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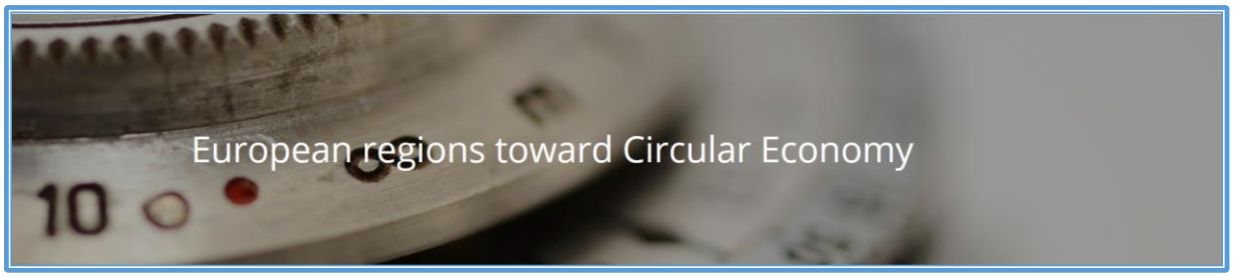

CircE Synoptic report

Opportunities, Barriers and Value Chain analysis

Annex 1: Opportunities

13 august 2018

Annex 1.

Opportunities for the sectors by partner, type of action, source and value chain.

4.1. Biomass

In the tools there are 14 opportunities included for Biomass of which 5 actions of policy making and 4 actions of industrial development. The source is mostly not known and the position in the value chain was not mentioned.

	number
Total number of opportunities	14
Type of Action	Industrial development 4 Legislation 1 Policy making 5 R&D 2 Unknown 2
Source	Internal gaps 1 cross regional - cross sectoral 1 unknown 12
Position in the value chain	Not specified

Biomass		
TYPE OF ACTION	**OPPORTUNITY**	**ABSTRACT**
Industrial development		
PP07-S5-007	Pellet plant	Construction of a pellet plant for utilization of wood waste generate from Municipal enterprise for waste treatment – Sofia and feeding the administrative buildings of Sofia Municipality

PP04-S5-008	Local Cultivation	Instead of importing wood pulp the cultivation of regional miscantus, grasses and hemp for different kinds of sectors/(chemical) industry
PP03-S5-015	Creating local links between entitles cooperating within chain of values	Start pilot project to identify barriers and initiators to create bio-community
PP03-S5-016	Creating local biorefinery	Support for development of creating biorefinery, which enable of producing biomass with high standardized parameters consistent with expectation of the customers (industry)
R&D		
PP03-S5-014	Identification of potential of local biomass	Identification of the source of bio-material of local demand. There is no reason for long distance transportation of biomass due to environmental issues. Both the supplier and the recipient should come from the same region as bio-material
PP03-S5-017	Models of economic activities in bio economy	Identification of promotional activities of attractive areas for agritourism development and new forms of services development
Policy making		
PP03-S5-018	Increase of local biomass usage and increase of usage of biomass waste for power industry	Activities increasing production of domestic biomass for energy production, from local sources located not further than 200km. There will be proposed policy changes in this regard

PP03-S5-019	Creation of environment to develop around one installation of biogas plant in rural municipality and rural-urban municipality (agricultural biomass producers)	Support opportunities and regulatory barriers to the creation of biogas plants.
PP03-S5-020	Stimulating demand for bioproducts	Promotional campaigns for bioproducts launched to educate consumers that they can have the same or better attributes than other products, and at the same time are environmentally friendly and are produced based on natural ingredients
PP03-S5-022	Support start-up development which specialize in industrial biotechnology	Proposed support programs for new entrepreneurs operating in the economy sector and realizing idea of CE
PP03-S5-023	Strengthening of R+D activities	Due to significant potential of the bio-economy, there will be identification of barrier concerning research development and introduce of mechanisms to search for new bio-based products and replace raw materials with bio-materials
Legislation		
PP03-S5-021	Creating norms and standards for bioproducts	The activities to standardize bioproducts should increase of consumer confidence

Unknown		
PP03-5-024	The promotion of agricultural cooperatives	Increasing the participation of small surrounding farms and the attainment of sufficient quantities of food, offered for green public procurement
PP03-S5-025	Construction of a pellet plant for utilization of wood waste generate from municipal enterprise for waste treatment	Recycling and recovery of incoming wood waste from households. Separated biodegradable waste not suitable for composting will be used in the production of pellets, which will increasing the share of recycled / recovered municipal waste.

SPECIFICATION BY SOURCE, SAME PROJECTS AS ABOVE

Biomass			
SOURCE	**OPPORTUNITY**	**TYPE OF ACTION**	**VALUE CHAIN**
internal gaps			
PP07-S5-007	Pellet plant	industrial development	recycling (open loop)
cross sectoral			
PP04-S5-008	Local Cultivation	industrial development	
Unknown			
PP03-S5-014	Identification of potential of local biomass	R&D	

PP03-S5-015	Creating local links between entitles cooperating within chain of values	industrial development policy making	
PP03-S5-016	Creating local biorefinery	industrial development policy making	
PP03-S5-017	Models of economic activities in bio economy	R&D	
PP03-S5-018	Increase of local biomass usage and increase of usage of biomass waste for power industry	policy making industrial development	
PP03-S5-019	Creation of environment to develop around one installation of biogas plant in rural municipality and rural-urban municipality (agricultural biomass producers)	policy making industrial development	
PP03-S5-020	Stimulating demand for bioproducts	policy making	
PP03-S5-021	Creating norms and standards for bioproducts	legislation	
PP03-S5-022	Support start-up development which specialize in industrial biotechnology	policy making R&D	
PP03-S5-023	Strengthening of R+D activities	policy making	
PP03-S5-024	The promotion of agricultural cooperatives		
PP03-S5-025	Construction of a pellet plant for utilization of wood waste generate from municipal		

	enterprise for waste treatment		

4.2. Built environment

In the tools there are 27 opportunities included for Build environment of which 7 actions of legislation and innovation. For source mostly internal gap is mentioned and for the position in the value chain use/service.

	number
Total number of opportunities	30
Type of Action	Legislation 7 Innovation 8 Industrial development 5 R&D 4 Policy making 4 Social awareness 1 Education & training 1
Source	Internal gaps 10 Cross regional 2 Cross sectoral 3Unknown 15
Position in the value chain	Use/service 7 Reuse 3 Primary material 1 Unknown 19

Building		
TYPE OF ACTION	**OPPORTUNITY**	**ABSTRACT**
R&D		

PP05-S5-002	Carry out a scoping study into how circular economy can be delivered through the development and regeneration of the Old Oak and Park Royal sites in north west London.	Create Study into how circular economy could be incorporated into the major development site at Old Oak and Park Royal
PP05-S5-007	Identify material requirements of major infrastructure and other developments in London.	Undertake a study to identify key demolition and construction that is within the London Infrastructure plan to identify key building materials that could be recovered and what is needed, and investigate need for location and space for storage within London
PP05-S5-010	Research constraints on refit, re-use and demolition activities.	Identify key barriers and how to overcome these
PP05-S5-012	Carry out research on under-utilisation of public and private buildings in London.	Identify underutilised buildings and potential cost savings/income generation opportunities for building owners
Innovation		
PP05-S5-014	use 'meanwhile' spaces (unused spaces created during redevelopment that can be used for temporary	

	positive uses) to demonstrate circular economy work.	
PP05-S5-015	Pilot new circular economy business models in the operation of buildings.	Develop a circular office programme with Business in the Community to identify how London offices can help deliver circular economy. This could include IT, office fit-out , uniforms
PP01-S5-009	Implementation of a web platform	A cross-sectorial web platform should be implemented for the creation of a virtual market containing the description, the volumes and the geographical localization of the waste materials coming from different sectors (from construction to textile to other sectors). The managers of the plants should provide the platforms with data related to their activities. In the Lombardy Region, ANCE Lombardia (construction sector), ANPAR (recycling sector) and Centrocot (textiles sector) are setting up or already testing similar tools, separately.
PP05-S5-011	Create/work with existing online web platform for trading of recovered building materials	Investigate market need, and learn from other existing platforms such as Globe-chain and Flow to set up web platform for building materials
PP05-S5-009	Seek funding to ensure that London is home to projects that demonstrate circular economy, building on learning from ongoing research projects.	Merton

PP05-S5-003	Promote novel technologies that enable circular economy within the built environment.	Work with sector to create collaboration hub which helps share best practice
PP05-S5-006	Invest in innovative circular economy building design and products.	Utilise LWARB funding and EU funding to invest in innovative products
PP8-S5-004	Diffused hotels	The diversified hotel (RH) is an innovative form of organization in tourism, focusing on the implementation of accommodation activities and business networking in tourism cooperatives.
Legislation		
PP01-S5-010	Enhance (the quality and traceability of) the procedure of waste management, from collection to recycling in built environment	This opportunity can be signifcantly supported through the implementation of the EU Protocol for built environment. This opportunity can be significantly supported through the implementation of the EU Protocol for built environment, in particular working for the best transposition and effective use in each European contest (country), with specific and effective sound and coherent links with the national and regional laws, in order to make it really operational. This Protocol complies with the Construction 2020 strategy, as well as the Communication on Resource Efficiency Opportunities in the Building Sector. The Protocol consists of 5 components: the first three are based on the C&D waste management chain and two are of a horizontal nature.

		a. Waste identification, source separation and collection; b. Waste logistics; c. Waste processing; d. Quality management; e. Policy and framework conditions. Widespread the protocol at a national scale is an opportunity. This Protocol has been developed for application in all 28 EU countries and has the following target groups of stakeholders.
PP01-S5-011	Increase of secondary raw materials use in the built environment	The increase of secondary raw materials use in the built environment is an important opportunity that can be boosted in particular increasing the percentage of secondary raw materials in the construction of infrastructure (e.g. binder, milled material, aggregates, concrete, environmental recovery). In order to develop this opportunity an important policy option is to stimulate and lobby the regional politicians for developing new technical and specific law.
PP01-S5-012	Reuse of built environment waste materials in other sectors	An alternative destination and application can be thought for the waste materials coming from the built environment.
PP04-S5-010	Demanding % waste material in new products	The government can demand that % for new products come from waste material
PP01-S5-005	Reverse logistics in built environment	In order to avoid the delivery of inert waste in landfill any more, it could be to set up a CLSC (Closed-Loop Supply Chain). Building materials would be extended after the end of life of the buildings by keeping them in the loop through systematically extraction from buildings and reusing them in some parts of other buildings or secondary markets. This

		procedure might include reusing the extracted items directly or after different levels of recovery processes.
PP01-S5-006	Waste recover from renovation activities	Concerning Italy, one of the flow of C&D waste decays from building renovation; in particular the main feature is the micro-renovation (ANCE LOMBARDIA-ANPAR): renovation activities on small buildings or on small parts of them, with a high percentage of historical buildings. Waste materials have to be recovered and reused for other purposes.
PP01-S5-007	Increase the (quality of the) regeneration of (target) city areas and thus increase the recovery of construction and demolition waste	An important role for achieving this result (perhaps the most significant role) can have the standardization policies on urban regeneration. This seems to be the most important policy option with a key role that it can has in developing CE. The standardization policies on urban regeneration will address the recovery of city areas and meanwhile the recovery of important quantities of construction and demolition waste. The Lombardy Region has launched a working group to implement it.
Industrial developmen t		
PP01-S5-013	Certification for sustainable buildings	As the energy classification for buildings, this opportunity wants to exploit a building classification depending on its sustainability. Different degrees of certifications can be reached depending

		on the environmental footprint of the building. One of the fundamental issues of the footprint is related to the materials used. The percentage of recycled materials used during its construction (e.g. containing recycled and manufactured aggregates, fly ashes) should reduce the value of the building footprint. This certification could boost the use of recycled materials and aggregates in the construction sector.
PP04-S5-009	Energy positive buildings	Built energy positive buildings, who can support their own energy needs
PP04-S5-011	Urban mining	Re-use of build material when demolishing buildings for new building projects. Example: company New Horizon
PP01-S5-008	Selective demolition	The selective disassembly of buildings should be implemented to facilitate the reuse or recycling of valuable materials such as wood, structural brick, and highly functional finished components like windows, doors, cabinets, and decorative materials.
PP08-S5-002	Wood Production Chains	We promote the processing and processing of wood and the development of the domestic wood industry, which is our key business partner.
Policy making		
PP05-S5-004	Incorporate relevant circular economy principles into	Work to influence GLA through workshops etc to ensure London plan includes circular economy. This will include investigating how a circular economy statement policy could be included in the

	London Plan and local plans.	London Plan, and what guidance would be needed. This could include guidelines for deconstructing buildings and treatment of waste if a gap exists
PP05-S5-05	Promotion of built environment good practice/voluntary agreements	Identify appropriate agreements and work to promote with developers, construction companies etc operating in London. This could also include training on reuse of materials for designers, developers, construction companies etc.
PP05-S5-008	Encourage or require reuse of materials: Work towards setting a re-use target for construction projects in London	Carry out research on developing the market in re-used/reclaimed products including space and logistics required. Identify potential material specific targets, or reuse targets
PP07-S5-006	Guidelines preparation	Preparation of guidelines containing sequence actions taken in case of destruction of buildings and the subsequent treatment of generated waste
Social awareness		
PP05-S5-013	Share good practice amongst facilities managers to implement circular economy principles in the running of their buildings.	
Education and training		
PP05-S5-001	Introduce circular economy	

	principles into relevant university courses.	

SPECIFICIED BY SOURCE, SAME PROJECTS AS ABOVE

Building			
SOURCE	**OPPORTUNITY**	**TYPE OF ACTION**	**VALUE CHAIN**
internal gaps			
PP01-S5-011	Increase of secondary raw materials use in the built environment	legislation	
PP01-S5-012	Reuse of built environment waste materials in other sectors	legislation	
PP01-S5-013	Certification for sustainable buildings		
PP04-S5-009	Energy positive buildings	industrial development	
PP04-S5-010	Demanding % waste material in new products	legislation	
PP04-S5-011	Urban mining	industrial development	
PP01-S5-005	Reverse logistics in built environment	legislation	
PP01-S5-006	Waste recover from renovation activities	legislation	
PP01-S5-007	Increase the (quality of the) regeneration of (target) city areas and thus increase the	legislation	

	recovery of construction and demolition waste		
PP01-S5-008	Selective demolition	industrial development	
cross regional			
PP01-S5-009	Implementation of a web platform	innovation	
PP01-S5-010	Enhance (the quality and traceability of) the procedure of waste management, from collection to recycling in built environment	legislation	
cross sectorial			
PP08-S5-002	Wood Production chains	Industrial development	Primary material processing
PP08-S5-004	Diffused hotels	Innovation	Reuse
PP07-S5-006	Guidelines preparations	policy making	use / service
unknown			
PP05-S5-001	Introduce circular economy principles into relevant university courses.	education and training	could be any
PP05-S5-002	Carry out a scoping study into how circular economy can be delivered through the development and regeneration of the Old Oak and Park Royal sites in north west London.	R&D	several

PP05-S5-003	Promote novel technologies that enable circular economy within the built environment.	innovation	several
PP05-S5-004	Incorporate relevant circular economy principles into London Plan and local plans.	policy making	several
PP05-S5-005	Promotion of built environment good practice/voluntary agreements	policy making	several
PP05-S5-006	Invest in innovative circular economy building design and products.	innovation	use / service
PP05-S5-007	Identify material requirements of major infrastructure and other developments in London.	R&D	use/ service
PP05-S5-008	Encourage or require reuse of materials: Work towards setting a re-use target for construction projects in London	policy making	n/a
PP05-S5-009	Seek funding to ensure that London is home to projects that demonstrate circular economy, building on learning from ongoing research projects.	innovation	n/a
PP05-S5-010	Research constraints on refit, re-use and demolition activities.	R&D	reuse recycling (closed loop) recycling (open loop)
PP05-S5-011	Create/work with existing online web platform for	innovation	reuse recycling (closed loop)

	trading of recovered building materials		recycling (open loop)
PP05-S5-012	Carry out research on under-utilisation of public and private buildings in London.	R&D	use /service
PP05-S5-013	Share good practice amongst facilities managers to implement circular economy principles in the running of their buildings.	social awareness	use /service
PP05-S5-014	Use 'meanwhile' spaces (unused spaces created during redevelopment that can be used for temporary positive uses) to demonstrate circular economy work.	innovation	use /service
PP05-S5-015	Pilot new circular economy business models in the operation of buildings.	innovation	use /service

4.3. Plastics

In the tools there are 13 opportunities included for Plastics of which 4 actions of industrial development and 3 for R&D. The source is mostly not known and for the position in the value chain recycling and production are mentioned.

	number
Total number of opportunities	13
Type of Action	Industrial development 4 R&D 3 Innovation 2

	Multiple 2 Social awareness 1 Education & training 1
Source	Internal gap 2 cross regional 1 cross sectoral 2 Unknown 8
Position in the value chain	Recycling 3 Production 2 Gathering of core resources 1 Use/service 1 Reuse 1 Primary material processing 1 Collection 2 Unknown 2

Plastics		
TYPE OF ACTION	**OPPORTUNITY**	**ABSTRACT**
Industrial development		
PP05-S5-049	Support London boroughs to harmonise collection systems across the capital, in line with emerging national and/or international standards (e.g.	LWARB has lobbied for this to be included in the new London Environment Strategy. It has been included in LES draft and LWARB will lobby for it to be kept in and to gain support from other stakeholders.

	Global Plastics Protocol).	
PP05-S5-050	Support London boroughs to be consistent in the plastics packaging they recycle so that all residents can recycle plastic bottles, pots, tubs and trays – and, in the near future, plastic film such as carrier bags.	
PP05-S5-054	Collate procurement needs across public organisations, private organisations and other cities to drive change by retailers and manufacturers.	
PP05-S5-052	Provide more widely available recycling services in public areas.	
Innovation		
PP05-S5-055	Work with the New Plastics	NPE, Global Plastics Protocol

	Economy to develop collaborative ways of working to drive change within the global plastics supply chain.	
PP05-S5-056	Work with SMEs and innovators to create alternatives to plastics e.g. bioplastics	Offer support through the Advance London programme within LWARB
R&D		
PP06-S5-001	Bio sourced materials	Used of bio-sourced materials for all sectors
PP01-S5-022	Increase percentage of recycled plastics into new products	This opportunity can be exploited by collaborating with plastics industries to have a percentage of recycled plastic inside every plastic product that is new to the market; in this way less plastics will be produced and a greater percentage will be reused into new products.
PP01-S5-023	Increase the production of sustainable and biodegradable plastics	Increase the production of more sustainable and biodegradable plastics. Plastics made from non-renewable petroleum and natural resources can limit the damages to the environment, to the human health, to the species maintenance, and to the ocean. (Policy option: giving money incentives)
Multiple		

PP01-S5-035	Increase of secondary raw materials uses in every sector (see opportunity n°11)	Define in the manufacturing of goods minimum percentages of secondary raw materials to be used and stimulate the increase of these percentages. This opportunity comes from a cross-sectorial analysis it can be achieved mainly through policy options.
PP01-S5-036	Increase the percentage of secondary raw materials used in the production of goods (see opportunity n° 13) - Sustainable certification for goods	This opportunity comes from a cross-sectorial analysis; it can be achieved mainly through policy options. This opportunity can be significantly supported through certifying the percentage of secondary raw materials used in the production of goods could be certified.
Social awareness		
PP05-S5-051	Give Londoners clear communications about which plastic containers and packaging they can recycle and which they cannot, and encourage reduction in use of single use plastics	recycle for London campaign, campaign on refillable water
Education and training		

PP05-S5-053	Encourage and support consumers and private and public organisations to procure items that are re-usable, easily recyclable and/or include recycled content.	Work with GLA to develop projects and guidance to include circular economy in public procurement.

SPECIFICIED BY SOURCE, SAME POJECTS AS ABOVE

Plastics			
SOURCE	**OPPORTUNITY**	**TYPE OF ACTION**	**VALUE CHAIN**
cross sectoral			
PP01-S5-035	Increase of secondary raw materials uses in every sector (see opportunity n°11)	multiple	gathering of core resources
PP01-S5-036	Increase the percentage of secondary raw materials used in the production of goods (see opportunity n° 13) - Sustainable certification for goods	multiple	primary material processing

internal gaps			
PP01-S5-022	Increase percentage of recycled plastics into new products	R&D	recycling
PP01-S5-023	Increase the production of sustainable and biodegradable plastics	R&D	production
cross regional			
PP06-S5-001	Bio sourced materials	R&D	all of them
Unknown			
PP05-S5-049	Support London boroughs to harmonise collection systems across the capital, in line with emerging national and/or international standards (e.g. Global Plastics Protocol).	industrial development	collection
PP05-S5-050	Support London boroughs to be consistent in the plastics packaging they recycle so that all residents can recycle plastic bottles, pots, tubs and trays – and, in the near future, plastic film such as carrier bags.	industrial development	recycling (closed loop) recycling (open loop)

PP05-S5-051	Give Londoners clear communications about which plastic containers and packaging they can recycle and which they cannot, and encourage reduction in use of single use plastics	social awareness	recycling (closed loop) recycling (open loop)
PP05-S5-052	Provide more widely available recycling services in public areas.	industrial development	recycling (closed loop) recycling (open loop)
PP05-S5-053	Encourage and support consumers and private and public organisations to procure items that are re-usable, easily recyclable and/or include recycled content.	education and training	reuse recycling (closed loop) recycling (open loop)
PP05-S5-054	Collate procurement needs across public organisations, private organisations and other cities to drive change by retailers and manufacturers.	industrial development	use / service
PP05-S5-055	Work with the New Plastics Economy to develop collaborative ways of working to drive change within the global plastics supply chain.	innovation	all
PP05-S5-056	Work with SMEs and innovators to create alternatives to plastics e.g. bioplastics	innovation	production

4.4. Food & Beverage

In the tools there are 44 opportunities included for Food & Beverage of which 12 actions for industrial development, 10 for innovation and 8 for social awareness. For the source internal gap is mostly mentioned and for the position in the value chain packaging & distribution and use/service are mostly mentioned.

	number
Total number of opportunities	49
Type of Action	Industrial development 13 Innovation 11 Social awareness 9 Policy making 7 R&D 5 Education & training 3 Legislation 1
Source	Internal gaps 11 cross regional 1 cross sectoral 8 Unknown 29
Position in the value chain	Packaging & distribution 7 Use/service 6 Biochemical feedstock recovery 2 Production 2 Collection 3 Water treatment 2Re use 1 Gathering of core resources 1 Unknown 25

FOOD & BEVERAGE		
TYPE OF ACTION	**OPPORTUNITY**	**ABSTRACT**
Industrial development		
PP07-S5-002	Sectoral separate collection	Start meetings and talks with the hotel industry and municipal hospitals for separate collection of biodegradable waste
PP02-S5-001	The creation of new valuable industry products from by-products	The food and beverage sectors alike are particularly intense in processing organic matter along the supply chain, from production to consumers. In this sense, the entire beverage value chain is full of opportunities for capturing organic matter and retrieving these nutrients whether for human and animal consumption or regenerating the environment. Wine manufacturers generate by-products from waste such as grape pomace or press residues (stems, skins and seeds, which may amount up to a 30% of the material used), which not valued as a highly profitable waste -directed to composting or discarded in open areas, max. 15 tonnes/ha/year)-. Husk and brewer's spent grain from the beer industry follow the same pattern where it can be used as animal feed with certain limitations (it has a shelf life of 48h due to its high moisture content and microbial load). Last but not least, the wine and juice industry can also extract healthy bioactive phytochemicals such as phenolic acids and flavonoids.

PP02-S5-003	Maximising inhouse water reuse (where within the production process ??)	The food and beverage industries are largely intense on using water for elaborating its products or assisting some of its processes such as cleaning and disinfection of equipment and facilities, auxiliary operations producing cold or heat. It is particularly intense in the beer industry sector, using between 2,5 hl to 7,2 hl per hectolitre of beer produced. Maximising inhouse water reuse could decrease water consumption by reusing as much as 60-65% in several production processes.
PP02-S5-004	Use of recycled packaging materials	Beverage manufacturers, in particular those specialised in commercialising bottled water, using PET as packaging material, can implement a bottle to bottle recycling scheme in cooperation with a waste collector and recycling plant. In Catalonia, aproximately, 550 million litres of bottled water are consumed every year. 70% of which is distributed in bottles of 2 litres or less, which amounts at least 192 million bottles of 30gr each (5760 tons of PET). A new recycling plant of around 800.000 € of investment could process 2.000 tons of PET for recycling a year, which is the equivalent of 25% of all PET volume consumed for bottling water in the region during the same period.
PP2-S5-007	Increase the reuse of glass packaging	According to the European Parliament Legislative Resolution of 18 of April 2018 on the Proposal for a Directive of the European Parliament and of the Council amending Directive 94/62/EC on packaging and packaging waste" (Ordinary Legislative Procedure: First Reading), article 5: ""In line with the waste hierarchy laid down in Article 4 of Directive 2008/98/EC, Member States shall take measures to encourage the

		increase in the share of reusable packaging placed on the market and of systems to reuse packaging in an environmentally sound manner and in conformity with the Treaty, without compromising food hygiene or the safety of consumers. Such measures may include, inter alia: (a) the use of deposit-return schemes; (b) the setting of qualitative or quantitative targets; (c) the use of economic incentives; (d) the setting up of a minimum percentage of reusable packaging placed on the market every year for each packaging stream"". Although no quantitative targets are set for reuse, this article, if finally adopted, will certainly reinforce the establishment of reuse mechanisms in Europe. In Catalonia, glass is intensively used by the beverage sector and could be subject to reuse specially in the wine, beer, juice and cabonated drinks subsectors. In fact, some pilot projects already exist regarding the reuse of glass packaging in the wine and cider subsectors.
PP03-S5-031	Prevent errors during the production process	Errors such as wrong labelling or wrong product weight should be managed to prevent food waste, like lowering the prize of the product
PP03-S5-032	Prevention of package damage/use of damaged goods	
PP03-S5-033	Prevention of breaking the cold chain	

PP03-S5-035	Prevention of package damage/use of damaged goods	
PP03-S5-036	Proper forecasting of demand and correct marketing strategies	Incorrect determination of the target group for a given product
PP03-S5-040	Explore opportunities to increase recyclability of food packaging	
PP03-S5-042	Further valorise food and beverage industry wastewaters.	The food supply chains are large in volume terms, significant in economic and environmental terms and central to the management of many biological materials. These chains currently generate significant amounts of waste and they are associated with high environmental impacts. The waste streams are generated during harvesting, storage and transport prior to primary processing (primary stream), during primary processing within the agro-food industry (secondary stream) and during production or consumption by end users (tertiary stream).
PP05-S5-023	Achieve maximum tonnage of food waste collected through local authority and business waste collection services.	This could include assisting small SMEs to jointly tender for food waste collection services

Policy making		
PP05-S5-024	Advocate for the continued protection and promotion of land for food growing in the London Plan and Borough Local Plans including the use of green belt and 'meanwhile' development sites to host food- growing and/or allotments to help increase the supply of local sourced produce.	Work with GLA to influence London Plan
PP05-S5-025	Promote the inclusion of space for food growing in the plans for new housing developments.	Work with GLA to influence London Plan
PP05-S5-019	Investigate potential for tax breaks for companies reducing food waste	Discuss approach being investigated by Lombardy

PP03-S5-037	promotion of Zero waste initiative	
PP03-S5-034	not allowing overestimation of orders	
PP03-S5-026	Preventing avoidable food waste	It is estimated that in Poland there is approx. 9 mln ton of food waste in production, distribution, commercial networks and households.
PP08-S5-001	Food Systems	Within the framework of the Podravje Self-Support project, a model of cooperation between public institutions and local providers is beeing developed in order to realize orders for local food and providing short supply chains.
Legislation		
PP01-S5-003	Improve the effectiveness of the avoidance of food waste in companies	For this opportunity it is crucial to strengthen and increase the enforcement of the rules for companies, in particular of the national law (Gadda law). On 2 August 2016, the Senate has definitively approved the Law on Waste Limitation, Conscious Use of Resources and Environmental Sustainability also known as Gadda Law, No. 166-2016. The law allows the adoption of the best practices on volunteering basis: both the Companies are not forced to follow the recommendations and the Local Governments are not pushed to give financial relieves if they are used. In order to improve the effectiveness of the avoidance of food waste to the benefit of the people in need, Banco Alimentare della Lombardia would recommend more

		stringent rules for Companies with a recognition of tax relieves.
Innovation		
PP01-S5-004	Integration of agro-food industry, biotechnological industry and green chemistry	The circular economy is rapidly rising up political and business agendas in contrast to today's largely linear, 'take-make-use-dispose' economy. The food supply chains are large in volume terms, significant in economic and environmental terms and central to the management of many biological materials. These chains currently generate significant amounts of waste and are associated with high environmental impacts. The waste streams are generated during harvesting, storage and transport prior to primary processing (primary stream), during primary processing within the agro-food industry (secondary stream) and during production or consumption by end users (tertiary stream). This is recognized as a priority sector where accelerating the circular economy would be beneficial and where EU policy has a particular role to play. The main goal of the present proposal is to further valorise food and beverage industry wastewaters based on the outcomes of the EU H2020 Saltgae project involving partner Regions in CIRCE (e.g. Lombardy, Slovenia). To do so, novel R&D and industrial collaborations within will be identified within these Regions, starting from Saltgae partners to ensure further scaling up and future potential industrial implementation of Saltgae outcomes.

PP01-S5-001	Enhance the territorial Network for recovering and re-distribution	Enhance the network of territorial resources (GDO outlets, shops, distributors, canteens) - Banco alimentaare della Lombardia manages a hub for collecting and recovering surpluses in delimited territories in Lombardy, and then redistributing them to charitable structures in the same territory. The benefits of the network are: 1) to ensure a better dietary mix for the assisted person, 2) maximize the collection from mid / small groups leveraging on the local precence, 3) optimize the recovery of fresh food and cooked meals by improving the efficiency through the creation Of local food bank wharehouses, 4) To activate networks of relationships on the territory that can create links and implications in terms of inclusion and social cohesion
PP01-S5-002	Siticibo Ristorazone in School Canteen	Enlarge the scope of Siticibo Ristorazione in School canteen through the full deployment of the program with the collection of cooked meals in addition of bread and fruit already recovererd. The most significant policy options can be the support at a legislation level, or with other specific supports and through the availablity of an infrastructure for managing fresh food also in this contest.
PP05-S5-020	Explore opportunities to reduce surplus preconsumer food waste through technology	Investigate opportunity to trial apps like Winnow to reduce overordering of food
PP05-S5-021	Use edible food surplus as a way of	Work with retailers, food app producers and local authorities to redistribute food e.g. apps such as Olio

	contributing to the alleviation of food poverty.	
PP05-S5-022	Raise awareness of options for using food waste as a valuable resource e.g.as animal feed, to create a new product or as an input for other industrial processes (e.g. bio-refining).	
PP05-S5-018	Explore opportunities to increase recyclability of food packaging.	Work with organisations such as EMF, retailers , manufacturers to pilot food packaging recycling
PP02-S5-006	increase the implementation of smart packaging solutions	Printing and labelling technologies allow multiple solutions and applications to develop new information streams added into the structural components of a particular package. NFC and RFID are the most common "smart tag" technologies implemented in industry but usually in tertiary packaging solutions (smart pallets). There is a large room for development of this solutions at primary package level, where barcode is the most common option. Barcode however needs a line-of-site reading, while RFID scanning can be done at greater distances. Solutions in between use alternative GS1 barcode technologies such as printing and scanning technologies that

		allow an easy scanning of packaging without using barcode and containing data beyond the GTIN or SKU number allowing a more accurate supply chain management. Mass-production of printed electronics (using NFC technologies) is going to have a huge impact on FMCG packaging reducing the costs of conventional electronics to a tenth or a hundredth.
PP02-S5-002	preventing food waste along the value chain	The beverage manufacturing industry is a key leverage for preventing food nutrients out of the system, which is currently a third of the total amount of food produced. Packaging systems, such as pascalization or High pressure processing (HPP) used whether in plastic, paper/board or glass act as a sufficient barrier to significantly extend shelf life of fruits and vegetables. This nonthermal technology with a pasteurization-like effect is on the rise for the juice segment in the beverage market providing a product shelf life up to 45 to 60 days. New agreements between food producers, wholesalers or retailers in the value chain and beverage manufacturers of different kind (established companies, start-ups, social enterprises) can prevent 'unsellable' food to end up in landfills.
PP02-S5-008	Minimzing material use for beverage packaging and distribution	The beverage sector has some material needs regarding beverage packaging and distribution so that products can be safely and efficiently distributed in the market. These activities generate 2.400 million of packaging produts in Catalonia, which equates to 266.000 tones (ENT, 2017). In consequence, reducing and minimizing material use for packaging and distribution is a key leverage for waste prevention. More than 700 beverage manufacturers in

		Catalonia can take advantage of this opportunity.
PP07-S5-003	Sustainable ecotourism	Promoting the possibilities of maintaining composts in guest houses as part of the sustainable ecotourism
R&D		
PP01-S5-024	Wastewater	The main goal of the present opportunity is to further valorise food and beverage industry wastewaters based on the outcomes of the EU H2020 Saltgae project, involving partner Regions in CircE (e.g. Lombardy, Slovenia). To do so, innovative R&D and industrial collaborations within these Regions need to be exploited, starting from Saltgae partners, to ensure further scaling up and future potential industrial implementation of Saltgae outcomes.
PP05-S5-026	Investigate need for urban food growing cooperatives	Identify whether urban food growing needs cooperatives to overcome issues with quantities of food needed by retailers in London
PP05-S5-027	Explore technologies to increase urban growing potential including aquaponics and vertical growing.	Work with innovators to develop hydroponics etc which can work in an urban setting in small spaces
PP03-S5-027	improve production	Improved conditions of storage and production could decrease food waste

	conditions and/or storage	
PP02-S5-005	Use of bio-based packaging solutions where beneficial	World plastics demand is planned to increase a 40% in the next 15 years. Thus, the pressure on petro-based chemicals and raw materials is going to be particularly acute. In this case, bio-based plastics is a first step towards de-fossilise plastics by using renewable and not finite sources. However, bio-based plastics (Bio PET) does not necessarily equate biodegradable, and the latter are not always suitable for compost (certified EN 13432). Furthermore, in 2017, EMF initiative on the New Plastics Economy issued an statement endorsed by 150 organisations proposing a ban on oxo-degradable plastics, which claim but are not bio plastics. In fact, they are petro-based plastics with additives which act as catalyst to mimic biodegradation, but can be considered in fact as "oxo-fragmentation". Although bioplastics performance is still improving for the beverage sector (CocaCola Plant Bottle still only uses 30% of bioPET, other industry players have already developed 100% bio-based biodegradable and compostable PLA bottles. While it is preferable to promote reuse, in the case of single use plastics, there are compostable solutions that can minimise the consequences of littering.
Social awareness		
PP01-S5-025	Increase percentage of food recovery	Concerning food waste, the current food recovery experience can be really widened and the conditions to do it can be fostered. This can be exploited by improving the

		general food collection, by increasing the incentives for food recovery in school canteens and by increasing the amount of food that is donable thank to the new law (n. 166/2016), that theoretically paves the way to a lot of initiatives.
PP05-S5-016	Promote and build on existing voluntary agreements, consumer and business campaigns.	
PP03-S5-041	Use edible food surplus as a way of contributing to the alleviation of food poverty.	
PP03-S5-038	meetings and talks with the hotel industry and municipal hospitals for separate collection of biodegradable waste	
PP03-S5-039	Social supermarkets	Establish social supermarkets that reduce food waste and sell stock including residual food waste at low prices to local people on low incomes and struggling with food poverty.
PP03-S5-028	Accept food rejected due to undesirable parameters	Take actions to prevent food rejected due to undesirable parameters to be wasted

PP03-S5-029	Use of products from overproduction	Products from overproduction that can be still used could be donated to public benefit organizations
PP03-S5-030	Decrease imperfections in production processes	Optimization and improvement of production processes
PP08-S5-07	Robinfood	Project is Robin Food – a new concept of food commerce that acts as a kind of "outlet".
Education		
PP05-S5-017	Support public authorities and private companies to procure catering contracts that promote the food waste hierarchy.	Develop guidance or pilot projects which help organisations to include avoidance of food waste within procurement activities.
PP07-S5-001	Training center	Establishment of a center within the Municipal enterprise for waste treatment - Sofia for training of staff for the operation of composting plants, seeking an adequate response to the growing need of such specialists in the country
PP08-S5-009	Agricultural cooperatives	Cooperative is a company whose owners are members themselves, democratically run and controlled

SPECIFICATION BY SOURCE, SAME PROJECTS AS ABOVE

FOOD			
SOURCE	**OPPORTUNITY**	**TYPE OF ACTION**	**VALUE CHAIN**
internal gaps			
PP07-S5-001	Training center	Education	biochemical feedstock recovery
PP02-S5-001	The creation of new valuable industry products from by-products	industrial development	production
PP02-S5-002	Preventing food waste along the value chain	innovation	packaging & distribution
PP02-S5-003	Maximising inhouse water reuse (where within the production process ??)	industrial development	production
PP02-S5-004	Use of recycled packaging materials	industrial development	packaging & distribution
PP02-S5-005	Use of bio-based packaging solutions where beneficial	R&D	packaging & distribution
PP02-S5-006	Increase the implementation of smart packaging solutions	Innovation	packaging & distribution
PP02-S5-007	Increase the reuse of glass packaging	Industrial development	Re use
PP02-S5-008	Minimzing material use for beverage packaging and distribution	Innovation	packaging& distribution
PP01-S5-001	Territorial Network for recovering and re-distribution	innovation	packaging & distribution
PP01-S5-025	Increase percentage of food recovery	social awareness	biochemical feedstock recovery
cross sectoral			

PP07-S5-002	Sectoral separate collection	Industrial development	collection
PP07-S5-003	Sustainable ecotourism	Innovation	use service
PP01-S5-002	Siticibo ristorazione in School Canteen	innovation	packaging & distribution
PP01-S5-003	Improve the effectiveness of the avoidance of food waste in companies	legislation	packaging & distribution
PP01-S5-004	Integration of agro-food industry, biotechnological industry and green chemistry	innovation	water treatment
PP01-S5-024	Wastewater	R&D	water treatment
PP08-S5-001	Food Systems	Policy making	gathering of core resources
PP08-S5-009	Agricultural cooperatives	Education and training	Use/Service
cross regional			
PP08-S5-007	Robinfood	Social awareness	collection
Unknown			
PP03-5-026	Preventing avoidable food waste	policy making	
PP03-S5-027	Improve production conditions and/or storage	R&D	
PP03-S5-028	Accept food rejected due to undesirable parameters	social awareness	
PP03-S5-029	Use of products from overproduction	social awareness	
PP03-S5-030	Decrease imperfections in production processes	social awareness	
PP03-S5-031	Prevent errors during the production process	industrial development	

PP03-S5-032	Prevention of package damage/use of damaged goods	industrial development	
PP03-S5-033	Prevention of breaking the cold chain	industrial development	
PP03-S5-034	Not allowing overestimation of orders	policy making	
PP03-S5-035	Prevention of package damage/use of damaged goods	industrial development	
PP03-S5-036	Proper forecasting of demand and correct marketing strategies	industrial development	
PP03-S5-037	Promotion of Zero waste initiative	policy making	
PP03-S5-038	Meetings and talks with the hotel industry and municipal hospitals for separate collection of biodegradable waste	social awareness	
PP03-S5-039	Social supermarkets	social awareness	
PP03-S5-040	Explore opportunities to increase recyclability of food packaging	industrial development	
PP03-S5-041	Use edible food surplus as a way of contributing to the alleviation of food poverty.	social awareness	
PP03-S5-042	Further valorise food and beverage industry wastewaters.	industrial development	
PP05-S5-016	Promote and build on existing voluntary agreements, consumer and business campaigns.	social awareness	several
PP05-S5-017	Support public authorities and private companies to procure catering contracts that	education and training	use / service

	promote the food waste hierarchy.		
PP05-S5-018	Explore opportunities to increase recyclability of food packaging.	innovation	use/service collection recycling (closed loop) recycling (open loop)
PP05-S5-019	Investigate potential for tax breaks for companies reducing food waste	policy making	
PP05-S5-020	Explore opportunities to reduce surplus preconsumer food waste through technology	innovation	use /service
PP05-S5-021	Use edible food surplus as a way of contributing to the alleviation of food poverty.	innovation	use / service
PP05-S5-022	Raise awareness of options for using food waste as a valuable resource e.g.as animal feed, to create a new product or as an input for other industrial processes (e.g. bio-refining).	innovation	use / service biochemical feedstock recovery
PP05-S5-023	Achieve maximum tonnage of food waste collected through local authority and business waste collection services.	industrial development	collection
PP05-S5-024	Advocate for the continued protection and promotion of land for food growing in the London Plan and Borough Local Plans including the use of green belt and 'meanwhile' development sites to host food- growing and/or allotments to help increase the	policy making	

	supply of local sourced produce.		
PP05-S5-025	Promote the inclusion of space for food growing in the plans for new housing developments.	policy making	n/a
PP05-S5-026	Investigate need for urban food growing cooperatives	R&D	n/a
PP05-S5-027	Explore technologies to increase urban growing potential including aquaponics and vertical growing.	R&D	n/a

4.5. Textile

In the tools there are 29 opportunities included for Textile of which 11 actions for industrial development. For the source there are 12 internal gaps, 8 cross regional, 2 cross sectorial and 7 unknown and for the position in the value chain 9 are mentioned for use/service.

	number
Total number of opportunities	31
Type of Action	Industrial development 12 Innovation 6 Social awareness 5 Legislation 4 Education & training 3 Policy making 1
Source	Internal gaps 12 Cross regional 8 Cross sectoral 4Unknown 7

Position in the value chain	Use/service 9 Collection 3 Several 5 Primary material processing 3 Recycling 3 Production 3 Remanufacturing 2 Repair 1 Unknown 2

TEXTILE		
TYPE OF ACTION	**OPPORTUNITY**	**ABSTRACT**
Industrial development		
PP04-S5-002	Young start-ups	New young start-ups are aware of the need for working circular. They are the new economy and realise that a change is needed.
PP02-S5-002	Promote new business models to increase, share, repair &refurbishment	

PP02-S5-003	Increase recyclability and availability of recycled of fibres, yarns and manufactured clothes	Although it is technically+G5 viable to introduce regenerated fibres and recycled yarns into new fabrics, there is still room for growth in this area. 20 companies out of 350 focused on yarn preparation, spinning, and fabric manufacture (5,7%) in Catalonia, are using pre-consumer or post-consumer recycled materials, most commons are:Pre consumer Cotton or Polyester yarns, in some cases the recycled content reaches up to 100% for both of them; or post consumer polyester or linen, both up to 100% too. In the rest of cases the predominant formula is a mix of materials (Recycled Cotton, virgin polyester and linen; Cotton, virgin acrylic and polyester). This are not the total amount of companies that use recycled fibres but those which are certified under the GRS (Global Recycled Standard) -containing at least a 20% of recycled content-. Finally, this yarns and fabrics must find space in the wholesale and retail markets and provide customers (both brands and consumers) a tool to make informed decisions.
PP02-S5-007	Promote ecodesign for durability	Textile sector needs to look for a new model to reduce pressure on raw materials and to maximize durability of the products. Eco-design based on durability is the main tool in the field of waste prevention. Ecodesign practices for durability must take into account two dimensions: the way of manufacturing as a fundamental element of the business model and the consumption patterns in the market, that is to say, both internal and external drivers must be addressed.

PP05-S5-029	Offer business support to textiles industry start-ups and existing SMEs to help them transition to more circular economy business models.	Offer support through Advance London programme within LWARB
PP05-S5-030	Invest in circular economy textile SMEs and in technologies that allow for more sustainable textile manufacture.	Offer support through Advance London programme within LWARB
PP05-S5-037	Invest in fibre sorting and fibre-to-fibre recycling technologies. Look at opportunities to 're-shore' textiles manufacture and production in the capital from overseas.	
PP05-S5-036	Assess how collections and infrastructure	

	for textile re-use could be improved	
PP06-S5-006	Calls for projects from eco organizations including ECO TLC	Calls for projects from eco-organizations, including Eco TLC
PP06-S5-007	Regional Action Plan for the Circular Economy	The PRPGD is a global planning tool for the prevention and management of all waste produced in the territory, whether household or from economic activities. Its role is to set up the conditions for achieving the national objectives of reducing waste at source as a priority, improving waste sorting and recycling rates in the second place.
PP02-S5-004	Intensity search of alternatives for subsstances of concern and microfiber realease (during product life cycle)	Recently, considerable attention has been gained by all stakeholders at European level on the phenomenon linked to the presence of microplastics in the marine environment. With this figure given by the European Commission between 75,000 and 300,000 tonnes of microplastics released annually to the environment in community territory, the textile sector is responsible for generating, unintentionally, between 72,000 and 138,000 tonnes, according to the latest of studies on the subject, prepared by Eunomia for the General Directorate of the Environment of the European Commission. In the textile sector, the focus of origin of this contamination of the medium with microplastics occurs during the use and maintenance phase of clothing and synthetic fabrics. As global textile plastic demand is increasing, there is one particular issue that needs to be tackled to prevent further pollution of our ecosystems while promoting

		reuse and maintenance of our textile finished products. It is estimated that 190 thousand tons of microplastics end up in the ocean every year. Thus, microfibre realise in home laundry wastewater is large scale problem as every single 5-kilo wash at a household releases 600.000 to 17,7 milion microfibres (0.43 to 1.27 grams of plastic) that pass unchallenged through wastewater treatment facilities and end up in marine ecosystems or even in the food chain. New fitering technologies can be implemented at the very origin of the problem by sorting microfibres out of laundry wastewater saving thousand of tons of microplastics to pollute our water streams. Thus, this appliance in every household can be complemented with a far reaching devlopment in B2B and industrial laundry services, where the bulk of microfibres are released. Last but not least, according to the own Ellen MacArthur Foundation in its New Textile Economy (2017), textile production requires intensive use of chemical products (43 million tonnes per year) including some substances at risk in the different stages of the life cycle of a product: fiber production; manufacture of the product; use and after-consumption. The community framework regulations refers tp various stakeholders in the sector that are in charge of complying with is the case of Regulation 1907/2006 REACH (Registration, Evaluation, Authorization and Restriction of Chemicals) . But beyond those substances banned or regulated at the community level, the EMF identifies certain substances that can become a risk to the environment, people or a barrier to the circularity of materials

		(substances of concern). Among these substances we find: 1. Pesticides: for the protection of crops such as cotton. 2. Solvents: used in various phases of production, such as in the dissolution of pigments for dyes 3. Surface chemical agents (Surfactants): applied to detergents and humidifiers in the washing process 4. Pigments and dyes: for dyeing clothing and poured into large quantities in industrial wastewater, some may contain heavy metals or occasionally decompose into carcinogenic substances or cause allergic reactions. 5. Plasticizers: such as PVC used for printing in fabrics. Some of them such as phthalates are limited and, in some cases, prohibited by European legislation. 6. Water repellents and spots: the hydrophobic characteristics are a property very sought after in some tissues that are used outside. They are made by the impregnation of fluorinated or perfluorinated compounds with a bioacumuative capacity that lasts when it reaches the environment. 7. Flame retardants: some of them with dangerous and bioaccumulative effects on people and animals such as perfluorexane sulphonate (PFHxS), which was added in the middle of 2017 to the list of candidates to enter the list of restricted substances of the REACH regulations. 8. Biocides: products such as triclosan, triclocarban and nano-silver are used to prevent the proliferation of microorganisms during the process of transport and storage of the product but sometimes it is difficult to only affect living organisms for which they

		have Been applied and they do not pose a risk for the people who manipulate the merchandise.
PP02-S5-005	Increase energy and water efficiency in the production process	Textile industry consumes large amount of water in their processes, mainly in dyeing and finishing operations. In general, during the dyeing process, up to 30% of dyes used can be discharged into wastewater. For this reason, the wastewater generated by this industry is characterized by high colouration. In recent years, the interest for the application of membranes technologies to the removal of dyes has increased significantly. In individual cases, textile companies can save up to 300.000 litres per day of water in dying yarns by implementing a purification system that processes the dying effluents and allows water reuse using Membrane Bioreactor Technology and a reverse osmosis process.
Legislation		
PP05-S5-033	Investigate and Lobby for extended producer responsibility for textiles, as happens in France.	Work with WRAP to undertake a study into EPR for textiles
PP01-S5-015	Increase the percentage of	One of the main tools available for developing this opportunity is to increase the CAM (minimal environmental criteria) relevance in

	recycled materials	the Green Public Procurement: the challenge is to increase the percentage of recycled materials through mandatory laws, thus increasing circular economy aspects.
PP06-S5-004	Regulatory evolution announced	Regulatory evolution announced
PP06-S5-005	European eco label	European Eco label
Innovation		
PP01-S5-016	Reuse of textiles in other sectors	An alternative destination and application can be thought for the waste materials coming from the textile sector. An important example is the reuse of wasted textiles as secondary raw materials in the built environment, becoming a material insulator to be used during the construction of buildings.
PP02-S5-006	Explore new ways of upcycling preconsumer textile waste for industrial uses	Textile sector throughout Europe produces an amount of textile waste derived from the productive process itself that can be loop within the manufacturing system as by-products for others industries or upgraded into the production processes of others industries in the sector or in other value chains. Yarns, fibers and textiles are nowadays redirected in some cases but in a non-structured manner between different companies, sometimes geographically far away. A more-articulated value chain will favour the reduction of pre-consumer textile waste that ends in incinerators and landfilling options. In Catalonia, textile sector is used to introduce industrial textile waste into reuse markets and as by-product of companies that produce recycled yarns and fibers, although the amounts are not maximized.

PP04-S5-001	Technological innovation	Mechanical and Chemical innovation
PP06-S5-008	Textile Recycling Valley	The objective of the RETEX project is to structure the textile sector in the field of circular economy by intervening in the three areas of action: the supply of economic actors in the textile sector, the management of textile products "End of life" , market demands in terms of products containing recycled materials.
Social awareness		
PP04-S5-003	Demand instead of supply input	Try to think more from the demand way then only from the supply way. If the buyers say they only want circular textile the suppliers have to change the way they produce/work.
PP01-S5-019	Greater involvement of fashion companies	Fashion brands can develop a specific survey for their suppliers in order to clarify their environmental and social performance on topic such as resource saving, transport impact reduction, packaging reduction, short value chain, clear labelling and origin of the clothes, sharing of sustainability principles and ideas with their customers in the retail points. Moreover, they can improve the percentage of recycled materials into the clothes and make the sustainability as their first brand paradigm.
PP01-S5-017	Increase second-hand clothes collection and redistribution	In textile clothing we deal with two kinds of waste: clothes that lost their functionality, due to use; tissues and clothes that are “not sold items” for market reason. An increased amount of textile waste can go to redistribution and to second-hand collection cycle; what can be done is to increase the

		reuse of clothes that are still wearable, by donating them to poor people or by reinserting them in the redistribution cycle, maybe also after that a redesign of the clothes has been made.
PP01-S5-014	Increase the recovery of waste clothes	The Lombardy Region produces 13-15 kg per year per person of wasted clothes, but only 2-3 kg are recovered. This opportunity can be exploited by reusing them or by inserting them into new clothes, thus reducing the amount of generated clothes waste and by creating new sustainable clothes made of recycled textiles.
PP05-S5-035	Continue to influence consumer behaviour through the Love Your Clothes campaign.	Love your Clothes campaign to be delivered by Resource London
Education and training		
PP05-S5-032	Encourage large textile brands and manufacturers to use more circular business models.	ECAP, other projects?
PP05-S5-034	Provide procurement advice and support to organisations to help them	Work with GLA to develop projects and guidance to include circular economy in public procurement.

	procure textiles more sustainably, using circular economy business models such as increased percentage of recycled content.	
PP05-S5-028	Increase knowledge and expertise by incorporating circular economy design into relevant textile design courses and create design competitions to incentivise and promote innovation.	Work with partners within fashion sector to deliver a circular economy fashion challenge for innovation in the sector. Support Circ fibres initiative to promote and bring together textile designers producers etc
Policy making		
PP02-S5-001	Increase sorting and collecting capacity of post-consumer clothing and home textiles	Sorting and collecting clothing and home textiles is the greatest big challenge and opportunity in Catalonia. It is estimated that more than 140.000 tons of post consumer textile waste are generated every year in Catalonia. Only less than 10% of this textile waste is processed in recycling plants (7.854 tons are currently collected through selective municipal waste schemes and approximately 6.000 more through other organisations). In

		the case of municipal waste, textile waste represents 1,04kg/hab/year (0,18kg increase since 2012). The increase of the sorting and selectively collecting post consumer clothes and textiles needs the engagement of brands and manufacturers and the way they put a product in the market bearing in mind the end of life options available for them, they can choose or establish their own collecting, reusing or recycling scheme or they can pay for the service to a waste management agent (EPR scheme). France in 2012 collected 26.000 tonnes out of 154.000, 25% of the overall amout put in the market, increasing an 8% y.o.y. growth since its introduction.

SPECIFICATION BY SOURCE, SAME PROJECTS AS ABOVE

TEXTILE			
SOURCE	**OPPORTUNITY**	**TYPE OF ACTION**	**VALUE CHAIN**
Internal gaps			
PP2-S5-001	Increase sorting and collecting capacity of clothing and home textiles	policy making	collection
PP02-S5-002	Promote new business models to increase, share, repair &refurbishment	industrial development	use/service
PP02-S5-003	Increase recyclability, recycling and use of recycled of fibres, yarns and fabrics	industrial development	primary material processing
PP02-S5-004	Intensity search of alternatives for subsstances of concern	R&D	use/service

	and microfiber release (during product life cycle)		
PP02-S5-005	Increase energy and water efficiency in the production process	R&D	production
PP01-S5-014	Increase the recovery of waste clothes	social awareness	repair
PP01-S5-015	Increase the percentage of recycled materials	legislation	use/service
PP01-S5-017	Increase second-hand clothes collection and redistribution	social awareness	collection
PP01-S5-018	Influencing fashion designer in the use of secondary raw materials (textiles)	innovation	remanufacturing
PP01-S5-019	Greater involvement of fashion companies	social awareness	production
PP04-S5-001	Technological innovation	innovation	
PP04-S5-003	Demand instead of supply input	social awareness	
cross regional			
PP06-S5-002	Bio-sourced materials for technical textiles	innovation	all of them
PP06-S5-003	Increase of collection/sorting/recovery objectives related to the renewal of eco organisation approvals	innovation	use / service
PP06-S5-004	Regulatory evolution announced	legislation	use / service
PP06-S5-005	European eco label	legislation	use / service

PP06-S5-006	Calls for projects from eco organizations including ECO TLC	R&D	use / service
PP06-S5-007	Regional Action Plan for the Circular Economy	R&D	use / service
PP06-S5-008	Textile Recycling Valley	innovation	recycling (open loop)
PP04-S5-002	Young start-ups	industrial development	
cross sectoral			
PP01-S5-016	Reuse of textiles in other sectors	innovation	recycling
PP02-S5-006	Explore new ways of upcycling preconsumer textiel waste for industrial uses	innovation	recycling (open loop)
PP02-S5-007	Promote ecodesign for durability	Industrial development	production
PP05-S5-028	Increase knowledge and expertise by incorporating circular economy design into relevant textile design courses and create design competitions to incentivise and promote innovation.	education and training	several
PP05-S5-029	Offer business support to textiles industry start-ups and existing SMEs to help them transition to more circular economy business models.	industrial development	several
PP05-S5-030	Invest in circular economy textile SMEs and in technologies that allow for	industrial development	primary material processing production

	more sustainable textile manufacture.		
PP05-S5-031	Look at opportunities to 're-shore' textiles manufacture and production in the capital from overseas.	R&D	primary material processing production
PP05-S5-032	Encourage large textile brands and manufacturers to use more circular business models.	education and training	several
PP05-S5-033	Investigate and Lobby for extended producer responsibility for textiles, as happens in France.	legislation	n/a
PP05-S5-034	Provide procurement advice and support to organisations to help them procure textiles more sustainably, using circular economy business models such as increased percentage of recycled content.	education and training	use / service
PP05-S5-035	Continue to influence consumer behaviour through the Love Your Clothes campaign.	social awareness	several
PP05-S5-036	Assess how collections and infrastructure for textile re-use could be improved	R&D	collection reuse
PP05-S5-037	Invest in fibre sorting and fibre-to-fibre recycling technologies.	industrial development	remanufacturing recycling (open en closed loop)

4.6. WEEE

In the tools there are 14 opportunities included for WEEE/Electronics of which 4 actions for industrial development. The source is mostly not known and for the position in the value chain use/service was mostly mentioned.

	number
Total number of opportunities	14
Type of Action	Industrial development 4 Social awareness 3 Multiple 3 Innovation 2 Legislation 1 Education & training 1
Source	Internal gaps 2 Cross regional - Cross sectoral 1 Unknown 11
Position in the value chain	Use/service 3 Reuse 2 Repair 2 Recycling 1 Several 1 Primary material processing 1 Collection 1 Unknown 3

Electricals/WEEE		
social awareness		
PP05-S5-038	Use the joint procurement power of cities	

	to influence the design of office equipment so as to embrace circular economy principles.	
PP05-S5-040	Pilot a consumer campaign to promote re-use, repair and recycling of electrical equipment.	
PP05-S5-041	Develop a larger repair economy in London by raising awareness of existing repair businesses and encouraging others.	
Industrial development		
PP05-S5-043	Review organisational IT strategies including procurement, replacement cycles and disposal routes.	
PP05-S5-044	Support SMEs that repair, re-use or remanufacture electrical equipment or	

	new start-ups in this field.	
PP05-05-045	Invest in businesses that improve product lifetimes.	
PP05-S5-046	Bring together producer compliance schemes to consider service packages to local authorities.	
Innovation		
PP05-S5-048	Support innovative ideas on collection, recycling and WEEE treatment.	This could include printed circuit board metals reclamation
PP05-S5-042	Support local authorities, other public-sector organisations and businesses to track and trace their electrical assets and use an online platform to enable re-use of items within their organisation and beyond.	

Legislation		
PP05-S5-047	Lobby for more stretching targets for producer compliance schemes.	
Education and training		
PP05-S5-039	Engage with university courses to embed circular economy thinking into relevant courses on electricals design.	
Multiple		
PP01-S5-029	Increase the percentage of materials (e.g. rare elements metals…) recovered from WEEE	Increase the percentage of materials (e.g. rare elements metals…) recovered from WEEE
PP01-S5-030	Increase the life time of EEE devices through the maintenance and repair	Increase the life time of EEE devices through the maintenance and reparation
PP01-S5-036	Increase the percentage of secondary raw materials used in the production of goods (see	This opportunity comes from a cross-sectorial analysis; it can be achieved mainly through policy options. This opportunity can be significantly supported through certifying the

	opportunity n° 13) - Sustainable certification for goods	percentage of secondary raw materials used in the production of goods could be certified.

SPECIFICATION BY SOURCE, SAME PROJECTS AS ABOVE

WEEE/ Electricals			
SOURCE	**OPPORTUNITY**	**TYPE OF ACTION**	**VALUE CHAIN**
internal gaps			
PP01-S5-029	Increase the percentage of materials (e.g. rare elements metals…) recovered from WEEE	multiple	recycling
PP01-S5-030	Increase the life time of EEE devices through the maintenance and repair	multiple	repair
cross sectoral			
PP01-S5-036	Increase the percentage of secondary raw materials used in the production of goods (see opportunity n° 13) - Sustainable certification for goods	multiple	primary material processing
Unknown			
PP05-S5-038	Use the joint procurement power of cities to influence the design of office equipment so as to	social awareness	use / service

	embrace circular economy principles.		
PP05-S5-039	Engage with university courses to embed circular economy thinking into relevant courses on electricals design.	education and training	several
PP05-S5-040	Pilot a consumer campaign to promote re-use, repair and recycling of electrical equipment.	social awareness	reuse repair recycling (closed and open loop)
PP05-S5-041	Develop a larger repair economy in London by raising awareness of existing repair businesses and encouraging others.	social awareness	repair
PP05-S5-042	Support local authorities, other public-sector organisations and businesses to track and trace their electrical assets and use an online platform to enable re-use of items within their organisation and beyond.	innovation	use / service
PP05-S5-043	Review organisational IT strategies including procurement, replacement cycles and disposal routes.	industrial development	n/a
PP05-S5-044	Support SMEs that repair, re-use or remanufacture electrical equipment or new start-ups in this field.	industrial development	reuse repair remanufacturing

PP05-S5-045	Invest in businesses that improve product lifetimes.	industrial development	use / service
PP05-S5-046	Bring together producer compliance schemes to consider service packages to local authorities.	industrial development	n/a
PP05-S5-047	Lobby for more stretching targets for producer compliance schemes.	legislation	n/a
PP05-S5-048	Support innovative ideas on collection, recycling and WEEE treatment.	innovation	collection recycling (closed and open loop)

4.7. Tourism

In the tools there are 3 opportunities included for Tourism for industrial development; policy making and innovation and all cross sectorial. The position in the value chain was not mentioned.

	number
Total number of opportunities	2
Type of Action	Innovation 1 Social awareness 1
Source	Internal gaps - Cross regional - Cross sectoral 2
Position in the value chain	Use / Service 2

	Project	Abstract
PP8-S5-003	Mobility	With Avant2Go, vehicle sharing effectively reduces and manages your mobility costs.
PP07-S5-004	Cycling	Promoting bicycles as an opportunity to move to a central city area

Tourism		type of action	source	value chain
PP08-S5-003	Mobility	innovation	cross sectoral	Use/ service
PP07-S5-004	Cycling	Social awareness	Cross sectoral	Use / service

4.8. Raw materials

In the tools there are 14 opportunities included for Raw materials of which 5 actions for R&D and 4 for industrial development. The source is mostly not known and the position in the value chain was not mentioned.

	number
Total number of opportunities	15
Type of Action	R&D 5 Industrial development 5 Education & training 2 Unknown 3
Source	Internal gaps - Cross regional 1 Cross sectoral 1 Unknown 13

Position in the value chain	Maintenance 1 Primary material processing 1 Unknown 13

RAW Materials		
TYPE OF ACTION	**OPPORTUNITY**	**ABSTRACT**
Education and training		
PP07-S5-008	Eco-industrial park	Building an ECO-INDUSTRIAL PARK, representing a multifunctional complex, illustrating the idea of resource efficiency and circular economy. The park will essentially be a preparation center for re-use and recycling, but at the same time it will be designed as a visitor center for social and cultural events, recreation areas to attract the attention of visitors and to increase their awareness and ecological issues
PP03-S5-006	Range of scientific research and teaching facilities of the region	The factor which can be an opportunity and real support for the development of innovation is to meet the expectations of the entrepreneurs and a demand from the labour market by pursuing specific fields of study at the universities of the region.
Industrial development		
PP03-S5-009	Fuller use of the products of KGHM	Regardless of the development of high-tech products based on renaissance, it would be beneficial to develop products based on silver and gold. These can be both jewellery using local decorative stones and gold and silver investment

		coins. It would also be desirable to support all types of producers using silver and copper in their products such as furniture with silver or copper handles with bacteriostatic features, glassware decorated with silver and gold, etc.
PP03-S5-004	The technology of the system of exploitation of copper ore deposits in associated conditions at depths below 1200 m	Given the successive increase in depth and the constrained operating conditions, the risk of bumps in the future is to be expected. This is confirmed by the constant increase in the number of recorded high-energy shocks generated during operation.
PP03-S5-005	Development potential of the industry	Both the exploitation and processing of natural resources, as well as processing of wood, are historically related to these areas. The entrepreneurs applying the technological heritage see its possible imperfections and try to counteract them. The research shows that in the last 10 years, more than 1/3 companies (34.5%) have introduced innovations to their businesses, which is the evidence of the industry's growth potential.
PP03-S5-007	Growing demand for innovative products/services	For many years there has been an increase in the demand for the innovative products and services in the country and in the world. The innovations implemented by the companies are one of the response to the dynamic changes taking place in the market environment.
PP07-S5-005	Industrial symbiosis	Preparing business models to promote cross-sectoral links, by creating secondary raw materials markets or promoting so-called ‘industrial symbiosis’

R&D		
PP03-S5-008	Development of environmentally friendly technologies	Its entities constitute potential beneficiaries and creators of solutions that improve the environment or minimize the negative impact on its condition. Such solutions are an opportunity for the development of the industry, increasing its potential and opportunities for environmentally safe extraction and processing.
PP03-S5-010	Exploitation of rare-earth elements	Recovery of rare-earth from heaps and landfills (like Żelazny Most);
PP03-S5-001	Development of a technology that minimizes the impact of mining on the environment	Promotion and dissemination of the extractive industry as an indispensable industry for the functioning of every human being and the functioning of a number of consumer goods
PP03-S5-002	Production of processing machines and equipment for the mining industry and the processing of raw materials	Taking into account the number of operating and processing companies, it can be surprising that in the whole region there are less companies supplying the necessary machines for the entrepreneurs in the mining and processing industry. They would be able to provide an excellent testing ground for new devices that can be applied in the industry.
PP03-S5-003	The use of hard-to-sell materials	Unused and undemanding R&D expenditures, produced during the processing of rock raw materials, which are currently waste for the entrepreneur, and in other areas could be used industrially for example as a bitumen additive or for

		the production of mineral wool (except for the raw materials used for this purpose).
Unknown		
PP03-S5-011	Expansion of the network of centers for reuse	
PP03-S5-012	use of secondary raw materials obtained from the processing of waste	Within public companies
PP03-S5-013	Preparing business models to promote cross-sectoral links, by creating secondary raw materials markets or promoting so-called “Industrial symbiosis”.	The main goal of that opportunity is to create a platform for the exchange of information and data on the proposed and demanded recyclable raw materials generated by the demolition process. The creation of such a publicly accessible platform will not only facilitate the demand and supply of recycled building materials but will also increase their share of construction sites.

SPECIFICATION BY SOURCE, SAME PROJECTS AS ABOVE

RAW Materials			
SOURCE	**OPPORTUNITY**	**TYPE OF ACTION**	**VALUE CHAIN**

cross regional			
PP07-S5-008	Eco-industrial park	Education and training	Maintenance
cross sectoral			
PP07-S5005	Industrial symbiosis	Industrial development	Primary material processing
Unknown			
PP03-S5-001	Development of a technology that minimizes the impact of mining on the environment	R&D	
PP03-S5-002	Production of processing machines and equipment for the mining industry and the processing of raw materials	R&D	
PP03-S5-003	The use of hard-to-sell materials	R&D	
PP03-S5-004	The technology of the system of exploitation of copper ore deposits in associated conditions at depths below 1200 m	industrial development R&D Innovation	
PP03-S5-005	Development potential of the industry	industrial development	
PP03-S5-006	Range of scientific research and teaching facilities of the region	education and training R&D	
PP03-S5-007	Growing demand for innovative products/services	policy making industrial development	

PP03-S5-008	Development of environmentally friendly technologies	R&D policy making	
PP03-S5-009	Fuller use of the products of KGHM	industrial development	
PP03-S5-010	Exploitation of rare-earth elements	R&D	
PP03-S5-011	Expansion of the network of centers for reuse		
PP03-S5-012	Use of secondary raw materials obtained from the processing of waste		
PP03-S5-013	Preparing business models to promote cross-sectoral links, by creating secondary raw materials markets or promoting so-called “Industrial symbiosis”.		

4.9 Different sectors

Partner SOS has in the tool 3 opportunities chosen for the sectors Public and Waste. These sectors are not CircE sectors.
Partner Sofia has in the tool 9 opportunities chosen for the sector General.

	number
Total number of opportunities	12
Type of Action	Social awareness 4 Education & training 3 R&D 2 Legislation 1 Industrial development 1

	Policy making 1
Source	Cross sectoral 8 Internal gaps 3 Cross regional 1
Position in the value chain	Use / Service 5 Maintenance 5 Refurbish 1 Explore 1

Projectnr	**Project**	**Sector**	**Abstract**
PP08-S5-005	Role of municipalities	Public sector	The transition to a circular economy is a complex, comprehensive and, above all, a long-term process, where cities play an important role.
PP08-S5-008	Digitalization	Public sector	Digital Coalition of Slovenia - digitalna.si is aimed at harmonizing the digital transformation of Slovenia according to the adopted Digital Slovenia 2020 Strategy in cooperation with stakeholders from the economy, research and development sector, civil society and the public sector.
PP08-S5-006	Reuse centers	Waste	The aim of the CPU is to extend the already developed practice of setting up the conditions for the operation of the REUSE

			Center, which is aimed at the processing and re-use of waste, at the regional level.
PP07-S5-009	RRR Centers	General	Design of centers for reuse, repair and preparation of waste to reuse, including provision of facilities and equipment on the territory of Sofia Municipality - Municipal - Eco Parks, through which to seek a point of intersection between the interest of the business, the municipality and the inhabitants
PP07-S5-010	Clean technologies for sustainable environment	General	Innovative and applied potential of a competence center “Clean technologies for sustainable environment - water, energy, waste for the circular economy - Clean & Circle” - The idea of the center is the development of specific technologies and innovations for the different types of waste to become resources
PP07-S5-011	Public campaigns	General	Conduct of campaigns, meetings, seminars and public discussions on raising awareness of the transition to a circular economy opportunities
PP07-S5-012	Partnership	General	Preparation and signing a partnership and mutual assistance agreement in the field of environment and the circular economy with specialized in these sectors universities (for example,

			University of Chemical Technology and Metallurgy, University of Forestry and etc.)
PP07-S5-013	Legislation development	General	Initiate steps to modify waste management programs with the inclusion of a circular economy section
PP07-S5-014	Energy recovery	General	The third phase of a project for the construction of a cogeneration plant in Sofia municipality with the utilization of RDF fuel on the territory of "Toplofikacia Sofia" with funding from OP "Environment 2014-2020" is in the process of preparation. The capacity of the plant is to recover 180,000 tons of RDF per year and will produce: 135,000 MWh of electricity sufficient to meet the needs of 25,000-30,000 households; 390,000 MWh of heat sufficient to meet the needs of 30,000-40,000 households; Natural gas consumption will be reduced by 65 million Nm3. The total energy efficiency of the plant is over 90%.
PP07-S5-015	Public awareness	General	Civil participation in the recycling process provides for identifying at least 300 households to participate in a pilot initiative for a comprehensive organization of separate collection of packaging waste - plastics, paper, metal and glass and

			food waste. During the project implementation, Sofia Municipality will provide separate households for separate collection to households willing to participate free of charge.
PP07-S5-016	Mobile separate collection	General	Advertising and positioning a mini-bus for separate collection of WEEE during cultural events. That will increase the awareness of the citizens regarding the separate collection of WEEE.
PP07-S5-017	Centers for reuse and repair	General	Design of centers for reuse, repair and preparation of waste to reuse - Eco Parks. It is foreseen the citiezens to bring on site their old furnitures and electronics. If somethig could be repair will be sell it in the center shop

SOURCE	OPPORTUNITY	TYPE OF ACTION	VALUE CHAIN
Internal gap			
PP7-S5-013	Legislation development	Legislation	Use / Service
PP7-S5-017	Centers for reuse and repair	Social awareness	Maintenance
Cross sectoral			
PP8-S5-008	Digitalization	Education & training	Use / Service

PP8-S5-006	Reuse centers	Education & training	Refurbish
PP7-S5-009	RRR Centers	Industral development	Explore
PP7-S5-010	Clean technologies for sustainable environment	R&D	Maintenance
PP7-S5-011	Public campaigns	Social Awareness	Use / Service
PP7-S5-012	Partnership	Education & training	Use / Service
PP7-S5-014	Energy recovery	R&D	Maintenance
PP7-S5-015	Public awareness	Social Awareness	Maintenance
PP7-S5-016	Mobile separate collection	Social awareness	Maintenance
Cross regional			
PP8-S5-005	Role of municipalities	Policy making	Use/ Service