UC Berkeley (USA), Cranfield University (UK), Imperial College London (UK), Kedge Business School (France), London Business School (UK), Massachusetts Institute of Technology (USA), MIP – Politecnico de Milano – Management Scholl (Italy), Stanford University (USA), University of Technology Delft (The Netherlands), Yale (USA), Royal College of Art – Sustain RCA (UK), HEC Paris (France), Tongji University (China), National Institute of Design (India), University of Bradford (UK)

5.3. Thematic measures

A certain number of circular economy initiatives could be taken within the different intervention areas of public authorities.

Eco-design /Eco-production

- ⇨ "eco-conditions" included in the awarding of environment and urbanism permits;
- ⇨ Including criteria which favour eco-design in the setting of amounts for EPR contributions;
- ⇨ Supporting vocational training in eco-design and the integration of eco-design in small enterprises;
- ⇨ Awarding of labels and rewards for eco-enterprises;

Examples of a successful initiatives supporting eco-innovation:

- Catalan Region (Spain): eco-design awards
- Flemish Region (Belgium): Ecolizer and SIS toolkit
- Limburg Province (The Netherlands): Cradle to Cradle Network

Function-oriented business model

⇨ The development of a regional or local platform for the identification of actions contributing to replacing products with services (e.g. the Function-oriented business model Club of the Rhône-Alpes region in France or the TURAS project in Brussels-Capital Region);

⇨ The development of methodological instruments favouring functional economy (example.g. the NOVUS methodology developed by the INSPIRE Institute of the Provence-Alpes-Côte d'Azur region in France).

Eco-consumption and reuse

⇨ Reinforcement of actions in favour of public procurement "greening" and the adoption of a specific plan in this area, which would involve a greater number of group purchases by different administration units;

⇨ Support to repair initiatives, for instance from promoting 'repair café' to dedicating space for profit repair activities;

⇨ The development of information campaigns on local actors who market eco-labelled or second-hand products.

Examples of a successful initiatives in the field of reuse:

- Flemish Region (BE): Kingwinkel network
- Göteborg (SV): Alelyckan reuse park
- Vienna (AT): RUSZ network

Industrial and territorial ecology

⇨ Promotion of industrial eco-parks;

⇨ The analysis of existing experiences of "territorial symbiosis";

⇨ Requirements of industrial symbiosis plans/considerations in permitting of facilities.

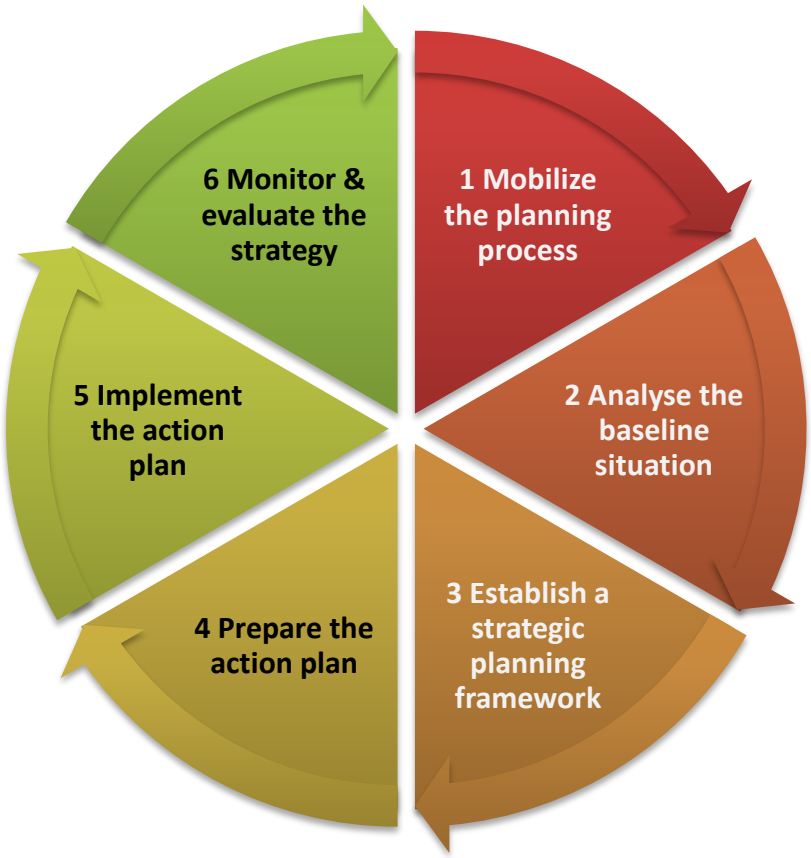
Examples of industrial ecology initiatives:

- Biopark Terneuzen (The Netherlands)
- Kalundborg Symbiosis (Denmark)
- Industrial Symbiosis Service in Northern Ireland (UK)
- Ecopal Network in Nord-Pas de Calais (France)

6. WHAT ROADMAP AND MONITORING TO ADOPT?

6.1. Synthetic roadmap for circular economy strategy at local and regional level

The main stages to be implemented in the framework of a circular economy strategy are as follows:



1. **Mobilise the planning process:**
   - Mobilise support to the strategy
   - Identify the main actors in the territory
   - Structure the work framework, possibly with specific working groups (cf. Section D1)
2. **Analyse the baseline situation on your territory:**
   - Territorial analysis
   - Global and/or sectorial diagnosis, including an analysis of current and planned actions
   - Mapping of opportunities and key working areas (sectors, streams, products/services)
3. **Establish a strategic framework for planning:**
   - Define a strategic vision and objectives
   - Define the area of intervention

- Identify and evaluate the options, particularly taking into account initiatives from analogous territories

4. **Prepare the action plan:**
    - By sector, stream or product/service
    - Short-/mid-/long-term actions
    - Risks and opportunities
5. **Implement the action plan:**
    - Organise deadlines and accompany the actors
    - Follow-up on the implementation of the action plan and the performance
    - Improve the plan according to the observed results
6. **Monitor & evaluate the strategy** *(this last step is detailed more in depth in the following section)*:
    - Organise deadlines and accompany the actors
    - Follow-up on the implementation of the action plan and the performance
    - Improve the plan according to the results

A circular economy strategy benefits from planning in a term neither too long nor too short: a 5-7 year period, including a mid-term evaluation phase, seems a good compromise between:

- the need to have a strategy that is long enough to allow the various stakeholders and partners to have a clear view of the coming years actions, and
- the need to be flexible and allow future reorientation.

6.2. Monitoring and evaluating the strategy

In order to facilitate a regular follow-up of the circular economy strategy, the appropriate indicators should be selected and implemented. In general, these indicators should be "SMART" (specific, measurable, attainable, relevant, and time-bound). A set of indicators should encompass not only resource efficiency but also socio-economic data.

It is a particularly complex issue to apply global indicators at local and regional level. Therefore, a compromise must be found between the accuracy and usefulness of a set of indicators on the one hand, and the time and skill required at local level to follow-up these indicators. Cooperation between the various services and organisations involved is needed.

Indicators related to resource efficiency should of course be included in any monitoring attempt with regards to circular economy. The Resource Efficiency Scoreboard is based on the statistics from Eurostat, the European Environment Agency and other internationally recognised sources and covers a wide range of interesting indicators, from which some of them can be used to follow-up circular economy strategies.

Selection of indicators from the Resource Efficiency Scoreboard[23]		
Theme	**Indicator**	**Source**
Resources	Resource productivity	Eurostat
	Domestic material consumption per capita	Eurostat
Carbon	Greenhouse gas emissions per capita	EEA
	Energy productivity	Eurostat
	Share of renewable energy in gross final energy consumption	Eurostat
Land	Built-up areas	Eurostat
Water	Water exploitation index	Eurostat
	Water productivity	EEA
Turning waste into a resource	Generation of waste excluding major mineral wastes	Eurostat
	Recycling rate of municipal waste	Eurostat
Supporting research and innovation	Eco-innovation index	Eco-innovation Observatory
Getting the prices right	Environmental tax revenues - % of total revenues from taxes and social contributions	Eurostat

Other organisations at international or national level have been working on the issue of environmental indicators. Again, not all these indicators are relevant or easily applicable at local or regional level, but they can help public authorities knowing better the impact of their circular economy strategy.

Examples of projects and other initiatives in the field of environmental indicators:

- RECREATE project report presenting existing scoreboards and possible indicators
- DESIRE project report proposing novel reference indicators and data sources
- CREEA project report on the Global Resource Footprint of Nations
- OECD report: Green Growth Indicators 2014
- MEDDE methodological guide on Material Flow Accounting in the Regions and Departments

More specifically, indicators focusing on the performance in the area of waste prevention and management should be considered.

[23] Source: Resource Efficiency Scoreboard highlight 2014

Examples of tools and indicators related to waste prevention and management:

- DREC (Destination RECylicling) is a method developed within the R4R project, aiming at comparing in a harmonised way the performances on waste collection and recycling via an online benchmarking tool. The DREC indicator addresses the waste quantities sent to processing, taking into account the quantities which leave the treatment plant (not the quantities at the starting point)[1].
- The Miniwaste project developed a tool allowing for a diagnosis and follow-up of biowaste reduction actions, particularly such as decentralised composting or fighting food waste. This tool is based on a series of indicators, affecting biowaste prevention and management.
- The Pre-waste project identified a set of indicators, allowing for the evaluation of prevention strategies and actions (resource, result and impact indicators). An online tool was also developed, which makes it possible to evaluate the impact of these actions in terms of quantities of waste prevented and CO_2 emitted.
- The "Waste Prevention Benefits Calculator" is a tool developed for the UK territory, allowing local authorities to evaluate the impact of waste prevention actions in terms of quantity, CO_2 emissions and cost.

The Province of Styria (Austria) developed a carbon footprint follow-up tool for waste management, which compares in a simple way the quantities of CO_2 emitted by different waste management solutions.

6.3. Circular Europe Network tools

On top of the present document, ACR+ has been developing a set of tools aiming at helping cities and regions to build up their circular economy strategy. This set of tools includes in particular an evolutive and collaborative database of case studies and good practices allowing users to find information about circular economy strategies implemented at local or regional level.

This database will be accessible from ACR+ website and the Circular Europe Network website:

- by territory (city or region);
- by type of instrument (legal, economic, technical and research, education and communication;
- by theme: general strategy or specific:
    - stream/sector: food, construction, textile, plastics, etc.
    - business model: eco-design, inductrial symbiosis, function-oriented business model, sharing and collaborative economy, etc.

The members of the Circular Europe Network are encouraged to enrich the database. Their contributions will consist in technical factsheets which templates will be prepared by ACR+.

On top of the factsheets on case studies and good practices, CEN members will benefit from information on events and news about circular economy activities and will have exclusive access to a virtual library where key documents about circular economy will be published. They will also have access to information about funding opportunities and the possibility to exchange with other members of the Circular Europe Network on the possibilities to build up projects together.

CONCLUSIONS

Public authorities have a responsibility to ensure sustainable development of our societies. Circular economy strategies can be a strong driver of change and a contribution to reach this goal. Local and regional authorities have their role to play, an essential role, close to the diverse stakeholders that need to be involved in the process.

Through the present guidelines and the various tools proposed to ACR+ members, the Circular Europe Network aims to provide useful support to local and regional authorities, capitalising on ACR+ 20 years-long expertise and the strength of its network. This document is one step on the road of circular economy, hopefully helping cities and regions to move in the right direction.

Increased collaboration between local and regional authorities could also be considered in the future as an activity to increase the effectiveness of circular economy. Indeed the use of some instruments can be more effective and lead to more innovative solutions if local and regional authorities work together or in a coordinated way (e.g. coordinated public procurement, EPR framework, local taxes or subsidies, etc.). The Circular Europe Network encourages such synergies and can help to facilitate this approach among ACR+ members.

Building on 20 years of experience, ACR+ launched the Circular Europe Network, a multi-stakeholder platform aiming at supporting local and regional authorities in adopting aspiring circular economy strategies. Carrying ACR+ vision for circular economy, the Circular Europe Network facilitates knowledge and expertise sharing on circular economy strategies.

It benefits from the active contributions from ACR+ members, cooperation with national and thematic networks and reviews by an advisory committee. It was launched with the political support of several personalities, in particular M. Janez Potočnik, former EU Commissioner for the Environment, as well as several mayors and ministers.