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ReTraCE Project

**Realising the Transition to the Circular Economy:
Models, Methods and Applications**

D4.1

**Circular Economy implementation at a Regional level:
a Preliminary Review**



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EXECUTIVE SUMMARY

Recent developments in the global economy have heightened the need for a shift from the current linear economy (characterised by the so-called *take-make-waste* extractive industrial model on one side, and by irresponsible consumption patterns on the other side) towards a more regenerative economy. Central to the entire idea of transitioning towards a more sustainable economy is the concept of Circular Economy (CE), which promises to yield positive societal benefits, design waste out of the system and decouple growth from the resource consumption.

In recent years, there has been an increasing amount of literature investigating the CE paradigm and ways to foster the transition towards it. However, the factual interest by the policy makers for the concept has been growing at a faster pace, as testified by several EU policy directives (such the CE Final Package, the CE Action Plan and the EU Green Deal) developed in recent years. Additionally, policies and strategies for transitioning towards a more circular economic system are being devised at national, regional and local levels.

In a free-market economic context, where government intervention is limited, bottom-up innovation and entrepreneurship have a fundamental role in achieving economic growth and competitiveness, hence also serving as basis for resilience and transition towards a CE. Nevertheless, proper conditions must be built in order to enable the engine of entrepreneurship and innovation to thrive. To this aim, this report will attempt to investigate further the role of policies to enable such ecosystem, with a special emphasis on the role of policy-making at a regional level, which has been indicated, by many scholars and practitioners, as an adequate unit of analysis to design and implement the transition towards a CE.



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LIST OF ABBREVIATIONS/ACRONYMS USED

CE	Circular Economy
CEAP	Circular Economy Action Plan
CoR	European Committee of Regions
D	Deliverable
EAFRD	The European Agricultural Fund for Rural Development
EC	European Commission
EDIP	Entrepreneurial Discovery and Implementation Practice
EDP	Entrepreneurial Discovery Process
EESC	European Economic and Social Committee
EGDIP	European Green Deal Investment Plan
EIB	European Investment Bank
EMFF	European Maritime and Fisheries Fund
EP	Environmental Performance Index
ERDF	The European Regional Development Fund
ESCP-S3	European Strategic Cluster Partnerships for Smart Specialisation Investments
ESF	The European Social Fund
ESIF	The European Structural and Investment Funds
EU	European Union
EVC	European Value Chain
GDP	Gross Domestic Product
G7	Group of Seven
ICT	Information and Communication Technology
IT	Information Technology
JTF	Just Transitioning Fund
JTM	Just Transitioning Mechanism
KETs	Key Enabling Technologies
MS	Member State
NGOs	Non-governmental Organisations
NUTS	Nomenclature of Territorial Units for Statistics
O	Objective
OP	Operational Programmes
PO	Policy Objective
PPS	Purchasing Power Standard
RD	Regional Development
R&I	Research and Innovation
RIS3	Research and Innovation Strategies for Smart Specialisation
SDGs	Sustainable Development Goals
SEIP	Sustainable Europe Investment Plan
SMEs	Small and medium-sized enterprise
SWOT	Strengths, Weaknesses, Opportunities and Threats
S3	Smart Specialisation/Smart Specialisation Strategy
UN	United Nations
WP	Work Package



1. GENERAL PURPOSE AND OBJECTIVES OF THE REPORT

This report is the first Deliverable (D4.1) for Work Package 4 (WP4) of the ReTraCE project. Such WP is generally concerned with Development Policies for the transition towards a Circular Economy (CE). More specifically, the data collected, and the analysis conducted in the report will contribute towards the first objective of the WP4 (O4.1), which is mainly focused on the identification of supporting policy mechanisms, at a regional level, for the transition towards a CE.

The policies included in this report have been identified as an important effort in terms of the practical implementation of CE and real case scenarios. Representativeness was sought by including a good variety of regions, across different geographies and context. The work developed within this report will provide a foundation for the second Deliverable (D4.2), which will be focused on the development of maps of stakeholders and interactions for designing policies for CE implementation at a regional level.

In a joint policy brief¹ produced within the INTERREG V C 2014-2020 programme, the role of local and regional authorities in launching and accelerating the transition towards the CE is greatly emphasised, regardless if that refers to establishing clear framework conditions, leading by example or directly supporting other local and regional stakeholders. More specifically, the policy brief advocates the integration of such commitments to a CE into appropriate strategic documents, establishment of local priorities, planned measures and various forms of support to be made available to cities and regions. By doing so, local and regional stakeholders can plan their long-term activities, aligning them to the existing and/or planned commitment of regional authorities. Those documents can comprise of EU regional operation programmes, long-term development plans, environmental and other thematic or sectoral strategies (e.g. waste management or industrial development plans). Furthermore, the development of such strategic vision of a region has proven to be a major driver for the sustainable transformation of regional economies (Pan-European Territorial Cooperation programmes, 2016). Taking into consideration the potential that cities and regions have to foster CE via these commitments, this report looks at the regional implementation of the CE.

The idea of regional resilience has emerged relatively recently in social science, and has become a popular concept to promote economic development and to favour the adoption of alternative models (such as CE-based approaches). Parallel to this growing interest in resilience, another strand of academic and political debate has come to emphasise the importance of entrepreneurship as a catalyst of economic development and competitiveness for sustaining vibrant and diverse economies. As such, many policy-makers and scholars view entrepreneurship as a key factor underpinning future trajectories of sustainable economic development at a regional level. Therefore, in a context characterised by free-market economic liberalism and limited planning

¹ The policy brief is available at the following URL:
http://urbact.eu/sites/default/files/policy_brief_on_circular_economy.pdf



intervention by central and local governments, entrepreneurship and innovation are an important engine of economic growth and competitiveness; it then follows that entrepreneurship will in turn serve as a basis of economic resilience and for the transition towards a Circular Economy. However, in order to create the conditions for innovation and entrepreneurship to flourish, i.e. an ecosystem that would allow a bottom-up emergence of CE, consensus must be reached among different stakeholders (research institutions, industry, local and national governments). Therefore, the main aim of this report is to further investigate and get a deeper insight into the role of policies capable of enabling such ecosystem. In this context, this report represents a starting point for the work which will be undertaken by the ReTraCE consortium on CE policy-making (WP4). To this aim, an initial scan of regional policy efforts has also been performed and presented in the report's Appendices.

The report is organised in four sections. The first part focuses on the general regional policies in the EU and their importance, covering the regional resilience concept, various levels of innovation systems and the place-based approach for innovating, and the importance of considering the quintuple helix model in the policy making process. The second part will discuss in detail the regional implementation of CE, including the NUTS classification and the EU funded projects on CE application. Additionally, the EU CE Action Plan and Final CE Package are analysed, along with the EU Green Deal. The third section is an attempt to analyse the databank, and present three exemplary cases of CE policies in three different NUTS levels. The last part is essentially a preliminary database with policies that refer to CE implementation. This database will be updated throughout the life-cycle of the project. When it comes to the type of the documents included, not only legislation and directives were included, but also strategic documents, roadmaps, and in some cases Operational Programmes (OP) and efforts that were considered relevant and could be used as a best practice. Regarding the level of the policies considered, not only regional policies were included (different levels of regions) but also examples of national policies and some of the most influential global and/or EU agreements.



2. REGIONAL POLICIES AND THEIR IMPORTANCE IN THE EU

2.1 RESILIENT REGIONS

In the RETRACE-INTERREG Policy Road Map (2018), European regions are described as “living metabolisms” or a “systems of systems” that are on the need to seek for resilience to be able to deal with climate and economic impact (p.29). For this reason, the adoption of appropriate governance actions is fundamental, addressing the current challenge of fostering preventive policy systems rather than reactive ones. The concept of resilience has been applied in a wide range of disciplines from ecology to strategic management, focusing on different geographical and organisational scales, from countries and regions to firms and individuals (Williams et al., 2013). While there is no universally agreed definition of what constitutes resilience, a scan of the literature shows that there is an emerging consensus.

Indeed, the resilience discourse within the urban/regional economic development debate has emphasised the cyclical nature of resilience as the capacity to withstand, adapt and respond to exogenous disruptions and crises. For example, Simmie and Martin (2010) discuss resilience in terms of a region’s capacity to resist an economic shock, while Christopherson et al. (2010) refer to the *inevitable adaptation* required in order to be resilient. When a region has been affected by adverse events, Dawley et al. (2010) refer to resilience in terms of a locality’s ability to ‘bounce-back’ or ‘comeback’ from an economic crisis.

These definitions highlight that resilience is a dynamic concept, and therefore emphasise the evolutionary dynamics and trajectories of regional economies and their differential capacity to adapt over time (Martin, 2012). Indeed, resilience has been argued to provide a mechanism to evaluate the vulnerability of regional economies to exogenous shocks, disturbances and stresses in addition to their capacity to creatively and flexibly respond (Pendall et al., 2010; Simmie and Martin, 2010). Therefore, as a conceptual approach to study the economic performance of regions, in simplest terms, resilience provides a lens to understand different responses to exogenous changes and shocks (Bhamra et al., 2011; Martin, 2012; Sullivan-Taylor and Branicki, 2011).

Dawley et al. (2010) contend that resilience offers an alternative perspective to the relentless preoccupation with growth, competitiveness and uneven development, whereby the focus is the ability of a region to resist and recover from the impacts of external shocks and maintain success over the long(er) term. The devolved autonomy of regions allows them to be dynamic and respond most appropriately to any exogenous (economic) change. Without this dynamism, Simmie and Martin (2010) assert, there arises a reduction in responsiveness with region economies being more exposed to and less able to adapt to the threat of shocks. For this specific report, the idea of *regional resilience* is seen as a popular concept to promote economic development and to favour the adoption of alternative models (such as CE-based approaches). This is highly in line with EU’s approach for place-based development specified in (CoR, 2019).



2.2 A PLACE-BASED APPROACH FOR INNOVATION

The place-based approach is a type of regional development policy (CoR, 2019), which aims at retaining value creation within a given region. Coherently, a region or city must develop place specific strengths, resistant to outsourcing (externalising economic activities and value creation outside of the region). Externally, a successful place-based approach means to develop a geographically-characterised *brand*, which is internationally recognised and benefits the local industrial players. This can be achieved by making the best use of endogenous resources and coordinating efforts of different regional stakeholders including, amongst others: governmental institutions; private industrial organisations; educational institutions, citizens and diverse non-government organisations and all levels of government (CoR, 2019).

Following a place-based approach, *“a region or city will focus its development path on existing specific strengths”*. Such an approach recognises that most of the knowledge needed to fully exploit local growth potential and to design tailor-made institutions and investments is not readily available, in the current state, to public authorities, large corporations and local agents. Consequently, it aims at developing an entrepreneurial ecosystem to support industry development within a region. The concept of place-based industry can be better defined by functional interrelations, rather than by administrative borders. It is not the result of a single strategy, developed by a single institution, but rather a product of common understanding, common practice and cooperation of a network of relevant actors (CoR, 2019).

2.3 THE SMART SPECIALISATION AGENDA

Igniting economic growth through place-led strategy and energising stakeholders at the regional level has been at the heart of the new European growth model based on regional smart specialisation (Todeva & Ketikidis, 2017). The model was launched by the European Commission in 2013 for better tailoring the support provided by European Structural and Investment Funds; it is indeed seen as an “important concept for better and more targeted innovation policy” in Europe (Todeva & Ketikidis, 2017). In response, EU member states were compelled to mobilise key stakeholders at the regional and national level, in order to identify strategic priority areas for future investment for growth (Foray & Goenanga, 2013). In various regions across EU, such priorities include the bio-economy and the transition towards a Circular Economy.

European Smart Specialisation policies aim to mobilise innovation and entrepreneurial capabilities and to deliver job creation and economic growth through inter-regional cooperation (Foray et al., 2009). The foundation principles for this policy initiative are: (i) an Entrepreneurial Discovery Process (EDP) that aims to mobilise all stakeholders throughout all stages from conception to strategy implementation; (ii) government-led policy initiatives for selecting strategic investment priorities; (iii) and building triple helix consensus space for regional policy implementation.

This has produced, since 2013, the emergence of several strategic activities, which took place at the regional and national level (S3 Platform, 2017). As an example, the Vanguard initiative for inter-regional collaboration among the most advanced regions in Europe has been leading the process

with political commitment, public sector initiatives, and active mobilisation of research and innovation leaders, universities, businesses, professional and commercial associations and other boundary spanner organisations and individuals (Reid & Miedzinski, 2014).

By the end of 2016, 18 member states and 164 European regions have submitted a Smart Specialisation Strategy (S3) (S3 Platform, 2017). These strategies emerge as a result of the comprehensive mapping of innovation capabilities (e.g., circular economy), entrepreneurial activities, SMEs support instruments, and open conversations with large local business players, employers, institutions, knowledge providers and knowledge brokers.

There is an emerging consensus on the fact that place-based strategies and policies for regional development (RD) offer a superior efficacy in mobilising productive capabilities (compared with sectoral-based policies). However, theory suggests that, in order to be successful, such policies have to be complemented by an industrial component of technological diversification, and value chain integration (McCann & Ortega-Argilés, 2015, Todeva & Rakhmatullin, 2016).

This is particularly relevant for the transition towards a CE. Indeed, such a transition requires a systemic change and a value chain approach, which cannot be driven by a single company. A region needs to move forward with a clear Smart Specialisation Strategy that builds upon the strength of its industrial clusters, exploiting synergies emerging at the crossroad of economic sectors for establishing virtuous industrial symbiosis mechanisms. Also, interactions between technology centres, universities, large companies and SMEs can be seen as the driver of this process. Regional and local governments can play a vital role in creating an enabling regulatory frameworks and collaborative platforms that could provide the foundations for a place-based approach to CE, which could also foster social cohesion at a local level (RETRACE-INTERREG Policy Road Map, 2018).

However, strategic choices based on embeddedness, relatedness and connectivity among inter-related economic sectors cannot deliver by themselves positive outcomes and drive change. It is crucial that the fundamental causes for underdevelopment are addressed – such as weaknesses in entrepreneurship and innovation capabilities, infrastructural problems, market failures (McCann & Ortega-Argilés, 2015).

Addressing these failures is a major concern for government intervention in a traditional sense of normative and regulatory action. In addition, there are a number of pre-requisites, while addressing regional and national contexts. The Entrepreneurial Discovery Process (EDP), which is an essential step towards building smart specialisation strategies, requires stakeholder mapping and engagement, as well as detailed knowledge of the key industry players, knowledge providers and innovation leaders at the regional level, which goes beyond the traditional role of government. This can become even more complex when it comes to circular economy, especially if inter-regional circularity is required.

As public administrators, regional and national authorities are required to perform their normative function of representing the public interest and governing the democratic processes that underpin the public sphere; as public policy agents, they are required to develop new policy framework conditions that create new incentives for entrepreneurship, eco-innovation and collaboration



(McCann & Ortega-Argilés, 2015; Morgan, 2015; Kroll, 2015; Ketels, 2016; Todeva & Rakhmatullin, 2016). Finally, as strategy development and implementation agents, public authorities are required to undertake a completely new set of initiatives, such as:

- Driving the local entrepreneurial discovery process;
- Assessing localised strategic capabilities as comparative advantage of and experimentation;
- identification and development of cross-sectoral, cross-regional and regional priorities;
- formulating strategic sectoral priorities and thematic activities;
- building triple helix coalitions with innovation performers, private sector commercial entities; technology entrepreneurs and other strategic organisations and resources;
- building inter-regional coalitions across the public and the private sector.

Proactive public authorities are building effective alliances with universities, business enterprises, innovation actors, public institutions and associations - as a prerequisite for the selection of strategic priorities, development of partnerships, and implementation of S3 through regional and interregional cooperation at European level (Foray & Goenaga, 2013).

Smart Specialisation and Circular Place-Based Value Chains

When it comes to fostering societal, environmental and industrial innovation the EC has developed several mechanisms that build upon place-based approaches, such as the already mentioned Smart Specialisation and Cluster Policy. As explained, the mapping of stakeholders and capabilities, along with the provision of value chain intelligence is crucial towards the implementation of such policies (Humphrey & Schmitz, 2002; Boaventura et al., 2016).

It has to be remarked that, through its partnership and bottom-up approach, a well-built Smart Specialisation strategy can drive the establishment of place-based and localised value chains. The mapping process can indeed provide an initial scan of the resources to be employed, along with with the connection and coordination of both suppliers and users.

In parallel to this, regional authorities could play an extra role and make sure that such value chains are designed according to a Circular Economy paradigm. This implies the promotion of networking and coordination among value chain actors, R&I (Research and Innovation) and investments measures to exploit local circular potentials. Also, regions can play an active role in directly filling possible gaps, for instance via the establishment of intermediary actors, which will manage the collection of by-products and/or waste, and their reprocessing, reuse or recycling.

Building place-based circular value chains results in many benefits, including: retention of value-adding processes; decreased unemployment; involvement of local communities in the innovation process. However, challenges might arise in terms of optimal dimensioning of regional value chains, and their stability and resilience to external market conditions (RETRACE-INTERREG, Systemic Design Method Guide for Policymaking: A Circular Europe on the Way, 2017).

Implications for regional authorities

The new strategic role of public administration officials requires not only a new set of strategic capabilities but also a continuous flow of business intelligence, enabling the government to select strategic priorities and to drive strategic partnerships and collaboration (Mazzucato, 2015).

The challenge for policy makers and public authorities is to select the right priority areas, where there is an existing concentration of capabilities and innovation potential, and where effective policy intervention can enhance regional competitiveness and economic performance. This requires a novel collaborative and risk-taking culture, adopted at the level of regional and national authorities (Foray & Goenaga, 2013).

In order to formulate smart specialisation strategies, public authorities need to develop and communicate a vision – how their specialisation can integrate with wider European value chains, and how it can connect to global markets (Todeva, 2015).

As policy makers, government officials need to design policy instruments that address specific strengths, weaknesses, opportunities and threats to the socio-economic and innovation systems under their jurisdiction. They are required to design evidence-based policies that create incentives in the right direction of stimulating of entrepreneurial behaviour, or innovation and productivity enhancing investments – among others (Ketels, 2016). Policy makers are also required to develop monitoring and evaluation systems that capture and measure the impact of implemented instruments (Williams et al., 2013; Todeva & Danson, 2016).

This can be challenging, as local governments might not have detailed knowledge of the structural composition of their priority sectors, or a comprehensive understanding of innovation actors, leading entrepreneurs and powerful local stakeholders that are required for building a consensus space. As a result, public authorities are becoming more dependent on intermediary organisations, such as leading consultancy firms, thus outsourcing further planning functions.

2.4 THE TRIPLE HELIX MODEL

The engagement of national and regional authorities with ‘Research and Innovation Strategies for Smart Specialisation’ (RIS3 strategies) resembles a triple helix in action, that builds upon political commitment, clear vision for the comparative advantage of the country / region (defined as strategic priorities), mobilisation of stakeholders and triple helix actors for innovation, experimentation and entrepreneurial discovery (Todeva & Danson, 2016). The third role of government as orchestrators of the entrepreneurial discovery process cannot be understood using the classical public administration theories and models, and it goes beyond the entrepreneurial government thesis for risk taking and risk sharing government intervention (Mazzucato, 2015).

It requires strategic leadership, which traditionally is a prerogative of the business sector, and cannot be performed without private sector leadership. The question and the challenge hence, is



under what circumstances government, industry, and university can create a consensus space to enable them collectively to act in accord – towards the design and implementation of S3 for sustainable growth?

The new model for entrepreneurial discovery and implementation practice (EDIP) identifies four strategic responses to the challenges outlined above. This model depicts four distinctive implementation steps to support interregional collaboration strategies and the successful mobilisation of interregional cooperation networks. This model refers to a new type of public authority intervention based on effective triple helix interactions between government, industry, and university. Triple helix governance involves a multi-stakeholder platform for strategic engagement, which goes beyond what some authors call ‘entrepreneurial government’, carrying the risk of developmental policies and investment decisions (Mazzucato, 2015). Triple helix governance mobilises decision-making capacity across the public and the private sector, and puts the university and the education sector as a whole, at the heart of growth strategies – both as providers of skills and innovation outputs.

Triple helix governance rests upon pro-active governments, collaborative business and entrepreneurial universities that are capable collectively to translate policy objectives into investment strategies and to mobilise the knowledge providers for strategically co-aligned development projects. Business intelligence is an essential prerequisite enabling governments to engage in strategy development and implementation. Business intelligence and knowledge production for S3 support all four implementation steps and include:

- More detailed mapping of industries and regional capabilities (strategic value chain groups and innovation networks);
- Dedicated communication platforms for inter-sectoral and cross-border stakeholder engagement that encompass industry-university and government (triple helix);
- Elaborate business models across input and output markets (designing value chains and value-added flows);
- Matchmaking within and across value chains.

Triple helix governance advocate for bridging across self-interest (through performance and efficiency) – public interest – creativity – sustainability – and value co-creation. This is translated by the new instruments and tools for interregional cooperation into a strategic agenda at the European level that follows a 4-stages approach: (i) Mapping competencies and opportunities for cooperation; (ii) Industrial cooperation and design of projects; (iii) Business Plan and funding mix; (iv) Investment projects (S3 Platform). This approach requires that the regional authorities sharpen their strategic knowledge and skills for the effective facilitation of inter-regional investment projects. Key prerequisites for the successful inter-regional thematic collaborations need some critical intelligence inputs – such as:

- Knowledge of value chains in established and emerging industries;
- Recognising complementarities across regions based on more detailed mapping of regional capabilities;

- Matchmaking of partners within and across complementary strategic value chain groups – to accelerate and scale up the development and commercialisation of new products, services, and technologies.

All recommended approaches for triple helix governance and orchestration of inter-regional cooperation projects rest upon a consensus space that expands from intra-regional to inter-regional. Ultimate drivers behind such a consensus space are political commitment and citizen participation that support effective and institutionalised triple helix governance platform, which is transparent and open to public debate and contributions from the civil society. These prerequisites, however, are necessary, but not sufficient – to orchestrate circular economic growth through inter-regional value chains. Ultimately, in the context of free-market economy with limited government intervention, it is the business leadership of the private sector that can take forward strategic objectives and implement them into collaborative inter-regional agreements.

Therefore, regions can be key players in the transition to a circular economy and can together create new circular economy value chains with critical mass. However, knowledge of each other's strengths and the available resources and services is often limited. Developing joint strategies, built on complementarities and respective strengths, can therefore be valuable for better realising their joint potential.

2.5 THE QUINTUPLE HELIX MODEL: A SOLUTION FOR TOP DOWN & BOTTOM-UP POLICY MAKING

The triple/quadruple helix do provide the sound basis for policy making, however, when it comes to circular economy and sustainable development, new actors and resources are involved. To this end, the work of Carayannis, Barth & Campbell (2012) is of core relevance towards understanding the behaviour of circular economy frameworks by integrating the ecological modernisation theory, diffusion of innovation theory, institutional theory and stakeholder theory into a properly explained ecosystem where knowledge (innovation), practice, society, policy and the environment (the quintuple helix) are the key decision making factors and drivers of theoretical and policy/compliance advancements:

“The Quintuple Helix finally frames knowledge and innovation in the context of the environment (natural environments). Therefore, the Quintuple Helix can be interpreted as an approach in line with sustainable development and social ecology. “Eco-innovation” and “eco-entrepreneurship” should be processed in such a broader understanding of knowledge and innovation” (Carayannis & Campbell, 2010; Carayannis, Barth & Campbell, 2012).

Similar quintuple helix models cited in EU-policy making frameworks also view such multi-stakeholder approaches as a solution for circular economy policy-making. According to CoR (2019) the quintuple helix model *“emphasises all the distinct characteristics of a place, including the physical, people and place-based potential”*. Such characteristics can be: workforce, know-how, competences and preferences of people in the territory to the infrastructure, buildings, harbours, landscapes, natural resources and technical facilities.



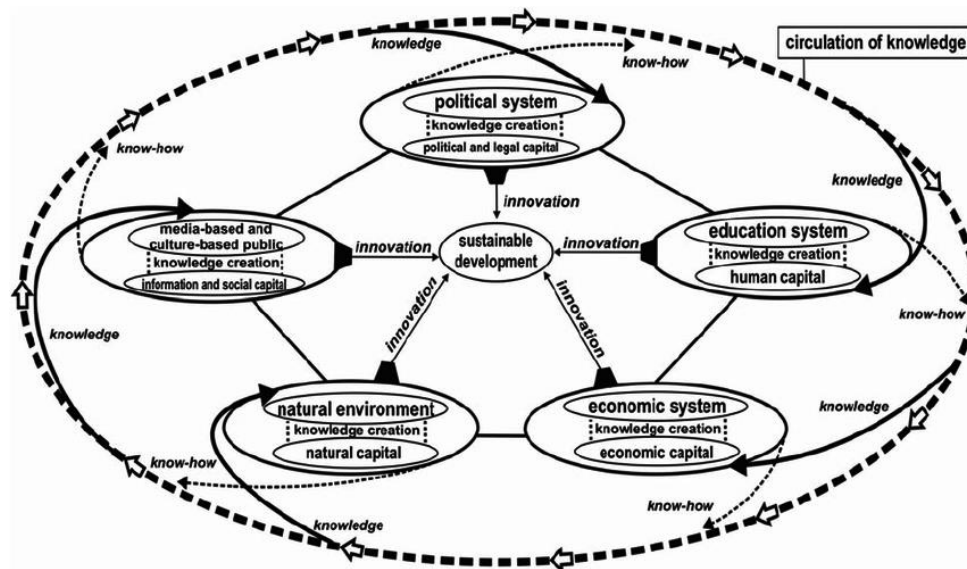


Figure 1: The Quintuple Helix Model (Carayannis, Barth & Campbell, 2012)

The fundamental role of the public and private quadruple helix actors (academia, industry, government, and civil society) organised at regional or local level was also highlighted in the RETRACE-INTERREG Policy Road Map (2018) when describing the regional innovation ecosystems and innovation hubs that need to be accounted for the next EU multi-annual financial framework 2021-2027. *“These actors coordinate research, innovation, and education activities, and accelerate among them the dissemination of results, knowledge transfers, innovation and development of new economic activities and services creating sustainable jobs while being close to the citizens and their local needs, which brings research and innovation close to society [...] Research and innovation are not targeted exclusively at companies but also concern public policies, Circular Economy, health, culture and community life, as well as the social economy and new economic models, which contribute to the creation of new partnerships, new activities and new social relationships. Therefore, the exploitation of innovation outputs should focus not only on conceiving products with an economic value but also services with a social value for citizens” (p.22).*

3 REGIONAL IMPLEMENTATION OF CIRCULAR ECONOMY

The existing academic body of literature is looking at the CE implementation at three levels: the micro level (single company or individual consumer), meso level (Eco-industrial park, supply chain) and macro level (city, province, region, nation) (Ghisellini et al., 2016). However, this categorisation is not consistently used nor defined across the scientific community. For instance, Morega et al. (2019) argue that regions are considered as being part of the macro scale for Chinese CE Promotion Law, being situated between cities and countries. On the other hand, Smol et al. (2017) consider regions as being the connection between the micro and macro scales when measuring CE eco-innovation, an approach that is being applied by the EU, which indicates a meso level.

According to Ghisellini et al. (2016) the evaluation of the CE implementation at the macro level, including cities, regions and overall nations is crucial, since this will provide feedback to policy makers regarding the soundness of the policies implemented so far, and also give direction for future policy development. Furthermore, they argue that the CE development in cities, province and/or regions encompasses the integration and redesign of four systems:

- Industrial system (e.g. changing the size of companies from small to large or the phase-out of the heavy polluting enterprises in favour of light economic activities as related to high-tech industries, tourism or culture);
- Infrastructure system delivering services (transportation and communication systems, water-recycling systems, clean energy and electrical power lines, etc.);
- Cultural framework;
- Social system.

The CE paradigm requires cooperation, coordination and integration amongst policies at all levels, institutions, stakeholders and sectors. Additionally, it entails not only awareness but also commitment of various relevant actors such as: public institutions, economic operators and civil society. The high-level design and priority for the CE have been established, and the key critical point and thus challenge lays in the actual implementation in practice, which is a key competence of regions (RETRACE-INTERREG, Systemic Design Method Guide for Policymaking: A Circular Europe on the Way, 2017). Therefore, regions play a fundamental role in effectively promoting the CE, supporting the deployment of EU and national strategies, laws and regulations. They are responsible for framing and putting into practice a wide range of policies, in different fields (innovation, growth, environment, education, social inclusion etc.). Often wise regions have legislative and regulatory power to create and deploy their strategies, as well as manage EU Structural Funds, support boosting innovation and resource efficiency. More importantly, they have built up a deep knowledge and understanding of their local territories, their capacities and potentials; putting them in the most favourable position to establish appropriate framework conditions, enforce targeted policies, mobilise regional stakeholders and boost synergies between various economic sectors. The importance of regions in the CE implementation is also acknowledged in the academic literature. Namely, Strat et al. (2018) are clearly enunciating this in their paper, stating that “a functional global circular economy can be built incrementally starting from the interconnection of national circular economies that rely on interconnected regional circular economies (p.278).

Regarding the approach of the implementation, it differs from territory of implementation. For instance, China, via the national political strategy, namely the CE Promotion Law, adopts a top-down approach and the CE implementation is structured following both a horizontal and a vertical direction. This implies that the national government through the national policy has for objective not only to transform the industry, but the whole socioeconomic organisation of the society at every level. The top-down approach of the national strategy is reflected on the instruments used, which are predominantly of “command and control” instead of market-based ones (Ghisellini et al., 2016). On the other hand, Europe has adopted the bottom-up approach from the very beginning, focusing mostly on fostering initiatives of NGOs, the civil society and industrial



organisations, with adequate legislation that should enable these (Ghisellini et al., 2016). According to the RETRACE-INTERREG Policy Road Map (2018), in order to pave the way towards circular Europe and address the arising challenges, adopting a mixed approach of both top-down and bottom-up activities is essential. A stronger engagement of local citizen's associations as well as increased representativeness of those associations at EU level is needed to support grassroots movements. The role of local organisations in fostering democracy and environmental justice should not be neglected, taking into account their knowledge that they have acquired as well as their comprehension of local issues related to development, urban structure, industry, tourism etc.

3.1 DEFINING REGIONS

The region as an administrative component is fundamental in the EU policy development (e.g. Cohesion Policy 2014-2020). Additionally, the EU financial resources are regionally oriented and distributed such as: ESIF (ERDF, ESF), the Cohesion Fund, EAFRD, EMFF. Another initiative that supports and fosters regional and local governments within Europe to create and implement better policies, including CE related policies, is the Interreg V Europe program 2014-2020. Since its launching 26 projects were tackling the environment and resource efficiency topic, and out of them 12 were focusing on resource efficiency and CE (Avdiushchenko, 2018). In some contexts, regions and cities are often seen as pioneers by practitioners in the transition towards sustainability, since they have started implementing changes before the national policies were even being devised. The affirmation in the UN's Agenda 21 regarding the importance of local actions dates back even to 1992. The reasons for that is their scale and controllable economic systems, proximity to close environmental, social and economic issues and ability to use local experience from relevant stakeholders (CIRCTER, 2019). The literature also supports this argument, in the context of the eco-cities (human settlements based on the self-sustaining resilient arrangement and function of the nature) programmes, and their great success which is deemed to be as an outcome of combination of several factors, including legal, social, economic and technical ones. Some examples of these factors include: the evolution of the legislative framework towards the adoption of a recycling oriented society, the shared responsibility of society over the need for environmental protection, the reduction of enterprise's risks and capital expenditure by means of subsidies, the diversification of enterprise's activities, and the improvement of technological capacity within particular industrial sectors (Ghisellini et al., 2016).

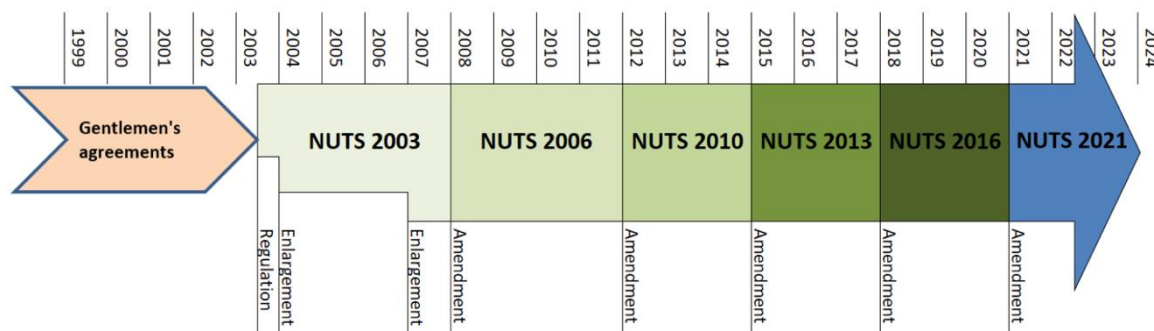
3.2 NUTS CLASSIFICATION

In such context, the Eurostat has devised the NUTS Classification (Nomenclature of Territorial Units for Statistics) and the related NUTS Regulations where the territory of the EU has been divided into three levels, based on the number of population. Looking at the history of NUTS, Eurostat established this classification at the beginning of 1970s as a unified and coherent system for partitioning the territory of the EU with the purpose of producing regional statistics for the Community. For the following three decades, the implementation and revision of the classification



was managed under several "gentlemen's agreements" between the Member States and Eurostat, as shown in Figure 2. The Commission commenced working in early 2000s in order to provide NUTS a legal status, which ultimately resulted in the first related Regulation (EC) No 1059/2003, which was adopted in spring 2003 and entered into force in July the same year. The NUTS regulation ensures stability of the classification for at least three years, meaning that for a certain period of time that data refers to the same regional unit.

Figure 2: History of the NUTS Classification



This system of hierarchical division of territories is done for several purposes, including the harmonisation of regional statistics and more adequate comparability between regions within EU, better socio-economic evaluation of the regions and also more consistent formulation of the EU regional policies. Most of the EU policies are devised and implemented in terms of financial support (structural and investment funds), as well as the related reporting of the results based on the NUTS 2 level. The criteria and related information for the NUTS levels are explained in the Table 1.

Table 1: NUTS Classification (2016)

Level	Description	Minimum population	Maximum population	Number of regions in EU
NUTS 1	Major socio-economic regions	3 million	7 million	104 regions
NUTS 2	Basic regions for the application of regional policies	800. 000	3 million	281 regions
NUTS 3	Small regions for specific diagnoses	150.000	800.000	1,348 regions

All EU Member States along with their NUTS 1, NUTS 2 and NUTS 3 regions have been compiled in an extended and comprehensive table presented in Appendix A: NUTS Classification. A summarised version of the corresponding national structures with the total number of regions per

each NUTS level is presented in Table 2. For better visual presentation of the regions' borders within a country, Figure 2, Figure 3 and Figure 4 were presented, depicting the NUTS 1 regions within the national borders of the member states, NUTS 2 regions and NUTS 3 regions respectively (along with the outermost regions).

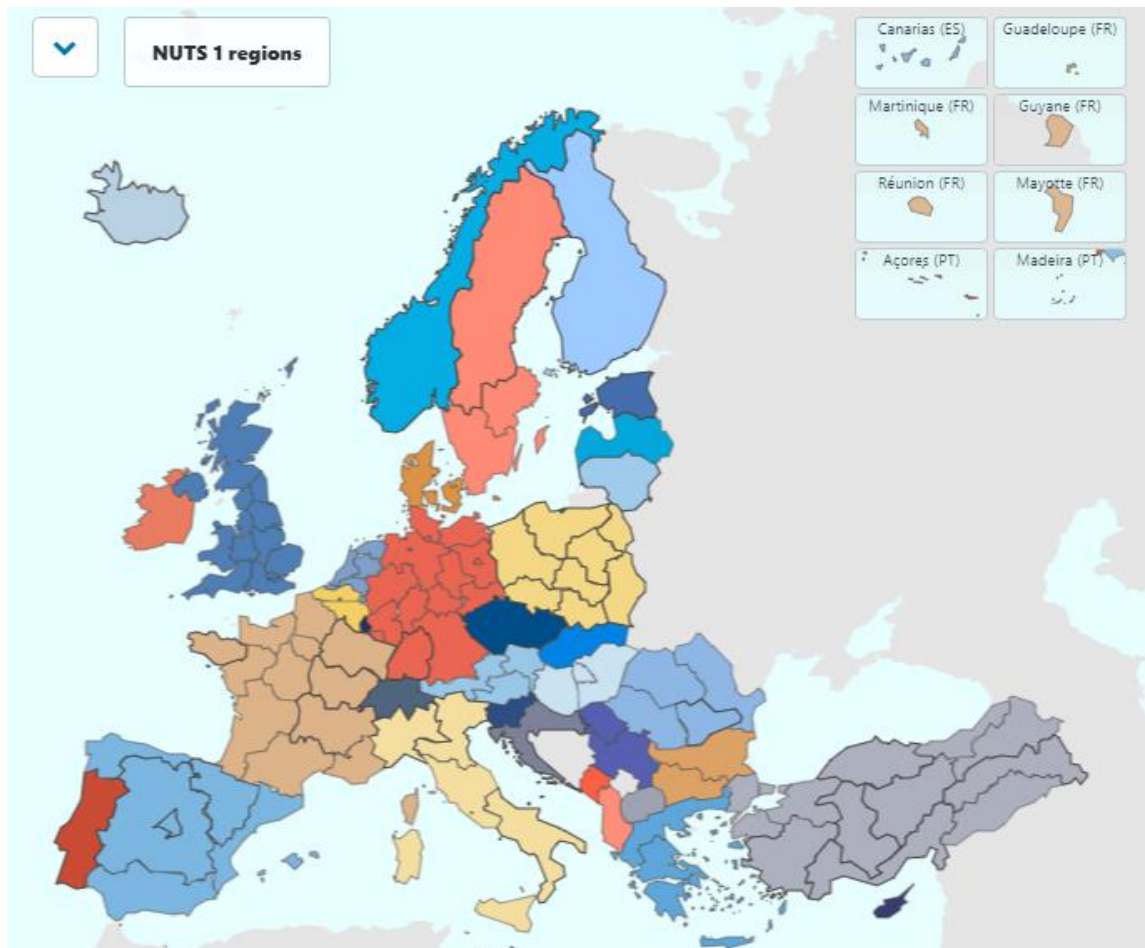
The classification provides the basis for regional boundaries and geographic eligibility, considering that statistics from regional accounts are used in the allocation of the EU funds. During the period 2014-2020, eligibility for the European Regional Development Fund (ERDF) and the European Social Fund (ESF) was calculated on the basis of regional GDP per inhabitant (in PPS) averaged for the period 2007-2009. NUTS level 2 regions were ranked and split into three groups:

- less developed regions, where GDP per inhabitant was less than 75 % of the EU-27 average;
- transition regions, where GDP per inhabitant was 75 %-90 % of the EU-27 average; and
- more developed regions, where GDP per inhabitant was more than 90 % of the EU-27 average.

The eligibility for the Cohesion fund, which was established in order to strengthen the economic, social and territorial unity of the European Union in the interests of promoting sustainable development, is based on the NUTS 2 level regions. Hence quite large amount of the cohesion policy budget was allocated to regions whose development lags behind the EU average; more specifically, more than 50% of the total budget was distributed to less developed regions that were mostly located in the south or the east of the EU, the Baltic Member States and several outermost regions (Eurostat regional yearbook, 2019).



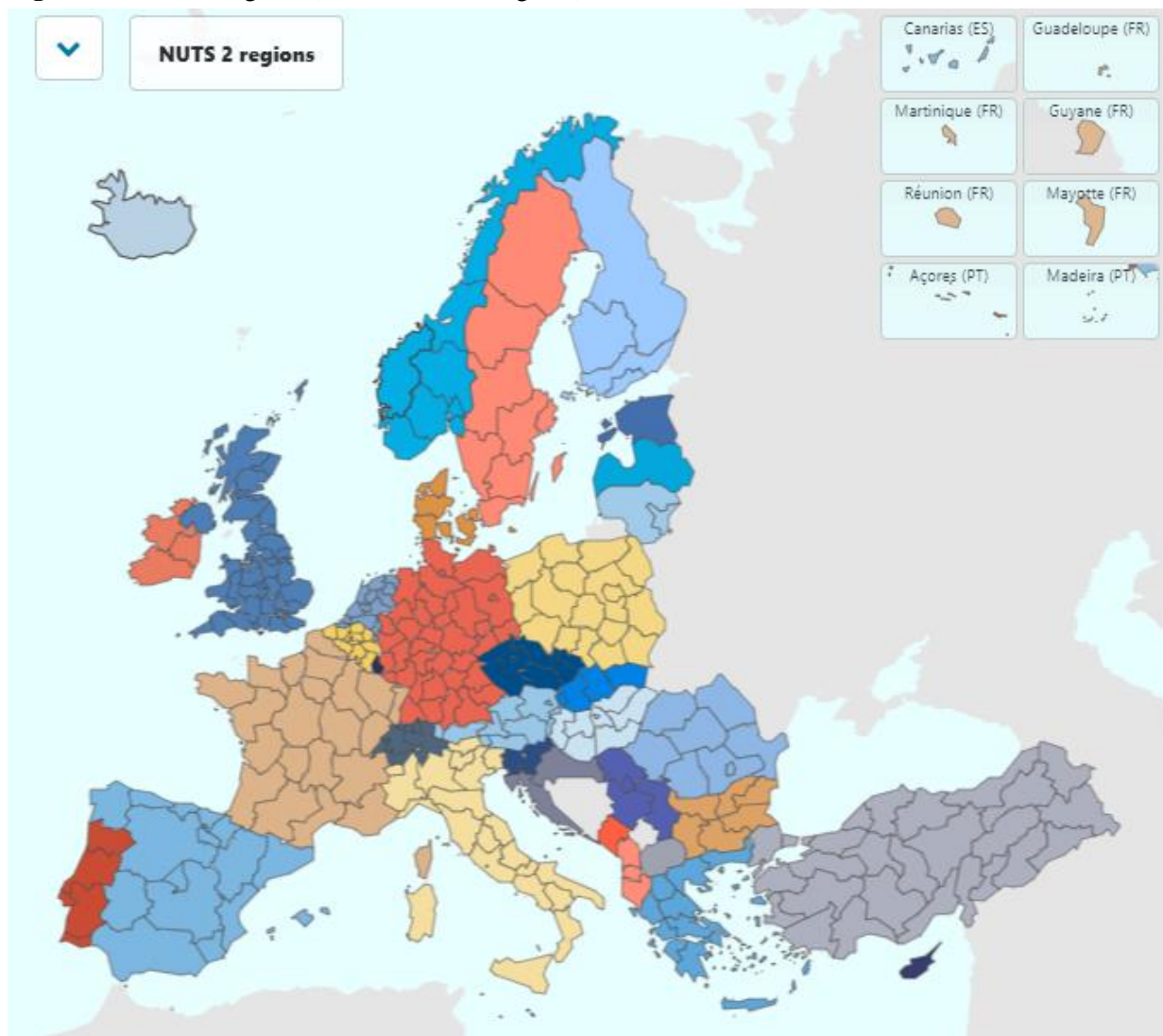
Figure 2: NUTS 1 regions (with outermost regions)



Source: Eurostat – Statistics Illustrated (<https://ec.europa.eu/eurostat/web/nuts/statistics-illustrated>)



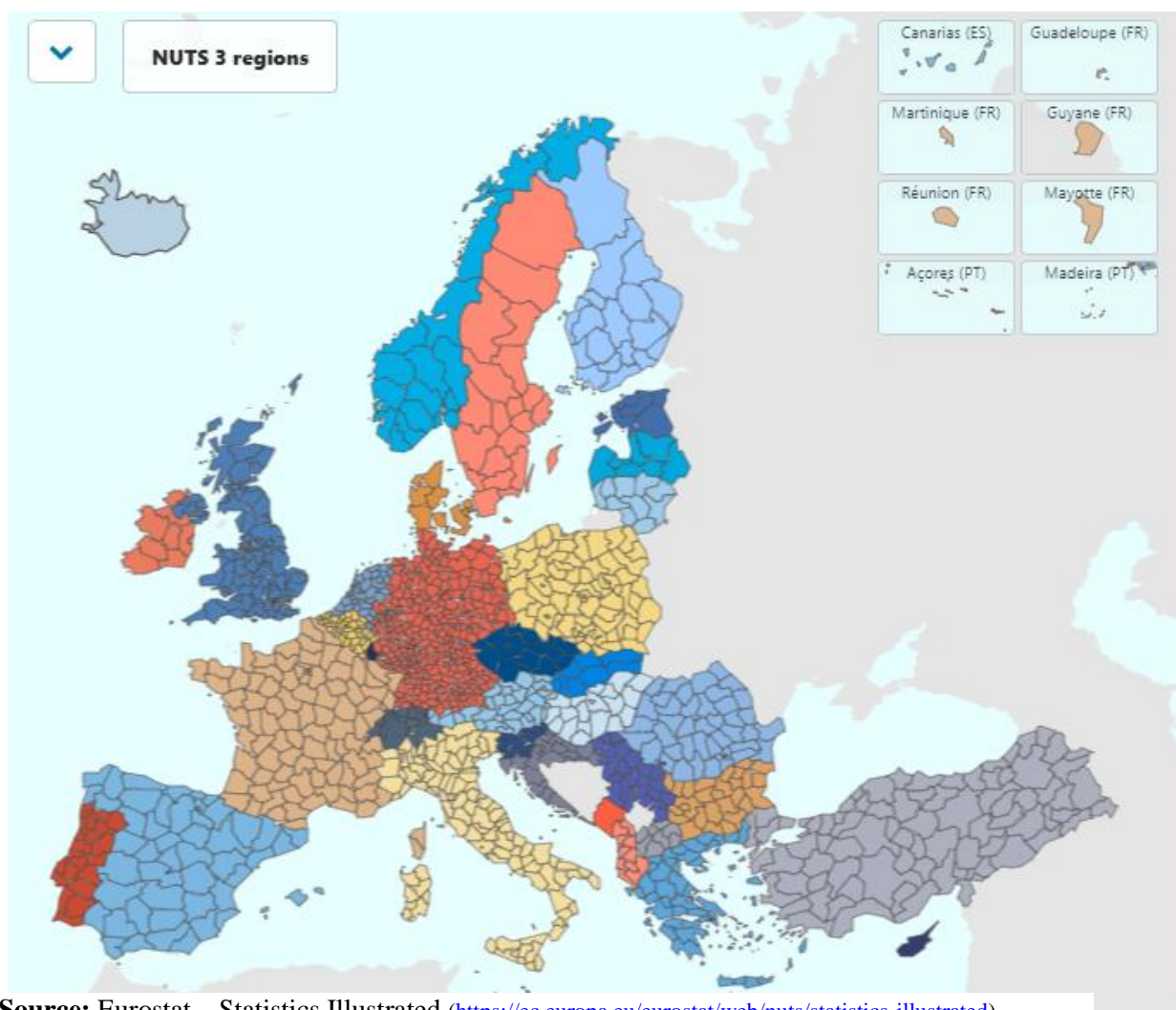
Figure 3: NUTS 2 regions (with outermost regions)



Source: Eurostat – Statistics Illustrated (<https://ec.europa.eu/eurostat/web/nuts/statistics-illustrated>)



Figure 4: NUTS 3 regions (with outermost regions)



Source: Eurostat – Statistics Illustrated (<https://ec.europa.eu/eurostat/web/nuts/statistics-illustrated>)



Table 2: National Structures

	NUTS 1		NUTS 2		NUTS 3	
BE	Gewesten / Régions	3	Provincies / Provinces	11	Arrondisse-menten / Arrondissements	44
BG	Зони (Zoni)	2	Райони (Rajoni)	6	Области (Oblasti)	28
CZ	Území	1	Regiony soudržnosti	8	Kraje	14
DK	-	1	Regioner	5	Landsdeler	11
DE	Länder	16	Regierungs-bezirke	38	Kreise	401
EE	-	1	-	1	Maakondade grupid	5
IE	-	1	Regions	3	Regional Authority Regions	8
EL	Μεγάλες Γεωγραφικές Περιοχές (Megales Geografikes Perioches - Great Geographical Areas)	4	Περιφέρειες (Periferies - Regions)	13	Ομάδες Περιφερειακών Ενοτήτων (Omades Periferiakon Enotiton - Groups of Regional Units)	52
ES	Agrupacion de comunidades Autonomas	7	Comunidades y ciudades Autonomas	19	Provincias + islas + Ceuta, Melilla	59
FR	Z.E.A.T + DOM	14	Régions + DOM	27	Départements + DOM	101
HR	-	1	Regija	2	Županija	21
IT	Gruppi di regioni	5	Regioni	21	Provincia	110
CY	-	1	-	1	-	1
LV	-	1	-	1	Statistiskie reģioni	6
LT	-	1	Regionai	2	Apskritis	10
LU	-	1	-	1	-	1
HU	Statisztikai nagyrégiók	3	Tervezési-statisztikai régiók	8	Megyeék + Budapest	20
MT	-	1	-	1	Regjuni	2
NL	Landsdelen	4	Provincies	12	COROP regio's	40
AT	Gruppen von Bundesländern	3	Bundesländer	9	Gruppen von Gemeinden	35
PL	Makroregiony	7	Regiony	17	Podregiony	73
PT	Continente + Regiões Autónomas	3	Grupos de Entidades Intermunicipais + Regiões Autónomas	7	Entidades Intermunicipais (Comunidades Intermunicipais + Áreas Metropolitanas) + Regiões Autónomas	25
RO	Macroregiuni	4	Regiuni	8	Judet + Bucuresti	42
SI	-	1	Kohezijske regije	2	Statistične regije	12
SK	-	1	Oblasti	4	Kraje	8
FI	Manner-Suomi, Ahvenanmaa / Fasta Finland, Åland	2	Suuralueet / Storområden	5	Maakunnat / Landskap	19
SE	Grupper av riksområden	3	Riksområden	8	Län	21
UK	Government Office Regions; Country	12	Counties (some grouped); Inner and Outer London; Groups of unitary authorities	41	Upper tier authorities or groups of lower tier authorities (unitary authorities or districts)	179
EU-28		104		281		1348

Source: Eurostat (last update 30/11/2018, based on NUTS 2016)



3.3 RECENT CIRCULAR ECONOMY RELATED DEVELOPMENTS IN THE EU

The EU Council presented some very relevant conclusions in October 2019, in a statement entitled “*More circularity - Transition to a sustainable society*”. Regarding the Circular Economy Strategy 2.0, the Council acknowledged that:

“[...] the Union's circular economy policy action has been successful, but STRESSES that more numerous, more ambitious and further scaled up actions are necessary to lead to a systemic transition in which circular, safe and sustainable climate-neutral production and consumption models and nature-based solutions become competitive and mainstream” (p.7).

The outcome proceedings of the meeting were providing very insightful information on the importance of regions for the CE transition and the EU Council was very vocal on that. Namely, the significantly improved resilience and competitiveness of the regions from a CE-implementation point of view, was underlined, but, at the same time, the Commission and individual MS were encouraged to consider the different social and economic conditions in various regions across the EU, in order to ensure a fair and inclusive transition. This could be inferred from Articles 8 and 9 (p.7):

“(The Council) URGES the Commission and the Member States to integrate the circular economy into all relevant policies and strategies, including the future 8th EAP, and make it one of the cornerstones of the long-term vision of the Union's industrial future;

UNDERLINES that a circular economy can significantly improve the resilience and competitiveness of businesses, societies, cities and regions;

ENCOURAGES the Commission and the Member States to take into account the diversity of situations in the various regions of the Union, including the outermost regions, and the social and economic effects of the transition, and to take appropriate measures to ensure a fair and inclusive transition for all, taking care especially to prevent adverse effects on the most vulnerable”

The fundamental role of cities and regions was emphasised again in Article 13 (p.8), where the Council:

“UNDERLINES that cities and regions play a pioneering role in the transition to a circular economy and function as hubs for circular change; ENCOURAGES the Commission and the Member States to mobilise and support regions and cities to draw up concrete action plans for a safe and sustainable climate-neutral circular economy, to improve waste management through policies, investments and pilot projects, and to create innovation platforms that activate the private sector and encourage industrial symbiosis between companies in order to minimise resource use”

In relation to the global efforts to support a shift from linear to circular plastics production and consumption in order to reduce marine litter from both land- and water-based sources, among other things the Council stressed the need for strong and effective regional cooperation with countries bordering the Union. Furthermore, when addressing the waste scarcity and draught in

the Union the Council encourages the EC and the MS along with stakeholders, to promote water reuse and reduce water leakages considering regional conditions across the Union as appropriate.

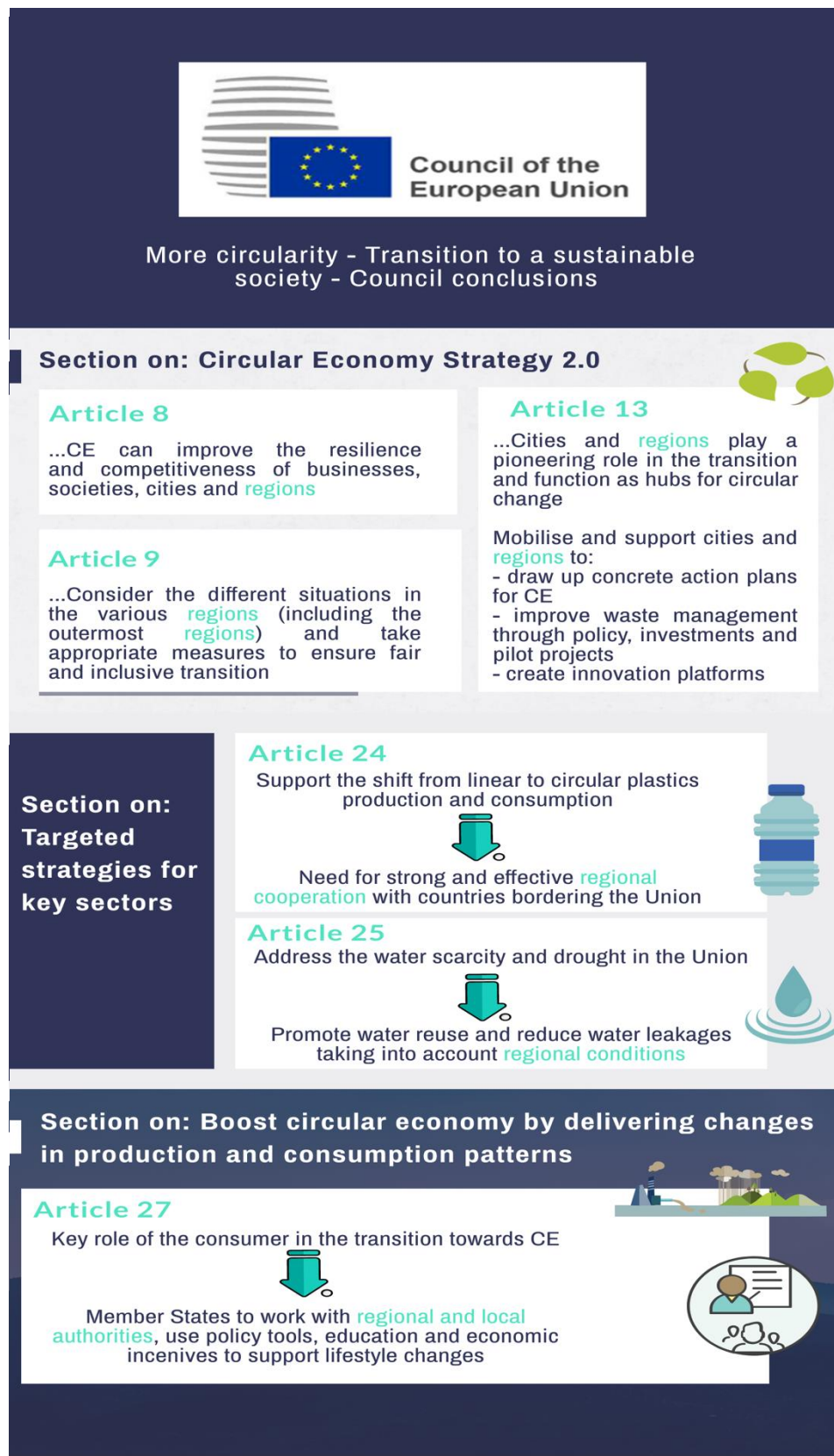
The role of the final consumer in the transition was also not overlooked. In that regard, Article 27 (p.14) provides the following statement:

“(The Council) STRESSES the key role of the consumer in the transition towards a circular economy; ENCOURAGES the Member States to work with regional and local authorities, use policy tools, education, and economic incentives to support lifestyle changes, which benefit both the environment and people’s skills, health and well-being; in this regard, INVITES the Commission to develop product information instruments aimed at consumers on elements such as product lifetime and reparability, and to consider how to incentivise consumers to contribute more to the circular economy; CALLS FOR digital solutions to improve the sharing of information, products and services in order to empower citizens to become active participants in co-creating solutions for a circular economy”.

Figure 5 recaps the abovementioned points, which were part of the EU Council Conclusions and were related to the role and expected actions from regions and regional authorities. The infographic represents an interpretation by the authors and was produced using the Piktochart online visualisation tool.



Figure 5: Summary of the EU Council Conclusions



The role and importance of regions is not neglected even when analysing the most recent developments within the EU, which is the newly presented European Green Deal by the European Commissions' president Ursula von der Leyen, vowing to "leave no-one behind" in the race to achieve a climate neutral economy by 2050. The Green Deal is an integral part of this Commission's strategy to implement the United Nation's 2030 Agenda and the sustainable development goals, and the other priorities announced in President von der Leyen's political guidelines. As part of the Green Deal, the Commission will refocus the European Semester process of macroeconomic coordination to integrate the United Nations' sustainable development goals, to put sustainability and the well-being of citizens at the centre of economic policy, and the sustainable development goals at the heart of the EU's policymaking and action.

The increased cross-border and regional cooperation needed for clean energy transition and achieving climate neutrality combined with smart infrastructure was highlighted. Additionally, the launching of the European Climate Pact by March 2020 was mentioned as a way to engage with the public on climate action. The Pact will "continue to work to empower regional and local communities, including energy communities. The urban dimension of cohesion policy will be strengthened, and the proposed European Urban Initiative will provide assistance to cities to help them make best use of opportunities to develop sustainable urban development strategies. The EU Covenant of Mayors will continue to be a central force. The Commission will work with it to continue to provide assistance to cities and regions that want to commit to ambitious pledges on climate and energy policies. It will remain an essential platform to share good practices on how to implement change locally" (p.23). Figure 6 below depicts the various important elements of the Green Deal which has the overarching goal to transform Europe's economy for a sustainable future (European Commission, 2019).

Among the several actions plans is also the Mainstreaming of Sustainability in all EU policies, within which the EC suggests a Just Transition Mechanism (JTM), including a Just Transition Fund (JTF) to ensure no social marginalisation during the transition. This mechanism will concentrate on the most dependent and affected regions and sectors by the transition (i.e. fossil fuel dependency, carbon-intensive activities etc.). The funds will be oriented to foster processes that could support the low-carbon ambitions and climate-resilience. Additionally, support will be provided to citizens and workers that are most affected by the transition. The official communication of the EU Green Deal clearly states that the EC will work not only with Member States, but also regions, in providing them support to establish and implement territorial transition plans (European Commission, 2019).

To achieve the ambition set by the European Green Deal, there are significant investment needs. The Commission has estimated that achieving the current 2030 climate and energy targets will require €260 billion of additional annual investment, about 1.5% of 2018 GDP. This flow of investment will need to be continuous and the magnitude of the investment will require mobilising both the public and private sector. A Sustainable Europe Investment Plan (SEIP), also referred as The European Green Deal Investment Plan (EGDIP), will be introduced by the EC to help meet the additional funding needs which will combine dedicated financing to support sustainable investments, and proposals for an improved enabling framework that is conducive to green

Source: EU Council, 2019 (<https://www.consilium.europa.eu/media/40928/st12791-en19.pdf>)



This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie Innovative Training Networks (H2020-MSCA-ITN-2018) scheme, grant agreement number 814247 (ReTraCE).

investment. The EU budget will play a key role considering that the EC has projected a 25% target for climate mainstreaming across all EU programmes. Furthermore, The Commission has proposed new revenue streams (“Own Resources”), one of which is grounded on the non-recycled plastic packaging waste. A second revenue stream could involve allocating 20% of the revenue from the auctioning of EU Emissions Trading System to the EU budget.

Figure 6: The European Green Deal



Source: (European Commission, 2019)

At least 30% of the InvestEU Fund will contribute to fighting climate change, offering the Member States the option to use the EU budgetary guarantee e.g. to deliver on climate related cohesion policy objectives in their territories and regions but also to strengthen the cooperation with national promotional banks and institutions, which can encourage an overall greening of their activities. The Commission will also work with the European Investment Bank (EIB) Group, national promotional banks and institutions, as well as with other international financial institutions. The EIB set itself the target of doubling its climate target from 25% to 50% by 2025, thus becoming Europe's climate bank.

The JTF precisely will draw on sources of funding from the EU budget as well as the EIB Group to leverage the necessary private and public resources. The mechanism will come in addition to the substantial contribution of the EU's budget through all programmes directly relevant to the

transition, as well as other funds such as the European Regional Development Fund and the European Social Fund Plus.

The private sector will play fundamental role for financing the green transition. Long-term signals will be needed to direct financial and capital flows to green investment and to avoid stranded assets. The Commission will present a renewed sustainable finance strategy in the third quarter of 2020 that will focus on a number of actions.

“First, the strategy will strengthen the foundations for sustainable investment. This will require notably that the European Parliament and Council adopt the taxonomy for classifying environmentally sustainable activities. Sustainability should be further embedded into the corporate governance framework and simultaneously companies and financial institutions will need to increase their disclosure on climate and environmental data so that investors are fully informed about the sustainability of their investments. To this end, the Commission will review the Non-Financial Reporting Directive. To ensure appropriate management of environmental risks and mitigation opportunities, and reduce related transaction costs, the Commission will also support businesses and other stakeholders in developing standardised natural capital accounting practices within the EU and internationally.

Second, increased opportunities will be provided for investors and companies by making it easier for them to identify sustainable investments and ensuring that they are credible. This could be done via clear labels for retail investment products and by developing an EU green bond standard that facilitates sustainable investment in the most convenient way.

Third, climate and environmental risks will be managed and integrated into the financial system. This means better integrating such risks into the EU prudential framework and assessing the suitability of the existing capital requirements for green assets. We will also examine how our financial system can help to increase resilience to climate and environmental risks, in particular when it comes to the physical risks and damage arising from natural catastrophes” (European Commission, 2019).

This approach is in great line with the 5 policy objectives (CoR, 2019) of the new programming period of the EU (2021-2027):

- PO1: a smarter Europe – innovative and smart industrial transformation;
- PO2: a greener, low carbon Europe – clean and fair energy transition, green and blue investment, circular economy, climate adaptation and risk prevention;
- PO3: a more connected Europe – mobility and regional ICT connectivity;
- PO4: a more social Europe – implementing the European Pillar of Social Rights;
- PO5: Europe closer to citizens – sustainable and integrated development of urban, rural and coastal areas through local initiatives.

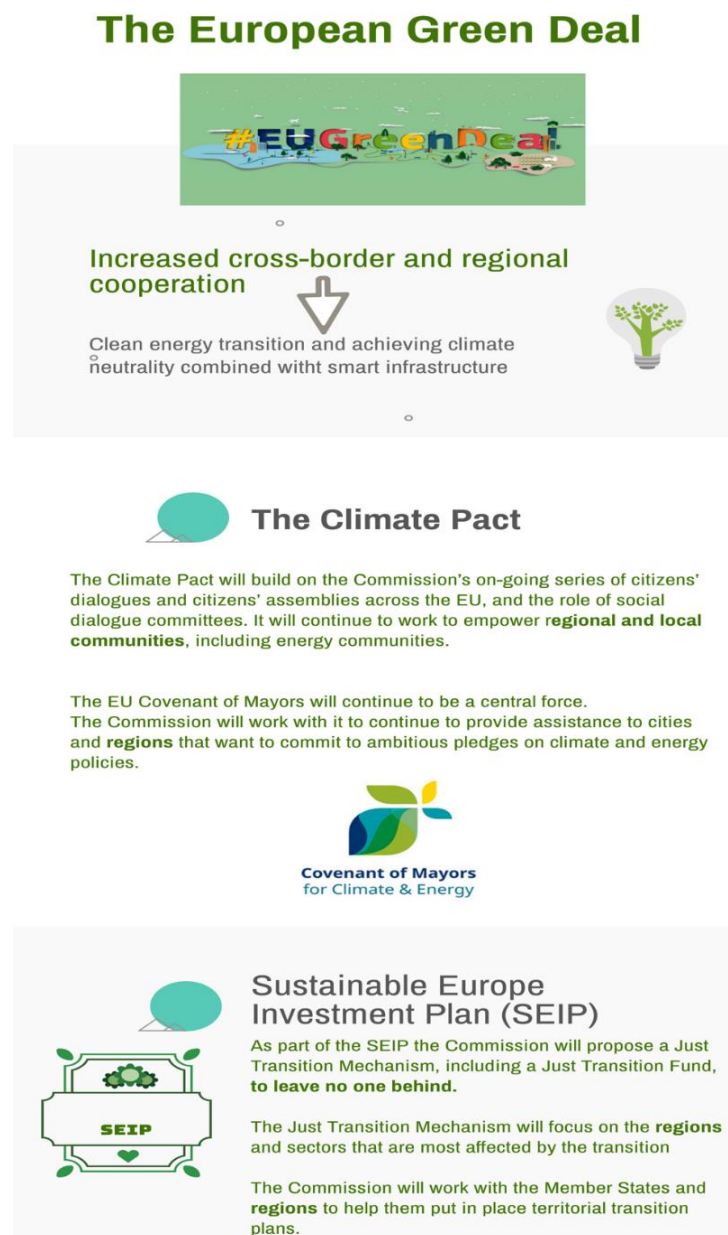
According to (CoR, 2019), *“the key novelty of the new programming period is the high focus on environmental issues. The majority of ERDF funding (65% to 85%) will focus on smart growth and the green economy, while the fund will also support activities such as connectivity, social issues and local development. The Cohesion Fund will continue to focus predominantly on environmental and transport infrastructure. Both funds are expected to contribute to the EU’s overall 25% commitment to the climate objective. Investments under the whole ERDF financial envelope*



are expected to contribute 30% to climate objectives, while this percentage rises to 37% under the Cohesion Fund.” Nevertheless, further support and priority is needed for less developed EU countries and especially for the Eastern EU block which are currently prioritising infrastructure development rather than business and social issues.

Figure 7 reviews the abovementioned points which were part of the European Green Deal and were related to the role and expected actions from regions and regional authorities. The infographic represents an interpretation by the authors and was produced using the Piktochart online visualisation tool.

Figure 7: Summary of the European Green Deal



Source: European Commission, 2019

(https://ec.europa.eu/info/sites/info/files/european-green-deal-communication_en.pdf)



This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie Innovative Training Networks (H2020-MSCA-ITN-2018) scheme, grant agreement number 814247 (ReTraCE).

3.4 THE EU CE ACTION PLAN AND FINAL CE PACKAGE

In 2015, the EC adopted an ambitious Circular Economy Action Plan (CEAP), which includes measures that will help stimulate Europe's transition towards a circular economy, boost global competitiveness, foster sustainable economic growth and generate new jobs. In the CEAP the economic actors (businesses and final consumers) are described as a key in driving this transition, the authorities (local, regional and national) are enablers of the transition and the EU has an overarching fundamental supporting role. The EC highlights that turning the plan into a reality will entail a long-term involvement at all levels, from MS, regions to cities, businesses and citizens. The need to integrate and complement the CEAP with national plans but also with global commitments taken by the EU and by EU MS is stressed; specifically, the UN 2030 Agenda for Sustainable Development and the G7 Alliance on Resource Efficiency. The action plan will be instrumental in reaching the SDGs by 2030, in particular Goal 12 of ensuring sustainable consumption and production patterns.

The Commission also promotes waste prevention and reuse through the exchange of information and best practices and by providing Cohesion Policy funding for projects at local and regional level, including interregional cooperation. Innovative forms of consumption can also support the development of the CE, e.g. sharing products or infrastructure (collaborative economy), consuming services rather than products, or using IT or digital platforms. These new forms of consumption are often developed by businesses or citizens, and promoted at national, regional and local level. The Commission supports these new business and consumption models through Horizon 2020 and through Cohesion Policy funding. Regarding the waste management, the EC is committed to provide technical assistance to MS encountering difficulties in implementation and to facilitate exchange of best practices with countries and regions that have successfully improved their waste management. The importance of raising consumer awareness in order to change behaviour to prevent food waste is also acknowledged, by supporting awareness raising campaigns at national, regional and local levels and the dissemination of good practices in food waste prevention. In terms of investment and innovation, important R&I funding opportunities are offered under the Cohesion Policy, with the CE being as one of the priorities highlighted by MS and regions in their Smart Specialisation Strategies.

The key role of SMEs, including social enterprises, to the circular economy transition is acknowledged as they are being particularly active in fields such as recycling, repair, and innovation. However, they also face specific challenges, related to funding and the difficulty of taking account of the circular economy if it is not their core business, implying the need to adjust and/or adapt a new business models. As set out in the 2014 Green Action Plan for SMEs, the Commission is acting to support these companies, analyse the barriers they encounter to a better use of resources and waste management, and to encourage innovation and cooperation across sectors and regions (European Commission, 2015).

Along with the CEAP, a complementary Annex has been disclosed with 54 detailed measures, and all of them have been delivered even though the work on some of the actions continues beyond 2019. The actions are categorised in the following groups: production, consumption, waste



management, market for secondary raw materials, sectorial action, food waste, critical raw materials, construction and demolition, biomass and bio-based materials, innovation and investments and monitoring (European Commission, 2015).

On 4th March 2019, the EC adopted a comprehensive report on the implementation of the CE Action Plan. The report presents the main achievements under the Action Plan and sketches out future challenges to shaping our economy and paving the way towards a climate-neutral, circular economy where pressure on natural and freshwater resources as well as ecosystems is minimised. This report, being a key document of the Final Circular Economy package, clearly states that achieving circularity should remain a pillar of the new Cohesion Policy over the 2021-2027 programming period. The Commission's proposal for a new ERDF and Cohesion Fund situates the CE as a priority in EU's efforts to achieve a greener and smarter Europe and excludes investments in landfills and facilities for the treatment of residual waste, in line with the waste hierarchy.

The strong stakeholders' engagement is vital for the transition; the systemic approach of the CEAP (2015) has given to all stakeholders a framework to replicate in order to foster partnerships across sectors and along value chains. Most of the MS have devised (or are in the process of devising and adopting) national strategies for the transition, and these frameworks are being replicated at lower levels, such as regional and local, which according to the EC brings the CE closer to the citizens and businesses. Another important initiative worth noticing is the establishment of the European Circular Economy Stakeholder Platform which brings together numerous networks and initiatives in the field. The Platform is a joint initiative by the European Commission and the European Economic and Social Committee (EESC) and it was launched in March 2017. It acts as a multiplier for best practices from the public and the private sectors and only in one year of operations, the Platform gathered and disseminated more than 300 examples of best practices, strategies and reports. The Platform brings together stakeholders active in the broad field of the circular economy in Europe. As a "network of networks", it goes beyond sectorial activities and highlights cross-sector opportunities, providing a meeting place for stakeholders to share and scale up effective solutions and address specific challenges. The Platform bridges existing initiatives at local, regional and national level, and supports the implementation of the CE. By sharing among other levels, also regional level practices, strategies, case studies but also contacts of regional stakeholders and governments the Platform definitely contributes to the transition to the CE (European Commission, 2019). This "network of networks" helps making the CE a reality by:

- Driving the circular economy in the Member States, in regional and local governments, and among civil society organisations and businesses;
- Strengthening cooperation among stakeholder networks to facilitate the exchange of expertise, good practices, knowledge and lessons learnt in the circular economy;
- Identifying barriers (such as social, economic and cultural) to the transition towards a circular economy with the intention of informing policy at all level of governance.

3.5 FURTHER INITIATIVES

Interreg Europe is an initiative funded by the ERDF that supports regional and local governments to develop and implement better regional policies across Europe. The ultimate idea is to enable regions to achieve their full potential, based on their strengths which is in line with the EU Smart Specialisation Strategy, while offering them opportunities not only for economic, but also social and environmental development. Interreg Europe is co-financing up to 85% interregional cooperation projects in several areas including low-carbon economy and environment and resource efficiency. Additionally, the Policy Learning Platform contributes to wider and continuous knowledge sharing of the collective network for regional policy stakeholders. Several related interregional cooperation projects were being funded in the area of CE implementation on the regional level. REPLACE is the most recent one, with the aim of developing a benchmark methodology that focuses on regional performance and identify the planned/existing efforts of regional stakeholders in that respect. CircE (European regions towards CE) is another related project with quite diverse Project Partners, and Bioregio as a project that looks into regional CE models and best available technologies for biological streams has already started producing important regional action plans which will be discussed in the following sections.



4 DATA COLLECTION STRATEGY AND DATABANK DESCRIPTION

The strategy for the data collection was devised with the aim of ensuring representativeness to the extent possible, primarily of the EU member states. Due to the scoping nature of this report, full coverage of all EU Member States and the encompassing 281 NUTS 2 regions was not feasible, hence representativeness of several types was attempted to be accomplished throughout the process. Geographical representativeness first of all was a goal, hence, countries and related regions from different parts of Europe were attempted to be included. Also, countries that recently joined the Union were also included, along with some of the first Member states of the Union itself. Additionally, the level of economic development was considered in order to include countries that are at a different economic, political and social stage and that certainly have different priorities on a national level (e.g. less developed countries are fighting high unemployment rates and lower GDP per capita). Certainly, one policy or one type of instruments of implementation cannot be applied to all countries and regions, and the approach adopted differs very much from many factors which were mentioned above.

Finally, several attempts of measuring circularity were considered, such as the EU Monitoring Framework on the progress towards a circular economy (European Commission, 2019), the POLITICO's CE index (Politico, 2018) and the Environmental Performance Index (EPI) (Wendling, Z. A. et al, 2018). The goal was not only to include countries that are leading the transition and have visible efforts in place, preliminary results of the implementation and better stakeholders' engagement, but also include countries that are lagging the implementation and that might have initial efforts and initiatives in that direction. Considering all this, the report and databanks will attempt to represent a balanced overview of the current status of policy efforts from several types and approaches, eliminating the biased representation of the current state if the databank was only focusing on the leaders of the transition. As already mentioned, knowledge and experience sharing is at the heart of the EU policies and the cross-regional collaborations via several projects already show great results. The collected strategies are listed in the Appendices at the end of the report.

Appendix B provides an overview of EU and wider level policy. This section collects initiatives deemed relevant to CE implementation, which acted as an umbrella for the lower level policies, which were devised based on them. The Paris Agreement and the 2030 Agenda for the SDGs were at the top of the list considering the importance and the global reach they have. Several EU legislations, directives, regulations are part of the list, followed by the CE Action Plan and the CE Package. Additionally, the two SWITCH-Asia Programmes were included. Such initiatives represent pivotal EU-funding schemes (started in 2007) focused on Asia. These include 106 grants running projects in collaboration with 19 Asian countries; projects focused on sustainable and renewable energy represent a significant portion of the total.

Appendix C deals with National policies describing efforts towards CE implementation, starting from national waste management plans to specific roadmaps and strategic documents for circular economy transition. When looking at the related policies at national level, it is apparent that some countries (Germany, France, Denmark, Belgium, The Netherlands) started devising comprehensive



and advanced initiatives aiming at optimising waste management several years ago. Such efforts were then followed by the elaboration of holistic CE strategies in the last couple of years. However, it is important to remark that, from 2018 onwards, similar initiatives have been undertaken also by countries which have more recently joined the European Union (such as Slovakia, Romania and Poland) and Southern-European member states (such as Greece).

In Appendix D examples of regional policies are reported. This is the largest databank, given the specific focus of this report. It consists of policy efforts at regional, but also municipal and city levels. As already mentioned in Section 3.2, for the purpose of funds distribution, the NUTS 2 regions were categorised into three groups: more developed regions, transitioning regions and less developed regions based on the regional GDP per capita (expressed as PPS compared to the EU average). The categorisation, depicted in Figure 5, is used in the raw data collected in Appendix A (NUTS Classification) which presents a master file used for the production of Appendix D (regional policies). Namely, the raw data collected for NUTS 2 regions, used in Appendix A and Appendix D in order to categorise the stage of development of the regions, are based on the NUTS 2016 classification as set out in the amending Regulation (EU) 2017/2391 of the European Parliament and of the Council of 12 December 2017. The NUTS 2016 classification is valid from 1 January 2018. The GDP, and hence the GDP per capita is a measure for total economic activity in a region, and therefore can be used for comparison purposes of the degree of economic development between regions. However, GDP does not measure the available income per capita, hence the PPS (purchasing power standard) is introduced by Eurostat for that purpose. The PPS is an artificial currency that considers the various national price levels discrepancies, allowing more meaningful comparison of economic indicators across regions. Considering all this, using Figure 8 as a guidance and explanation for the collected Regional policies, column four represents the development stage of the region, which is used in the analysis (only available for NUTS 2 level).

Figure 8: NUTS 2 classification

Group of Region	GDP per capita (PPS), EU28=100 (2017 data)
More developed regions	≥ 90
Transition regions	≥ 75 - < 90)
Less developed regions	< 75

Regarding the regional policies collected, the distribution between the NUTS levels depends from country to country. Most of the policies were developed at NUTS 2 level, due to the practical arguments presented previously and the importance of the regions as administrative units in the EU policy and financial support. Regions that developed their strategic documents and roadmaps at NUTS 2 level did so mainly as a result of the EU support through the already mentioned funds and initiatives (such as the BIOREGIO project, part of the Interreg initiative). These resulted into regional Action Plans in the Päijät Häme Region in Finland, Central Macedonia in Greece, Pays De La Loire in France and Castilla-La Mancha in Spain. Also, a degree of cross-fertilisation can be observed: for instance, the Circular economy roadmap of the Päijät Häme Region in Finland has inspired project partners in Slovakia. This resulted in the introduction of bio-based CE activities in the economic and social development programme in the Nitra self-governing region.

It could be concluded that even the less developed and transitioning regions are starting to develop policies related to the CE, implying that relevant regional stakeholders have comprehended the importance, benefits but also the urgency of implementing the CE agenda as part of their already existing policies and strategies.

4.1 EXAMPLARY CASES

Three exemplary cases of strategies were analysed and presented in the following pages, representing, respectively, NUTS 1 (Scotland), NUTS 2 (Region of Central Macedonia) and NUTS 3 (Päijät-Häme region) level regions. A comparison is provided in Table 3. It could be seen that the highest level example (NUTS 1) does not refer to any specific policy instrument and does not refer to any other regional framework related to CE. All NUTS level strategies are referring to existing National frameworks which support the transition towards CE; only the selected NUTS 2-level strategy is not mentioning the EU CE frameworks. The analysed NUTS 1 strategy has employed some specific priority areas (namely, main industrial sectors). Lower level strategies (NUTS 2 and NUTS 3) have presented objectives and actions, at a higher level of detail for the NUTS 3-level policy.

All the strategies emphasised the role of stakeholders, with a growing level of detail spanning from NUTS 1 (more general and wide level) to NUTS 3 (more granular and specific level). In the case of the NUTS 2 and NUTS 3 analysed strategies, the explicit roles of the region and regional authorities (e.g. Regional Council) were clearly mentioned. In the case of the NUTS 1 strategy for Scotland, the role of the national government is mentioned. Figures 9, 10 and 11 below represent a synthetic authors' interpretation of the strategies.

Table 3: Comparison of the policy context between the strategies

NUTS Level	Reference to EU Frameworks	Reference to National Frameworks	Reference to Regional Frameworks	Policy instrument addressed
NUTS 1	✓	✓	✗	✗
NUTS 2	✗	✓	✓	Regional Operational Programme for Central Macedonia 2014 – 2020
NUTS 3	✓	✓	✓	Finnish Structural Fund Programme for 2024 – 2020

Figure 9: NUTS 1 Strategy example



Figure 10: NUTS 2 Strategy example



POLICY CONTEXT

- ✓ **The Action Plan aims to impact:** Investment for Growth and Jobs programme
- ✓ **Name of the policy instrument(s) addressed:** Regional Operational Programme of Central Macedonia 2014-2020
- ✓ **National Framework related to CE:** The Revised National Plan for Waste Management and the National Strategy for CE
- ✓ **Regional Framework related to CE:** Action Plan for CE and revised Regional Waste Management Plan

OBJECTIVES & ACTIONS

- ✓ **Main objective:** Strengthening cooperation in the energy utilization of biowaste
- ✓ **Specific Objective 1:** Strengthening cooperation on innovation/R&D between enterprises and research centres/institutions
- ✓ **Specific Objective 2:** Institutionalising cooperation, coordination and mediation in the sector
- ✓ **Action 1:** Pilot projects of cooperative innovation/R&D in the field of biowaste energy utilisation
- ✓ **Action 2:** Creation of a structure for supporting the biowaste value chain

STAKEHOLDERS INVOLVED

- ✓ **Region of Central Macedonia**
- ✓ **Managing Authority** of the Operational Programme for the Region of Central Macedonia
- ✓ **Aristotle University of Thessaloniki** - Laboratory of Heat Transfer and Environmental Engineering
- ✓ **Enterprises** in the biowaste value chain / associations - bodies

powered by



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Source: Regional Development Fund of Central Macedonia, 2019
(<https://www.interregueurope.eu/bioregio/action-plans/>)

Figure 11: NUTS 3 Strategy example



POLICY CONTEXT

- ✓ **EU Circular Economy and Bio-economy Programs:** EU Circular Economy Policy and the EU Bioeconomy Strategy 2018
- ✓ **National Programmes related to Bio-based CE:** Finnish Road Map to a CE 2016-2025 and the Finnish Bioeconomy Strategy
- ✓ **Regional Programmes related to Bioeconomy:** Päijät-Häme Regional Development Strategy and Plan for 2018-2021 and the Päijät-Häme Roadmap Towards CE
- ✓ **Name of the policy instrument(s) addressed:** Finnish Structural Fund Programme for 2014 - 2020/Sustainable Growth and Jobs

ACTIONS

- ✓ **Action 1:** Promoting a sustainable bio-based CE and enhancing nutrient cycles
- ✓ **Action 2:** Promoting a sustainable bio-based CE and enhancing nutrient cycles
- ✓ **Action 3:** Promoting the use of bio-products and bioenergy
- ✓ **Action 4:** Establishing Päijät-Häme as an international reference area for CE

STAKEHOLDERS INVOLVED

- ✓ **Päijät-Häme Regional Council**
- ✓ **Häme Centre for Economic Development, Transport and the Environment**
- ✓ **City of Lahti**
- ✓ **City of Heinola**
- ✓ **Finnish Forest Centre**
- ✓ **Lahti Region Development LADEC Ltd**
- ✓ **Päijät-Häme Grain Cluster**
- ✓ **Lahti Energy Ltd**
- ✓ **Päijät-Häme Waste Management Ltd**
- ✓ **LABIO Ltd**
- ✓ **Lahden Työn Paikka (a social enterprise owned by the City of Lahti)**
- ✓ **LUT University**
- ✓ **University of Helsinki**
- ✓ **Aalto University**
- ✓ **Lahti University of Applied Sciences Ltd**

Source: Päijät-Häme Regional Council and Lahti University of Applied Sciences, 2018
(https://www.interregeurope.eu/fileadmin/user_upload/tx_tevprojects/library/file_1559896937.pdf)

5 FUTURE DEVELOPMENTS

As already mentioned, the databank is a non-exhaustive list of policies, strategic documents and roadmaps on regional, national and wider levels, which will be updated on a regularly basis throughout the duration of the Project. This will be done based on the work looking at the literature and the academic knowledge base but also in the practical implementation and attempts for circular economy implementation. The current version of the databank was part of the WP4 deliverable (D4.1) and as previously stated was a result of the joint work between the ESRs in WP4, led by SEERC. However, this database will be continuously enriched with inputs from the whole ReTraCE consortium. The benefits of creating (as much as possible) comprehensive database with related CE policy efforts on several levels, but mostly focusing on regional ones, will be beneficial for the whole consortium, but also for CE-related stakeholders, which will be able to consult this database. Despite the fact of several existing attempts to create a collection of CE policy efforts, there is still a lack of a comprehensive databank and this report is the initial step for creating that.



6 CONCLUSIONS

This report has given an account of the role of policies to enable and create appropriate conditions, i.e. an ecosystem that would allow a bottom-up emergence of CE, by means of fostering entrepreneurship and innovation. For that purpose, the first section of the report was looking at the regional policies and their importance in the EU, focusing on the place-based resilient regional development theories, the innovation systems and the place-based approach for innovating as well as the Smart Specialisation agenda and its tangent points with the CE related policies. Taking into account the needed consensus that must be reached among different stakeholders (research institutions, industry, local and national governments) in order to establish and create thriving conditions for innovation and entrepreneurship, the Triple and Quintuple Helix model was analysed and proposed as a solution for top-down and bottom-up policy making. The second section of the report laid down the regional dimension of CE implementation, arguing the pioneering role of cities and regions in the transition to a CE and their function as hubs for circular change. In that respect, several EU policy documents were analysed through the lenses of regional circular implementation. The third section covered the data collection strategy and description of the databank; some exemplary cases of regional strategies have also been analysed. The last section of the report is essentially the database itself, presented in the Appendices of the report, listing the collected regional, national, EU and wider level policies and strategies that represent efforts and attempts towards making the circular economy a reality.



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APPENDICES

- A. NUTS CLASSIFICATION (see Excel file)
- B. EU AND WIDER LEVEL POLICIES
- C. NATIONAL POLICIES
- D. REGIONAL POLICIES (BELOW NATIONAL)



A. NUTS CLASSIFICATION

The employed NUTS classification is reported in the [Appendix A](#).



B. EU AND WIDER LEVEL POLICIES

Name of the policy	Area of coverage	Year
2030 Agenda for Sustainable Development (SDGs)	UN Member States	2015
The Paris Agreement	Global	2016
EU Cohesion Policy for 2014–2020	EU	2014
Final Circular Economy Package	EU	2019
2018 Circular Economy Package	EU	2018
EU Action Plan for the Circular Economy	EU	2015
The EU Green Action Plan (GAP) for SMEs	EU	2014
The 7th Environment Action Programme (EAP)	EU	2013
REACH: Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals - EC/1907/2006	EU	2006
CLP: Regulation on classification, labelling and packaging of chemical substances and mixtures EC/1272/2008	EU	2008
EMAS Environmental Management and Audit Scheme regulation III (EC) No 1221/2009	EU	2009
Eco-labelling regulation (EC) No 66/2010	EU	2009
Energy labelling directive 2010/30/EU	EU	2010
The Eco-design directive 2009/125/EC	EU	2009
WEEE: Waste Electrical and Electronic Equipment Directive 2012/19/EU	EU	2012
RoHS: Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment 2002/95/EC	EU	2003
Packaging and Packaging Waste Directive 94/62/EC	EU	1994
End-of-Life Vehicle directive 2000/53/EC	EU	2000
SWITCH-Asia I Programme*	EU funding focused on Asia	2007
SWITCH-Asia II Programme*	EU funding focused on Asia	2018



C. NATIONAL POLICIES

Name of the policy	Area of coverage	Year
Austrian Resource Efficiency Action Plan (REAP)	Austria	2012
Federal Waste Management Plan 2017 part 1 & 2/Bundes-Abfallwirtschaftsplan 1 & 2	Austria	2017
Austrian Action Plan for Sustainable Public Procurement	Austria	2010
Belgium as pioneer of the circular economy/Vers une Belgique pionnière de l'économie circulaire	Belgium	2014
Let's make the economy work by developing the circular economy in Belgium/Ensemble faisons tourner l'économie en développant l'économie circulaire en Belgique	Belgium	2016
Planned obsolescence: Belgian policy and measures to protect consumers/L'obsolescence programmée : politiques et mesures belges de protection du consommateur	Belgium	2017
Several Opinions of the State Council on Accelerating the Development of Circular Economy	China	2007
Law of the People's Republic of China on Circular Economy Promotion (CE Promotion Law)	China	2008
Notice about the Investment and Financing Policy to Support the Development of Circular Economy	China	2010
Development Strategy and Recent Action Plan of Circular Economy	China	2013
Strategy for circular economy/Strategi for circular økonomi	Denmark	2018
Leading the cycle: Finnish road map to a circular economy 2016-2025/Kierrolla kärkeen: Suomen tiekartta kiertotalouteen 2016- 2025	Finland	2016
Roadmap for the Circular economy - 50 measures for a 100% circular economy/Feuille de route Économie circulaire : 50 mesures pour une économie 100% circulaire	France	2018
German Resource Efficient Programme II: Programme for the sustainable use and conservation of natural resources/Deutsches Ressourceneffizienzprogramm II: Programm zur nachhaltigen Nutzung und zum Schutz der natürlichen Ressourcen	Germany	2016



National circular economy strategy	Greece	2018
Towards a Circular Economy Model for Italy/Verso un modello di economia circolare per l'Italia	Italy	2017
The National Waste Management Plan 2014-2020	Lithuania	2014
Lithuanian Law for the Management of Packages	Lithuania	2001
Waste Management Act of the March 21st 2012/Loi du 21 Mars 2012 relative à la gestion des déchets	Luxembourg	2012
The national Waste Management Plan/Plan general de gestion des déchets	Luxembourg	2010
Road map – transformation towards a circular economy/Mapa drogowa Transformacji w kierunku gospodarki o obiegu zamkniętym	Poland	2018
Leading the transition: a circular economy action plan for Portugal 2017-2020/Liderar a transição: plano de ação para a economia circular em Portugal 2017-2020	Portugal	2017
Portugal 2020 is a partnership agreement between Portugal and the EC*	Portugal	2014
PO SEUR - Operational Programme for Sustainability and Efficient Use of Resources, established through an Execution Decision from the EC and is one of the 16 programmes created for the operationalization of Portugal 2020 Strategy*	Portugal	2014
The Energy Efficiency Program in Public Administration “ECO.AP”	Portugal	2011
National Waste Management Plan	Romania	2017
Waste prevention programme of the Slovak Republic for 2019-2025/Program predchádzania vzniku odpadu Slovenskej republiky na roky 2019-2025	Slovakia	2019
Waste Management Plan of the Slovak Republic for 2016 – 2020	Slovakia	2015
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The National Waste Management plan 2009-2021/Landelijk Afvalbeheerplan 2009-2021	The Netherlands	2010
The National Economic and Social Development Plan (The Twelfth Plan, 2017-2021)	Thailand	2017

*Substantial Programme, not policy



D. REGIONAL POLICIES (BELOW NATIONAL LEVEL)

Name of the policy	Country	Territory of implementation	NUTS level	Year
Provincial waste management plan for Burgenland	Austria	Burgenland	NUTS 2	Updated 2013
Carinthian waste report and waste management concept	Austria	Carinthia	NUTS 2	3rd update 2012
Lower Austrian waste management plan	Austria	Lower Austria	NUTS 2	planning period 2016 - 2020
Upper Austrian waste management plan	Austria	Upper Austria	NUTS 2	2011
Salzburg waste management plan	Austria	Salzburg	NUTS 2	2006
Provincial waste management plan	Austria	Styria	NUTS 2	2010
Waste management concept for the Tyrolean provincial administration	Austria	Tyrol	NUTS 2	2013
Vorarlberg waste management plan	Austria	Vorarlberg	NUTS 2	2 nd update 2006, 3 rd update in prep.
Viennese waste prevention programme and the Viennese waste management plan	Austria	Vienna*	NUTS 2	planning period 2013 - 2018
OekoBusiness Wien – The Environmental Service Package of the City of Vienna	Austria	Vienna*	NUTS 3/City	Launched 1998
Vision 2050, a long-term strategy for Flanders	Belgium	Flanders	NUTS 1	2016
Circular Flanders/Vlaanderen Circulair	Belgium	Flanders	NUTS 1	2017
Regional programme for circular economy 2016–2020/Programme régional en économie circulaire 2016–2020/Gewestelijk programma voor circulaire economie 2016 – 2020	Belgium	Brussels capital region*	NUTS 1, NUTS 2, NUTS 3	2016
Marshall plan 4.0	Belgium	Walloon Region	NUTS 1	2015
The Green Deal Circular Purchasing	Belgium	Walloon Region	NUTS 1	2019
Walloon Plan for Waste-Resources (PWD-R)	Belgium	Walloon Region	NUTS 1	2018



Circular Economy Road Map/ Päijät-Hämeen kiertotalouden tiekartta - Päijät-Häme	Finland	Päijät-Häme	NUTS 3	2017
Päijät-Häme Bio-based Circular Economy Action Plan	Finland	Päijät-Häme	NUTS 3	2018
A Strategy for a Circular Economy in Normandy/Stratégie pour une économie Circulaire en Normandie	France	Normandy	NUTS 1	2019
White Paper on the circular economy of Greater Paris	France	Grand Paris region*	Admin. structure ~NUTS 2	2015
Circular economy plan for Paris/Plan Economie Circulaire de Paris	France	Paris*	NUTS 3	2017
Action plan towards bio based circular economy	Greece	Central Macedonia	NUTS 2	2019
Emilia Romagna regional bill 16/2015 (containing policies and strategies of Regional Law 16/2015 and the Regional Waste Management Plan)	Italy	Emilia Romagna region	NUTS 2	2015
Zero Waste Strategy	Italy	Capannori	City	2007
Strategy for sustainable and circular consumption in Oslo/Strategi for bærekraftig og sirkulært forbruk i Oslo	Norway (not an EU member)	Oslo*	City	2018
Roadmap for a circular city of Porto in 2030/Roadmap para a cidade do Porto circular em 2030	Portugal	Porto	NUTS 3	2017
Development Strategy of the Malopolska Region 2011-2020	Poland	Malopolska	NUTS 2	2011
Regional Operational Programme for the Malopolska region 2014-2020	Poland	Malopolska	NUTS 2	2014
Regional Operational programme from the Portugal 2020	Portugal	North	NUTS 2	2014
Regional Operational programme from the Portugal 2020	Portugal	Center	NUTS 2	2014



Regional Operational programme from the Portugal 2020	Portugal	Lisbon*	NUTS 2	2014
Regional Operational programme from the Portugal 2020	Portugal	Alentejo	NUTS 2	2014
Regional Operational programme from the Portugal 2020	Portugal	Algarve	NUTS 2	2014
Regional programme in the autonomous region from the Portugal 2020	Portugal	Azores	NUTS 2	2014
Regional 1 programme in the autonomous region from the Portugal 2020	Portugal	Madeira	NUTS 2	2014
Smart specialization strategy of South Muntenia region: Innovative instrument devoted to regional economic development	Romania	South Muntenia	NUTS 2	2015
Program of economic and Social Development of Nitra region in Slovakia	Slovakia	Nitra	NUTS 3	2016
Strategy for the Transition to Circular Economy in the Municipality of Maribor/Strategija prehoda mesta Maribor v krožno gospodarstvo	Slovenia	Maribor	Municipality	2018
Extremadura 2030. Strategy for green and circular economy. Action plan of the Government of Extremadura /Extremadura 2030. Estrategia de economía verde y circular. Plan de acción de la Junta de Extremadura	Spain	Extremadura	NUTS 2	2017
Promoting the Green and Circular Economy in Catalonia/Impuls a l'economia verda i a l'ecomia circular	Spain	Catalonia	NUTS 2	2015
Andalusian Strategy on Circular Bio-economy	Spain	Andalusia	NUTS 2	2018
Madrid 7R Economía Circular	Spain	Madrid*	NUTS 2	2017
The Basque Environmental Strategy of Sustainable Development 2002-2020	Spain	Basque Country	NUTS 2	2002



Environmental Framework programme of the Basque Country 2020	Spain	Basque Country	NUTS 2	2002
Integrated waste management plan of Castilla-la Mancha/Plan Integrado de Gestión de Residuos de Castilla-la Mancha	Spain	Castilla-la Mancha	NUTS 2	2016
La Rioja: Waste Plan 2016-2026/Plan Director de Residuos de La Rioja 2016 - 2026	Spain	La Rioja	NUTS 2	2016
Circular Taipei 2018-2022 White Paper	Taiwan	Taipei	City	2018
Amsterdam Circular - a vision and route map for the city and region/ Amsterdam circulair - een visie en routekaart voor de stad en region	The Netherlands	Amsterdam	City	2016
Stepping stones to circular economy 2019-2028 in Brabant/ Bouwstenennotitie circulaire economie 2019-2028, Brabant beweegt in kringlopen	The Netherlands	Brabant	NUTS 2	2019
Rotterdam for circular economy/Rotterdam gaat voor circulair	The Netherlands	Rotterdam	Municipality	2017
Rotterdam Circularity Programme 2019-2023	The Netherlands	Rotterdam	Municipality	2019
Hague – transition to a sustainable economy/ Circulair Den Haag – transitie naar een duurzame economieCircular	The Netherlands	The Hague	NUTS 3	2018
Nederland - Northern Netherlands Circular - roadmap to a circular northern Netherlands/ Noord-Nederland Circulair - routekaar naar een circulair	The Netherlands	Northern Netherlands	NUTS 1	2018
A Circular Economy / Zero Waste Strategy for Derry City and Strabane District Council	UK	Derry and Strabane	NUTS 3	2017



Circular Glasgow: a vision and action plan for the city of Glasgow	UK	Glasgow	NUTS 3	2016
London's Circular Economy Route Map	UK	London	NUTS 1	2017
Circular Peterborough: Circular City Roadmap - an ambitious plan & performance monitoring framework towards 2021	UK	Peterborough	NUTS 3	2018
Making things last: a circular economy strategy for Scotland	UK	Scotland	NUTS 1	2016

