



CircE - European regions toward Circular Economy"
INTERREG Europe Project

Synoptic report

Opportunities, Barriers and Value Chain analyses

Annex 3 Value Chain analyses



CircE
Interreg Europe



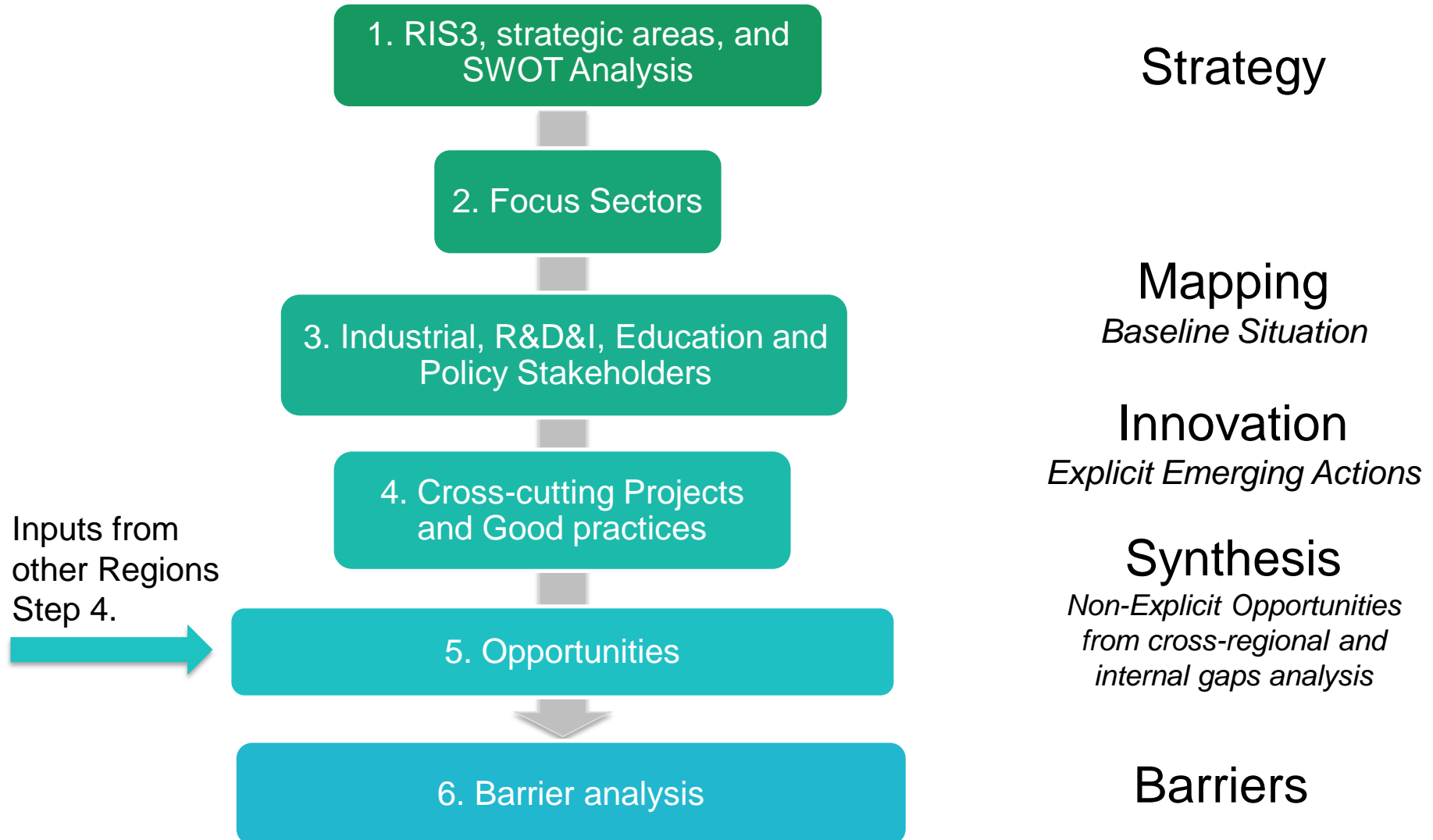
European Union
European Regional
Development Fund

CircE Tool Analysis

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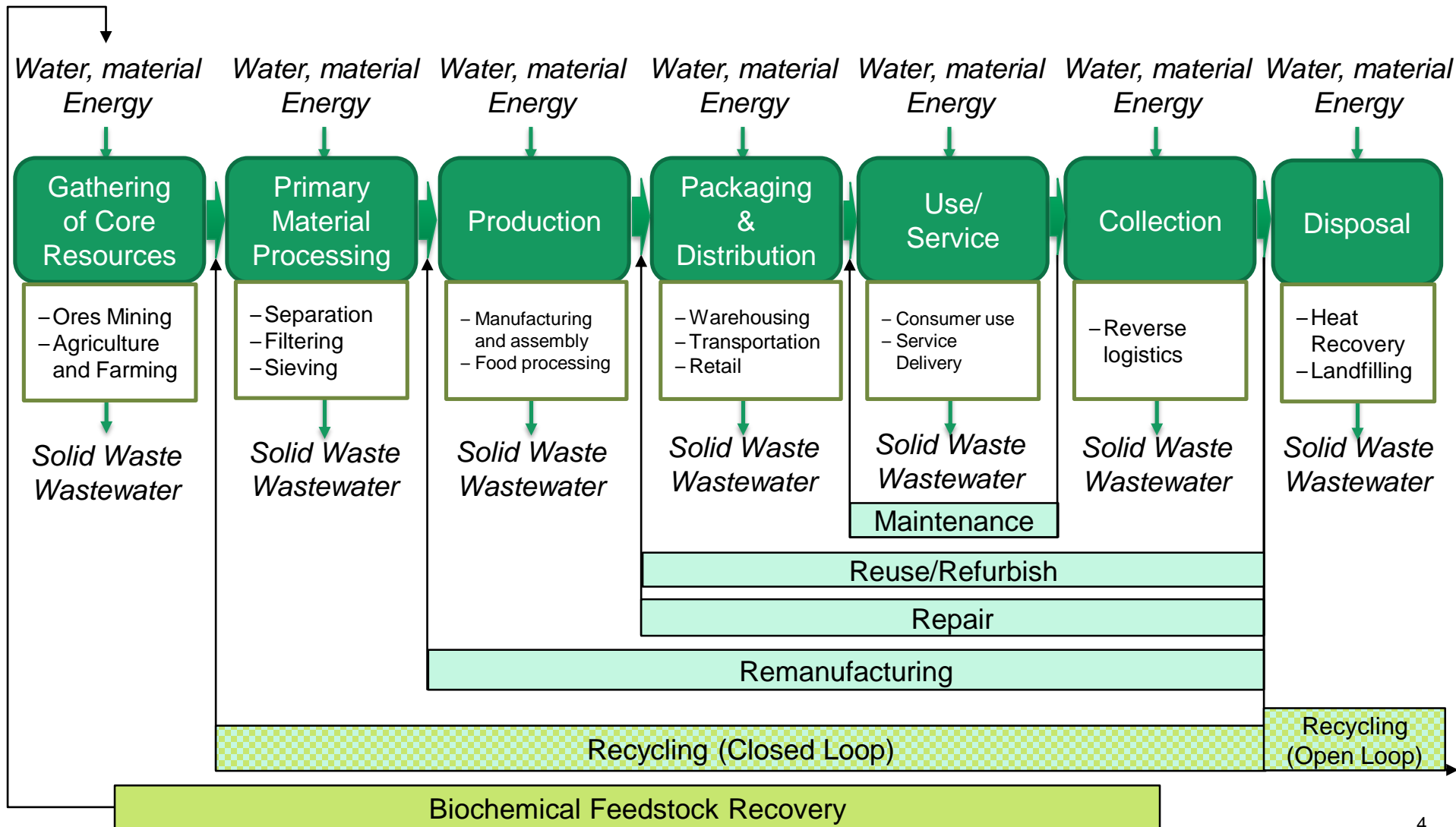
28th May, 2018 |

CircE Tool as the starting point



Reference Framework

Position in the Circular Value Chain



Analysis of the value-chains

	SECTORS								
	BUILT ENVIRONMENT	PLASTICS	FOOD WASTE	TEXTILE	WEEE - STRATEGIC METALS	TOURISM	BIOMASS	MOBILITY - TRANSPORT	RAW MATERIALS
LP LOMBARDIA	2	1	2	2	3	2	3 (wood, paper, biomass)		
PP2 CATALONIA		2 - packaging	3 - beverage	3					
PP3 LOWER SILESIA		2 - packaging	1						3
PP4 GELDERLAND	1			3			2 (paper)		
PP5 LWARB	3	2	2	2	1			2	
PP6 CD2E	2	2	2	2	2				
PP7 SOFIA	3		1		2				
PP8 SOS	2		2 - (short-food-chains and smart public procurement)			3		2	



Mechanisms for identification of actions

Three mechanisms for the identification of cross-regional actions have been proposed:

- **Matching opportunities expressed from different Regions:** This originates possible actions at low TRL level (4-5).
- **Matching opportunities with existing projects:** This originates possible actions at medium TRL level (6-7).
- **Matching opportunities with best practices:** This originates possible actions at high TRL level (7-8).

Preliminary analysis of the value-chains

Food Waste value chain

Data gathered from the CircE Tools of the Partners in the Food Waste sector:

- **36 Industrial Stakeholders in the Food Waste sector**
- **9 Research Stakeholders in the Food Waste sector**
- **6 Education Stakeholders in the Food Waste sector**
- **9 Policy Stakeholders in the Food Waste sector**

- **16 Cross-cutting Projects in the Food Waste sector**
- **32 Good Practices in the Food Waste sector**

- **46 Opportunities in the Food Waste sector**

Outcomes of the analysis

Regional Stakeholders in the Food Waste sector

Region	Industrial Stakeholder
Lombardy52	Banco Alimentare della Lombardia ONLUS
Lombardy54	Colussi S.P.A.
Lombardy55	Emmetre S.P.A.
Lombardy58	Inalca S.P.A.
Lombardy59	SOLANA
Lombardy61	LODIGRANA
Lombardy63	FERRARI FORMAGGI
Lombardy64	MOLINO PAGANI
Lombardy65	L'ERBOLARIO
Lombardy66	COMINTER
Lombardy67	EPO
Lombardy68	MASSIRONI CARNI
Lombardy69	Molino Filippini s.r.l.
Lombardy70	Riso Scotti S.p.A.
Lombardy72	
Lombardy91	Viscolube

Region	R&D&I Stakeholder
Lombardy	Parco Tecnologico Padano
Lombardy	TECNOALIMENTI Società Consortile per Azioni
Lower Silesia	Wrocław University of Environmental and Life Sciences
Lower Silesia	Wrocław Technology Park (WPT)
Lower Silesia	NutriBiomed Cluster
LWARB	WRAP (Waste & Resources Action Programme)
LWARB	University College London
LWARB	Sustain
Cd2e	INRA (Institut National de la Recherche Agronomique)

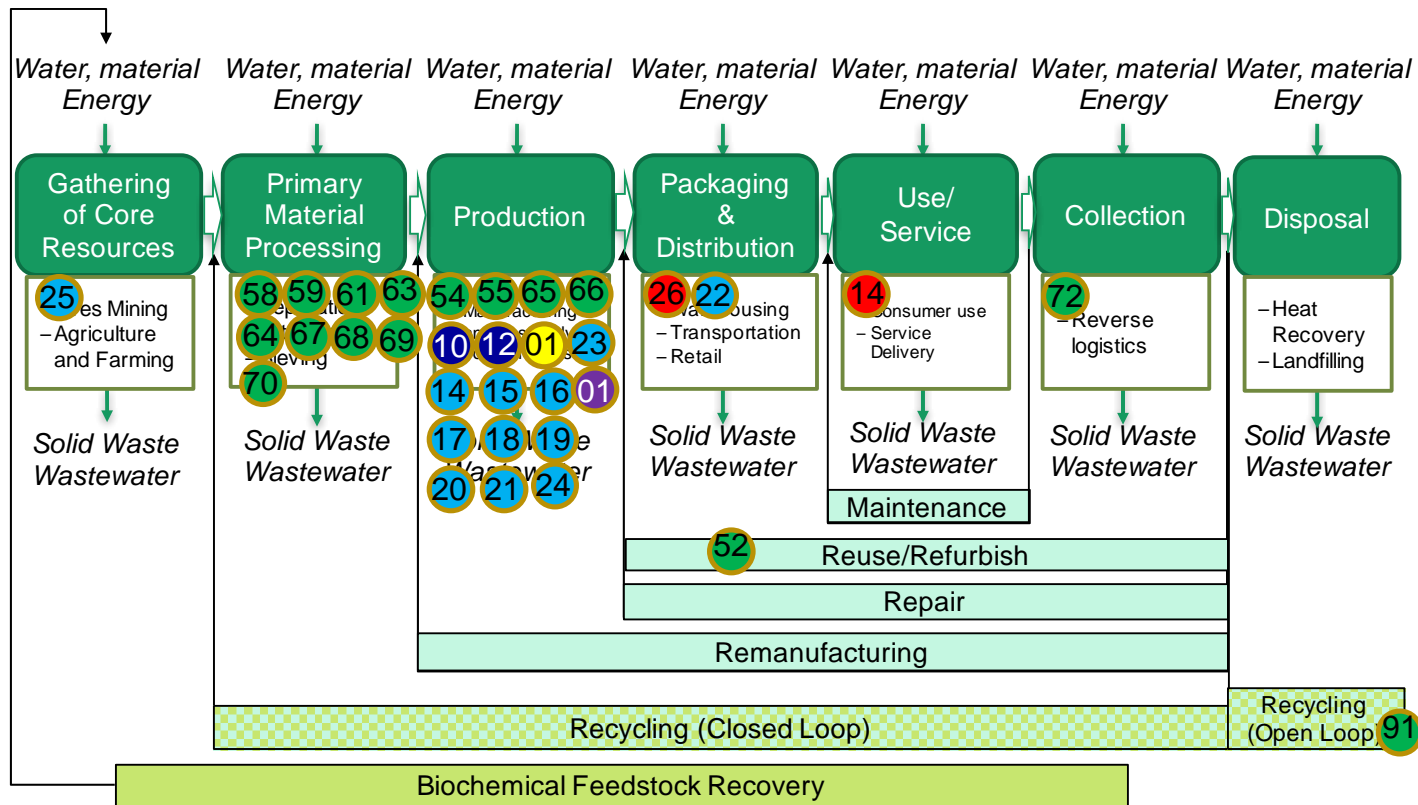
Region	Education Stakeholder
Lombardy	Politecnico di Milano
Lombardy	Lombardy Region
Lombardy	Lombardy Region, Local
Catalonia	URV_Facultat de Tecnologia i Wine Business
Lower Silesia	Wrocław University of Science and Technology
Lower Silesia	Wrocław University of Environmental and Life Sciences

Region	Policy Stakeholder
Lombardy	Regione Lombardia, Directorate Environment, Unit Waste Planning
Lombardy	Milano Municipality, Food Policy Management office, Mayor's Cabinet
Lombardy	Università degli Studi di Milano, Centro di Servizio per l'orientamento allo Studio delle Professioni
Lombardy	Università degli Studi di Milano, FACOLTÀ DI SCIENZE AGRARIE E ALIMENTARI
Lower Silesia	Ministry of Environment
Lower Silesia	Ministry of Finance
Lower Silesia	Ministry of Health
LWARB	Department for Environment, Food & Rural Affairs (DEFRA)
Catalonia	Department of Agriculture, Generalitat de Catalunya

Regional Stakeholders belonging to the **Food Waste sector** are analysed through the value chain approach

Outcomes of the analysis

Industrial Stakeholders in the Food Waste sector



94,4% of the Regional Stakeholders present a complete data set, useful to be mapped within the value chain

●	Catalonia
●	Cd2e
●	Gelderland
●	Lombardia
●	Lower Silesia
●	LWARB
●	Sofia Municipality
●	SOS

Outcomes of the analysis

Projects and Good practices in the Food Waste sector

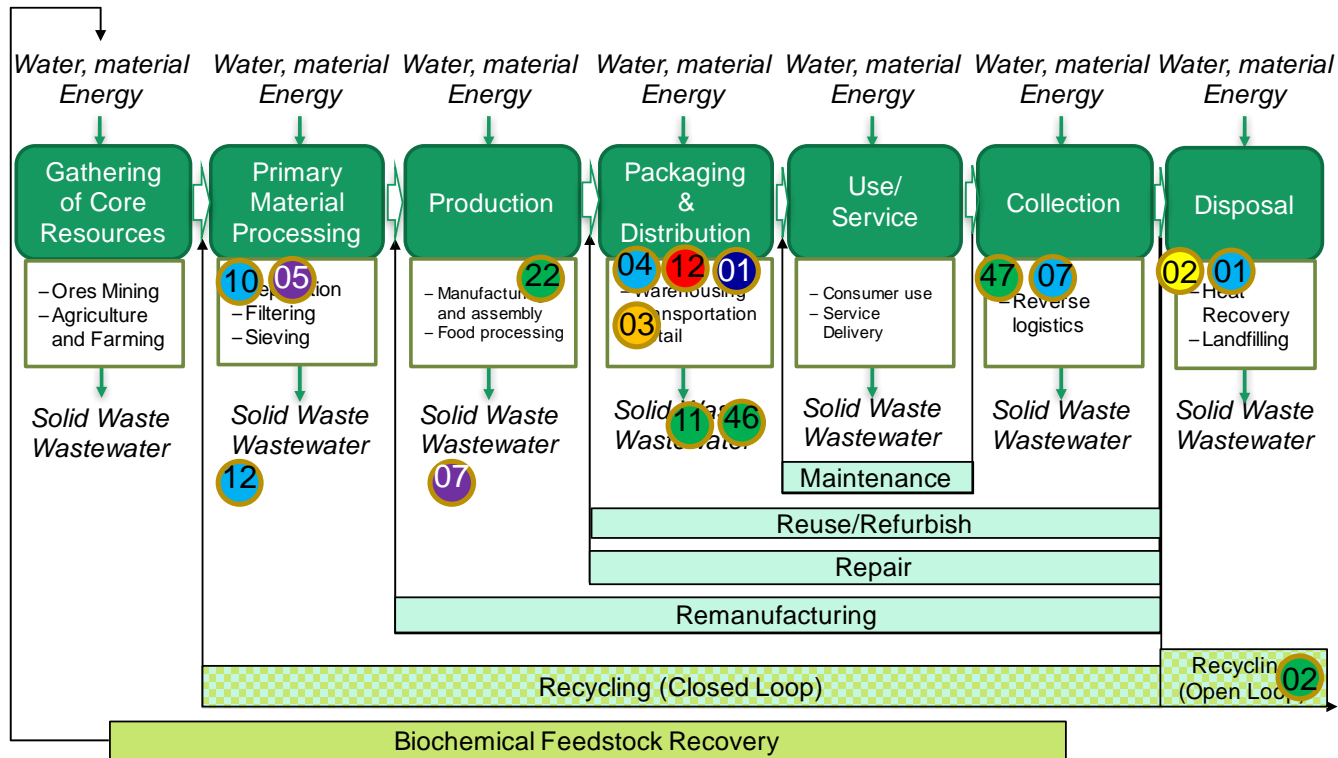
Region	Project Name (past and ongoing projects)
Lombardy02	LIFE CITRUS - Recycling of citrus industry scrap into natural additives for food industry
Lombardy11	Bio Idrogeno
Lombardy22	LIFE DOP - Demonstrative model of circular economy process in a high quality dairy industry
Lombardy46	SALTGAE - Demonstration project to prove the techno-economic feasibility of using algae to treat saline wastewater from the food industry
Lombardy47	LIFE NOW
Catalonia01	EcoWaste4Food
Catalonia04	REFRESH
Catalonia07	ReWINE
Catalonia10	Vineyards4Heat
Catalonia12	POLIFAVI
LowerSilesia02	STREFOWA- Strategies to Reduce Food Waste in Central Europe
LWARB12	TRiFOCAL London
Cd2e01	BIOSMART (Bio-based smart packaging for enhanced preservation of food quality)
SofiaMunicipality03	TRiFOCAL London – Transforming City FOod hAbits for Life, is an initiative being led by Resource London
SOS05	Urban Soil 4 Food
SOS07	projekt saltgae

Good Practice	Good Practice name
LombardyGP01	Food Waste
LombardyGP02	Food waste in school
LombardyGP04	Fill up the tank, new life for frying oil
LombardyGP26	Ortomercato
LombardyGP27	Territorial Network for recovering and re-distribution
LombardyGP28	Dispensa sociale
LombardyGP42	Recovery of products from the supermarket counters
LombardyGP43	Banco Scuola Preventing waste
LombardyGP44	Siticoibo GDO
LombardyGP45	Siticoibo Ristorazione
CataloniaGP11	FRUITA EN SUCS
CataloniaGP12	VINEYARDS 4 HEAT
CataloniaGP13	ECORK WASTE
CataloniaGP14	REWINE
CataloniaGP15	INDULLEIDA
CataloniaGP16	MAHOU SAN MIGUEL
CataloniaGP17	LIFE PRIORAT+MONTSANT
CataloniaGP18	TOWARDS ZERO WASTE
CataloniaGP19	GRAPE TANNINS
CataloniaGP20	COPIRAL
LowerSilesiaGP02	Food waste management in Hotel Mercury
LowerSilesiaGP04	EPP0 Sp. z o.o.
LowerSilesiaGP07	Food Banks
LowerSilesiaGP08	Jadłodzielnia
LWARBGP02	Love Food Hate Waste
LWARBGP09	Social Supermarkets
LWARBGP10	FoodSave
LWARBGP13	#SquareMileChallenge
LWARBGP15	Growup farms
LWARBGP16	Snact
LWARBGP29	Olio
SofiaGP04	RRR of municipal and biodegradable waste

Cross-cutting Projects and Good Practices belonging to the **Food Waste sector** are analysed through the value chain approach

Outcomes of the analysis

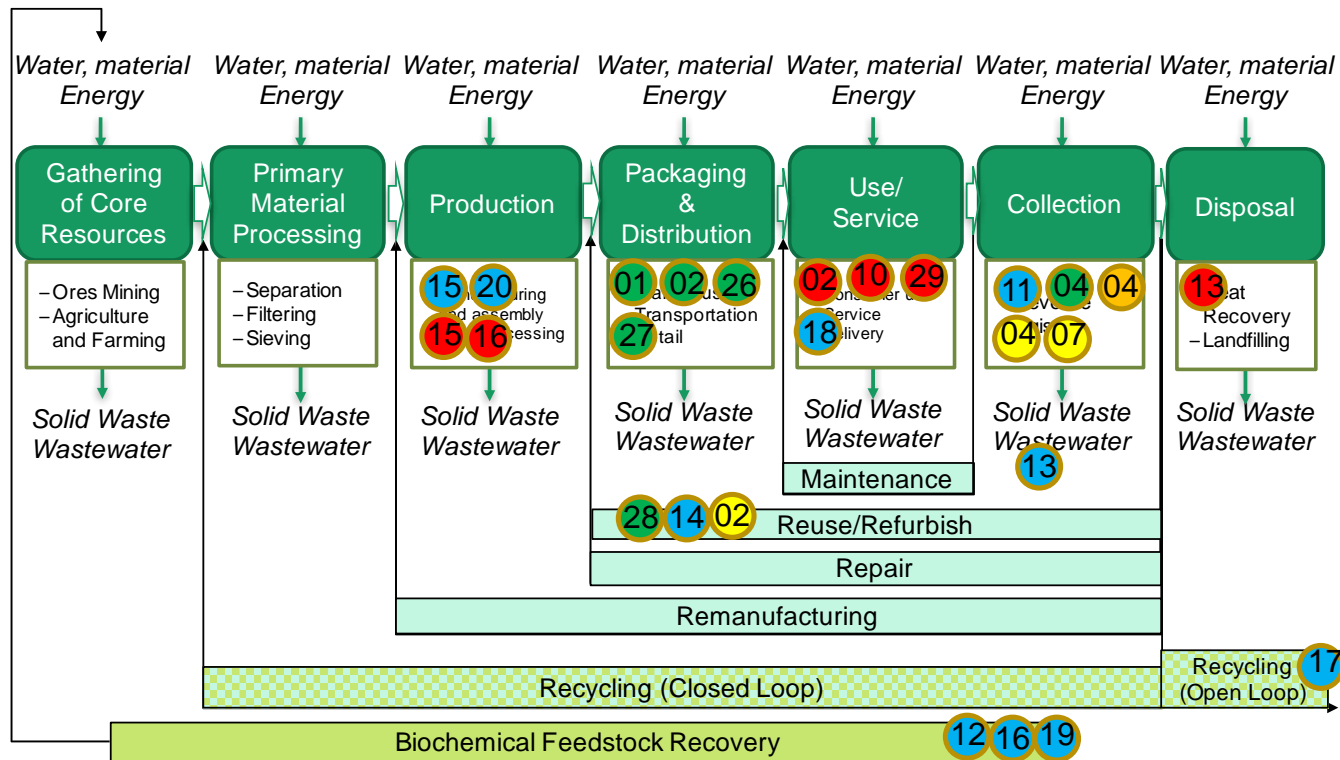
Cross-cutting Projects in the Food Waste sector



100% of the Cross-cutting Projects present a complete data set, useful to be mapped within the value chain

Outcomes of the analysis

Good practices in the Food Waste sector



100% of the Good practices present a complete data set, useful to be mapped within the value chain

Outcomes of the analysis

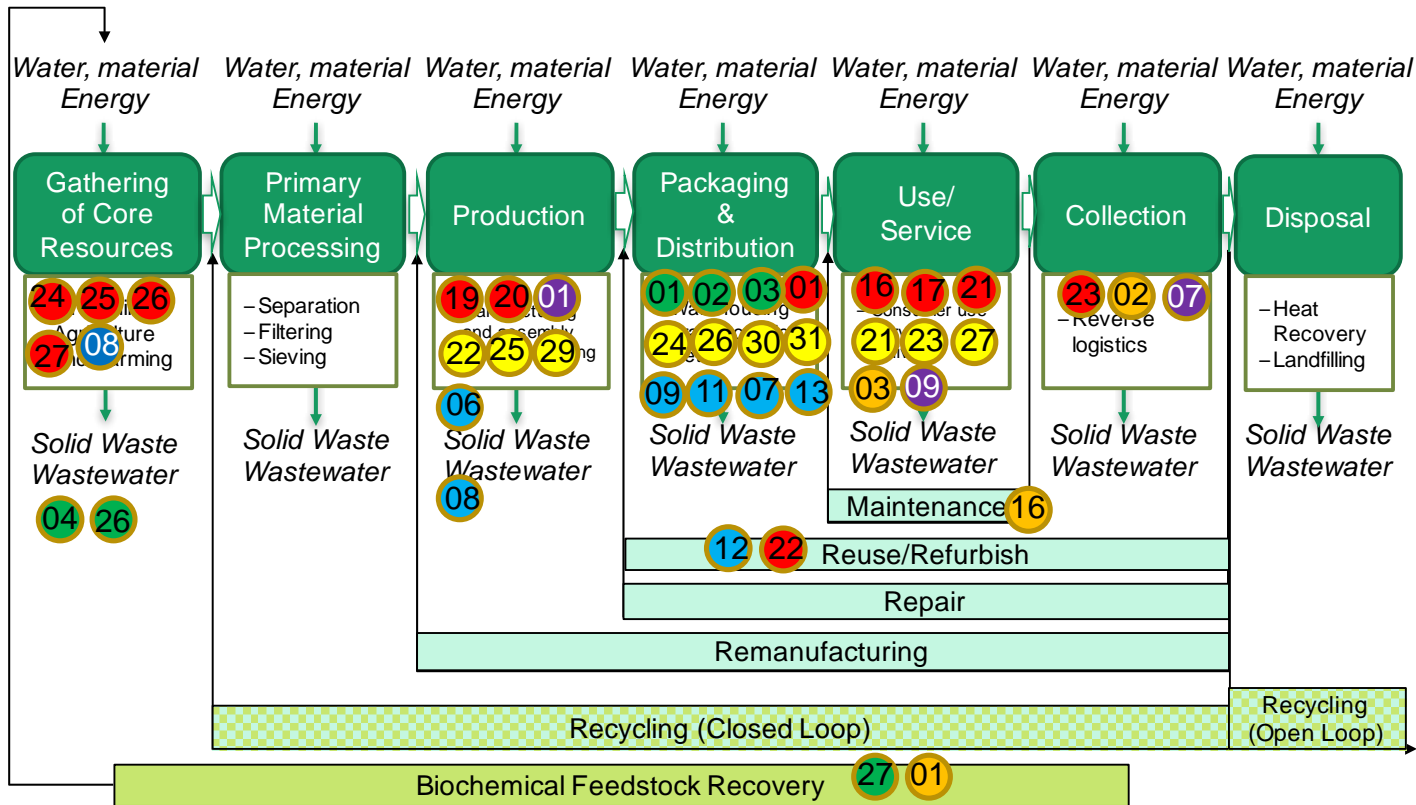
Opportunities in the Food Waste sector

Opportunities belonging to the **Food Waste sector** are analysed through the value chain approach

Opportunity ID	Opportunity name
Lombardy01	Enhance the territorial Network for recovering and re-distribution
Lombardy02	SITICIBO RISTORAZIONE in School Canteen
Lombardy03	Improve the effectiveness of the avoidance of food waste in companies
Lombardy04	Integration of agro-food industry, biotechnological industry and green chemistry
Lombardy26	Wastewater
Lombardy27	Increase percentage of food recovery
Lombardy35	Reverse logistics in every sector (see opportunity n° 5)
Lombardy39	Standardization on waste management from collection to recycling (see opportunity n° 7)
Catalonia06	SCALING THE CREATION OF NEW VALUABLE INDUSTRY PRODUCTS FROM BY-PRODUCTS
Catalonia07	PREVENTING FOODWASTE ALONG THE VALUE CHAIN
Catalonia08	MAXIMISING INHOUSE WATER REUSE (WHERE WITHIN THE PRODUCTION PROCESS??)
Catalonia09	USE OF RECYCLED PACKAGING MATERIALS
Catalonia11	INCREASE THE IMPLEMENTATION OF SMART PACKAGING SOLUTIONS
Catalonia12	INCREASE THE REUSE OF GLASS PACKAGING
Catalonia13	MINIMIZING MATERIAL USE FOR BEVERAGE PACKAGING AND DISTRIBUTION
LowerSilesia21	Preventing avoidable food waste
LowerSilesia22	improve production conditions and/or storage
LowerSilesia23	accept food rejected due to undesirable parameters
LowerSilesia24	Use of products from overproduction
LowerSilesia25	decrease imperfections in production processes
LowerSilesia26	prevent errors during the production process
LowerSilesia27	prevention of package damage/use of damaged goods
LowerSilesia28	provention of breaking the cold chain
LowerSilesia29	not allowing overestimation of orders
LowerSilesia30	prevention of package damage/use of damaged goods
LowerSilesia31	proper forecasting of demand and correct marketing strategies

Outcomes of the analysis

Opportunities in the Food Waste sector



93,5% of the Opportunities present a complete data set, useful to be mapped within the value chain

Title of Good Practice/Opportunity
Recyclable and Smart Packaging

Name and Type of Stakeholders

Ellen MacArthur foundation, retailers, Packaging waste collectors, Packaging recyclers, Packaging converters, Brand owners, End users printing and labelling technology, product manufacturers, Packaging converters, wholesalers

Type of action

- Gathering of core resources
- Primary material processing
- Production
- Packaging and Distribution
- Use and Service
- Collection
- Disposal

Brief description









Opportunities:

- Catalonia09 Use of recycled packaging materials
- Catalonia11 Increase the implementation of smart packaging solutions
- LWARB18 Explore opportunities to increase recyclability of food packaging

Complementary Data

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, approximately, 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 tones of PET). A new recycling plant of around 800.000 € of investment could process 2.000 tones 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. 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 hundred. Work with organisations such as EMF, retailers, manufacturers to pilot food packaging recycling

Matching cross-regional opportunities, TRL 4-5

	Catalonia
	Cd2e
	Gelderland
	Lombardia
	Lower Silesia
	LWARB
	Sofia Municipality
	SOS

Title of Good Practice/Opportunity
Local and urban food growing

Name and Type of Stakeholders

Citizens, KCPK, LWARB and GLA

Type of action

- Gathering of core resources
- Primary material processing
- Production
- Packaging and Distribution
- Use and Service
- Collection
- Disposal

Brief description









Opportunities:

- Gelderland08 Local Cultivation
- LWARB25 Promote the inclusion of space for food growing in the plans for new housing developments.
- LWARB26 Investigate need for urban food growing cooperatives
- LWARB27 Explore technologies to increase urban growing potential including aquaponics and vertical growing.

Complementary Data

- Instead of importing woodpulp the cultivation of regional miscanthus, grasses and hemp for different kinds of sectors/(chemical) industry (Gelderland08).
- Work with GLA to influence London Plan.
- Identify whether urban food growing needs cooperatives to overcome issues with quantities of food needed by retailers in London
- Work with innovators to develop hydroponics etc., which can work in an urban setting in small spaces.

Matching cross-regional opportunities, TRL 4-5

	Catalonia
	Cd2e
	Gelderland
	Lombardia
	Lower Silesia
	LWARB
	Sofia Municipality
	SOS

FOOD WASTE

Lombardy, Lower Silesia

Title of Good Practice/Opportunity
Use of products from over production

Name and Type of Stakeholders

Food retailers, customers, citizens, public administration, municipalities, large retail, sectorial company.
Specific CircE SH: Cauto.

Type of action

- Gathering of core resources
- Primary material processing
- Production
- Packaging and Distribution
- Use and Service
- Collection
- Disposal

Brief description

Opportunities:

- LowerSilesia24 Use of products from overproduction.

Cross-cutting Project:









- Lombardy47 LIFE NOW.

Complementary Data

Opportunity: products from overproduction that can be still used could be donated to public benefit organizations

Cross-cutting project: Non separated waste produced by Mass Retailers (supermarkets and hypermarkets) accounts for about 40% of all urban waste. Management of this type of waste is costly and logistically complex. The organic waste that Mass Retailers produce mostly consists of unsold food products that have to be disposed of for various reasons: packaging, seasonal produce or samples, physical standards, changes in corporate image, business closure, recommended sell-by dates, new product launches, sudden bad weather, errors in purchasing programmes, etc. NOW is an innovative model for the sustainable management of organic waste, proposed by CAUTO, aimed at recovering unsold products of a suitable quality in terms of health and hygiene and then donating these or reprocessing them as food resources. At present, the conventional systems adopted by Mass Retailers do not separate organic waste from the rest of their waste products, even though organic waste accounts for 80% of total waste. Thanks to NOW this part of the Mass Retailers' waste can extend its own life cycle by becoming food donations for social purposes or turned into animal fodder, and so no longer just thrown away. NOW also makes it possible to recover other types of waste, such as packaging, wood/plastic and WEEE (Waste Electrical and Electronic Equipment), turning these into goods that can be reused and recycled in line with national standards and European directives.

Matching cross-cutting projects and opportunities, TRL 6-7

	Catalonia
	Cd2e
	Gelderland
	Lombardia
	Lower Silesia
	LWARB
	Sofia Municipality
	SOS

Title of Good Practice/Opportunity
Food poverty alleviation

Name and Type of Stakeholders

Food retailers, customers, citizens, public administration, municipalities, large retail, sectorial company.
Specific Circe SH: BANCO ALIMENTARE DELLA LOMBARDIA, CLUSTER Alta Tecnologia Agrofood, CLUSTER Smart Cities and Communities.

Type of action

- Gathering of core resources
- Primary material processing
- Production
- Packaging and Distribution
- Use and Service
- Collection
- Disposal
- Reuse

Brief description

Opportunities:

- LWARB21 Use edible food surplus as a way of contributing to the alleviation of food poverty.

Good Practice:









- LombardyGP28 Dispensa sociale Cauto.

Complementary Data

Opportunity: Work with retailers, food app producers and local authorities to redistribute food e.g. apps such as Olio

Good practice: Cauto distributes for free to entire beneficial entities of the territory over 3000 tonnes of food every year. They recover food items discarded from the large-scale retail trade, from the market and companies, to distribute them for social purposes. Food companies, canteens, hypermarkets and supermarkets can donate unsold goods, no longer tradable (Law 155/2003 of the Good Samaritan Law). The service is possible thanks to a selection platform suitable for safety and hygiene, and to the provision of suitable means of transport. We avoid disposal costs for donors of goods; we prevent the production of organic waste; we offer a concrete and continuous response to the food needs of thousands of people.

Matching good practices and opportunities, TRL 7-8

	Catalonia
	Cd2e
	Gelderland
	Lombardia
	Lower Silesia
	LWARB
	Sofia Municipality
	SOS

Title of Good Practice/Opportunity
Food recovery and reuse

Name and Type of Stakeholders

Food retailers, customers, citizens, public administration, municipalities, large retail, sectorial company.
Specific Circe SH: BANCO ALIMENTARE DELLA LOMBARDIA, CLUSTER Alta Tecnologia Agrofood, CLUSTER Smart Cities and Communities.

Type of action

- Gathering of core resources
- Primary material processing
- Production
- Packaging and Distribution
- Use and Service
- Collection
- Disposal
- Reuse

Brief description

Opportunities:

- Lombardy02 SITICIBO RISTORAZIONE in School Canteen.
- Lombardy27 Increase percentage of food recovery.

Good Practice:









- LowerSilesiaGP02 Food waste management in Hotel Mercury.

Complementary Data

Opportunity: 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 recovered. 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.

Good practice: Reduction of food waste by production of new dishes by rest of food left after the meals.

Matching good practices and opportunities, TRL 7-8

	Catalonia
	Cd2e
	Gelderland
	Lombardia
	Lower Silesia
	LWARB
	Sofia Municipality
	SOS

Preliminary analysis of the value-chains

Textile value chain

Data gathered from the CircE Tools of the Partners in the Textile sector:

- **34 Industrial Stakeholders in the Textile sector**
- **9 Research Stakeholders in the Textile sector**
- **4 Education Stakeholders in the Textile sector**
- **6 Policy Stakeholders in the Textile sector**

- **11 Cross-cutting Projects in the Textile sector**
- **31 Good Practices in the Textile sector**

- **36 Opportunities in the Textile sector**

Outcomes of the analysis

Regional Stakeholders in the Textile sector

Region	Industrial Stakeholder
Lombardy02	Ratti
Lombardy03	Centri Servizi Calza
Lombardy73	Cauto
Lombardy75	Grassi Spa
Lombardy76	Eurojersey Spa
Lombardy77	Radici Group
Lombardy78	Orsa Group
Lombardy85	LAROS
Catalonia01	Antex
Catalonia02	Arpe
Catalonia03	Crevin
Catalonia04	Grintint
Catalonia05	Hidrocolor
Catalonia06	Hilaturas Arnau
Catalonia07	Mango
Catalonia08	Pagès Valentí
Catalonia09	Punto Blanco
Catalonia10	S.A. Vilarrassa
Catalonia11	Roba amiga
LowerSilesia13	IMP Ovatex Sp. z o.o.,
Gelderland03	MODINT

Region	R&D&I Stakeholder
Lombardy	Università di Bergamo
Lombardy	Centro Tessile Cotoniero e Abbigliamento Spa
Lombardy	Centro Tessile Serico Spa Consortile
LWARB	WRAP (Waste & Resources Action Programme)
LWARB	University of the Arts London
Cd2e	CETI: European Center for Technical Textiles
Cd2e	Laboratoire GEMTEX
Cd2e	IFTH (French Institute of Textile and Clothing)
Cd2e	Ecole des Mines de Douai

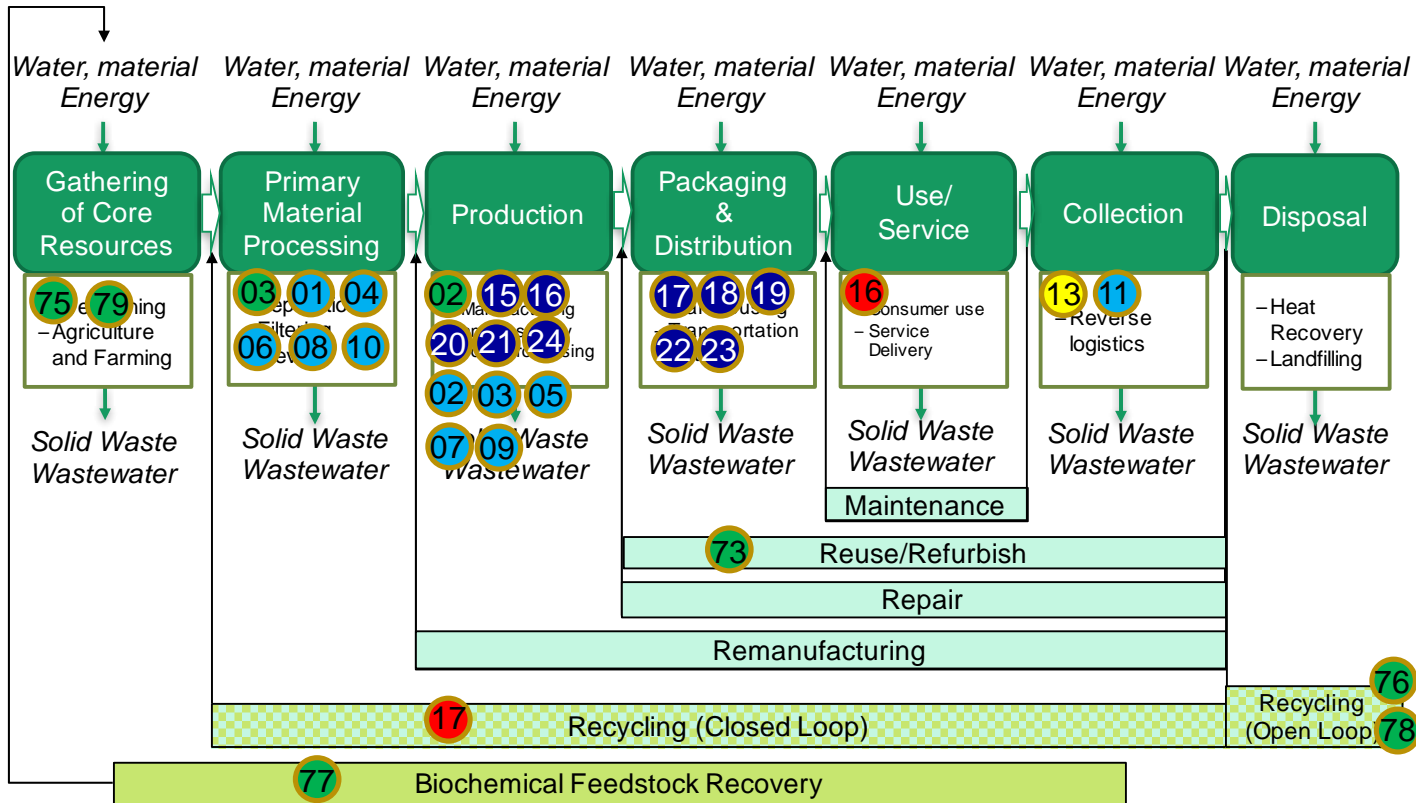
Regional Stakeholders belonging to the **Textile sector** are analysed through the value chain approach

Region	Education Stakeholder
Catalonia	Escola Superior d'Enginyeries Indus
LWARB	University of the Arts London
Cd2e	ESAAT (Ecole Supérieure des Arts Appliqués et du Textile)
Cd2e	ENSAIT (Ecole Nationale Supérieure des Arts et Industrie Textile)

Region	Policy Stakeholder
Catalonia	ACTE : coordinador ACTE Spain = Ajuntament d'Igualada
Catalonia	REGIOTEX
Catalonia	Euratex
Catalonia	DTES and the Government Contracts Consultation Board of the Autonomous Community of Catalonia
Catalonia	Generalitat de Catalunya
Catalonia	Generalitat de Catalunya

Outcomes of the analysis

Industrial Stakeholders in the Textile sector



●	Catalonia
●	Cd2e
●	Gelderland
●	Lombardia
●	Lower Silesia
●	LWARB
●	Sofia Municipality
●	SOS

94,1% of the Regional Stakeholders present a complete data set, useful to be mapped within the value chain

Outcomes of the analysis

Projects and Good practices in the Textile sector

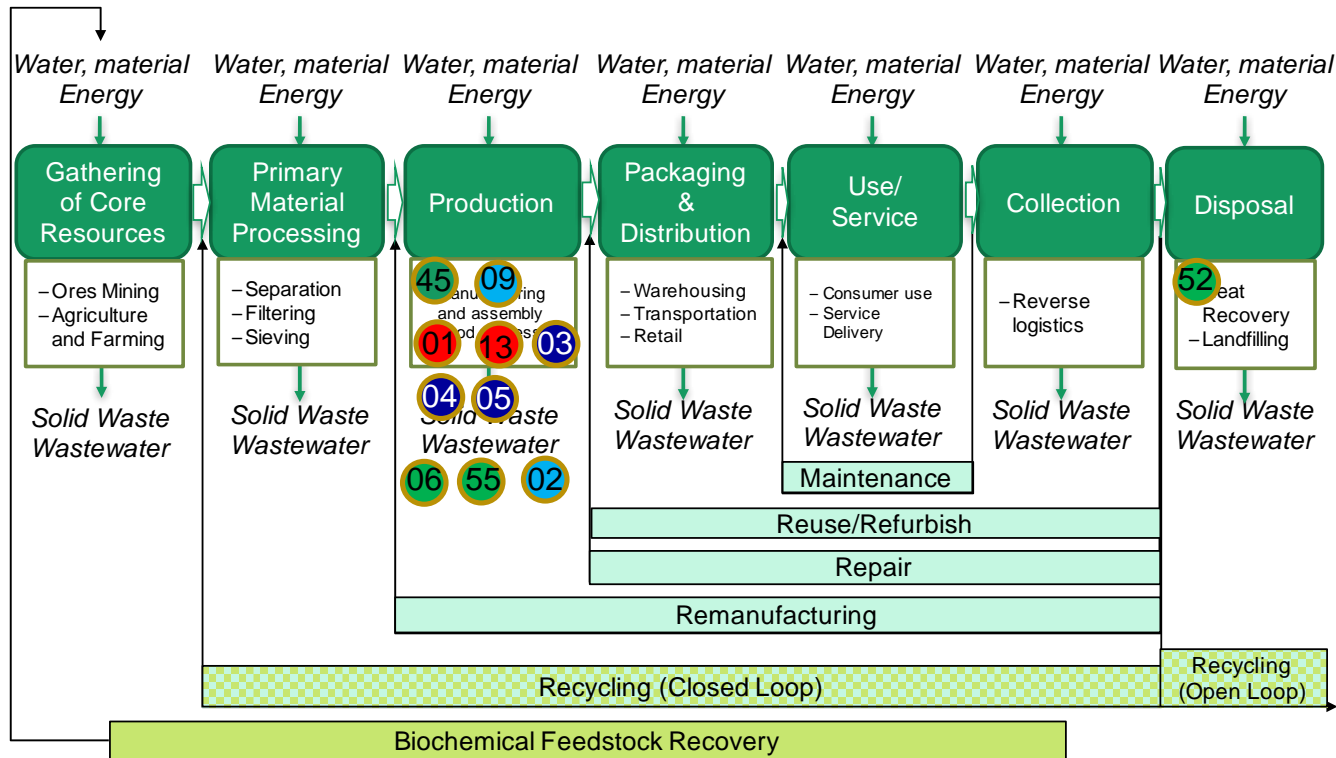
Region	Project Name (past and ongoing projects)
Lombardy06	LIFE BATTLE - Best Available Technique for water reuse in TextiLE SMEs
Lombardy45	LIFE CRESIM Project - Carbon Fiber Recycling Through Special Impregnation
Lombardy52	ENTeR - Expert Network on Textile Recycling
Lombardy55	MERMAIDS - Mitigation of microplastics impact caused by textile washing processes
Catalonia02	Ecuval
Catalonia09	MIDWOR
LWARB01	REBUS
LWARB13	ECAP – the European Clothing Action Plan
Cd2e03	CROSSTEXNET (TEXTILE AT THE CROSS ROADS OF NEW APPLICATIONS)
Cd2e04	PASTA (Integrating Platform for Advanced Smart Textile Applications)
Cd2e05	MULTITEXCO (High Performance Smart Multifunctional Technical Textiles for the Construction Sector)

Good Practice ID	Good Practice name
LombardyGP15	Nylon socks recycling
LombardyGP29	Clothes from waste textile
LombardyGP30	Second-end clothes
LombardyGP31	Survey
CataloniaGP01	BRE FASHION
CataloniaGP02	ROBA AMIGA
CataloniaGP03	HUMANA
CataloniaGP04	ECOANTEX
CataloniaGP05	TUVA TOWEL
CataloniaGP06	COMMITTED
CataloniaGP07	PAGÈS i VALENTÍ
CataloniaGP08	LIFE FLAREX
CataloniaGP09	ECUVAL

Cross-cutting Projects and Good Practices belonging to the **Textile sector** are analysed through the value chain approach

Outcomes of the analysis

Cross-cutting Projects in the Textile sector

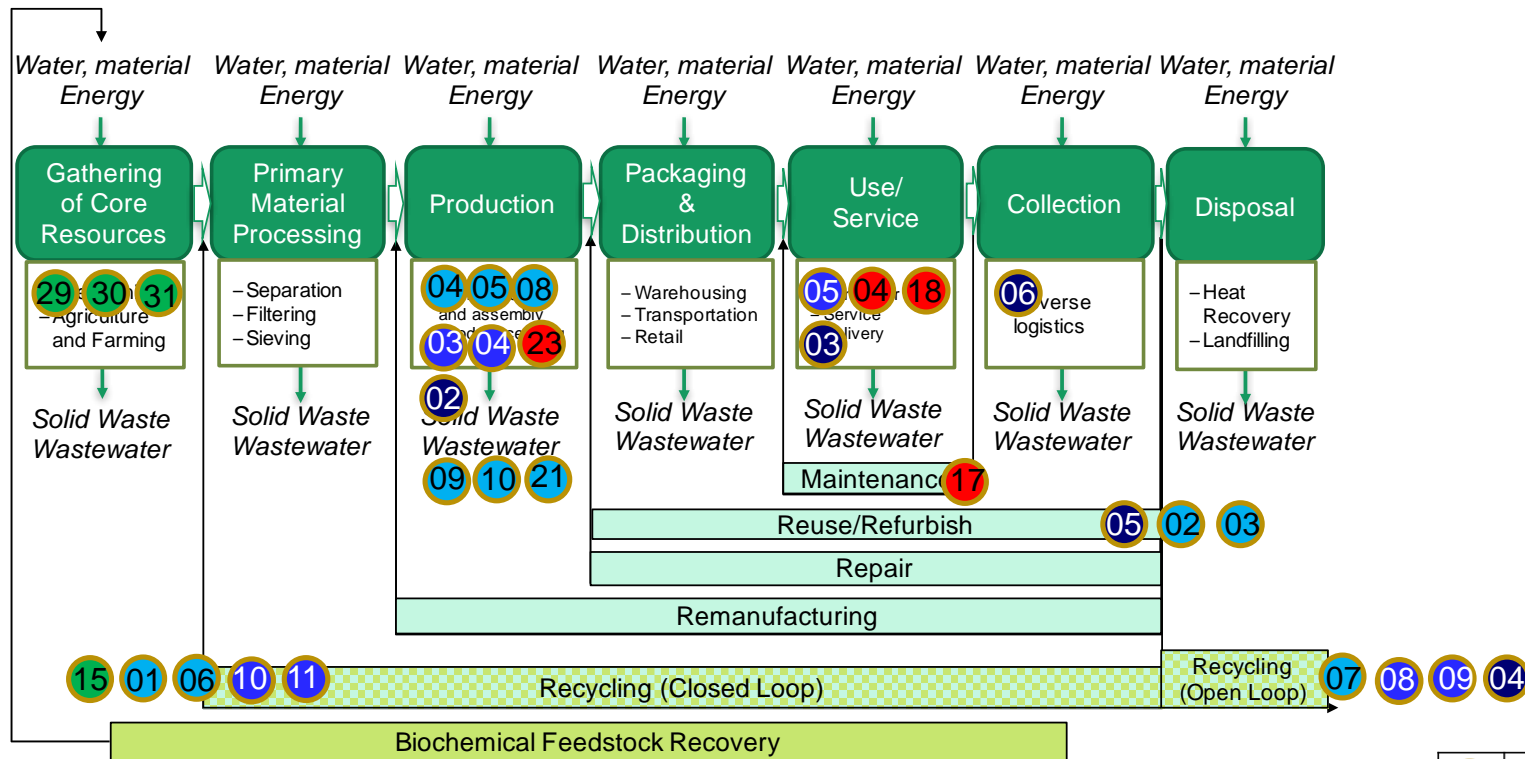


100% of the Cross-cutting Projects present a complete data set, useful to be mapped within the value chain

	Catalonia
	Cd2e
	Gelderland
	Lombardia
	Lower Silesia
	LWARB
	Sofia Municipality
	SOS

Outcomes of the analysis

Good practices in the Textile sector



100% of the Good practices present a complete data set, useful to be mapped within the value chain

●	Catalonia
●	Cd2e
●	Gelderland
●	Lombardia
●	Lower Silesia
●	LWARB
●	Sofia Municipality
●	SOS

Outcomes of the analysis

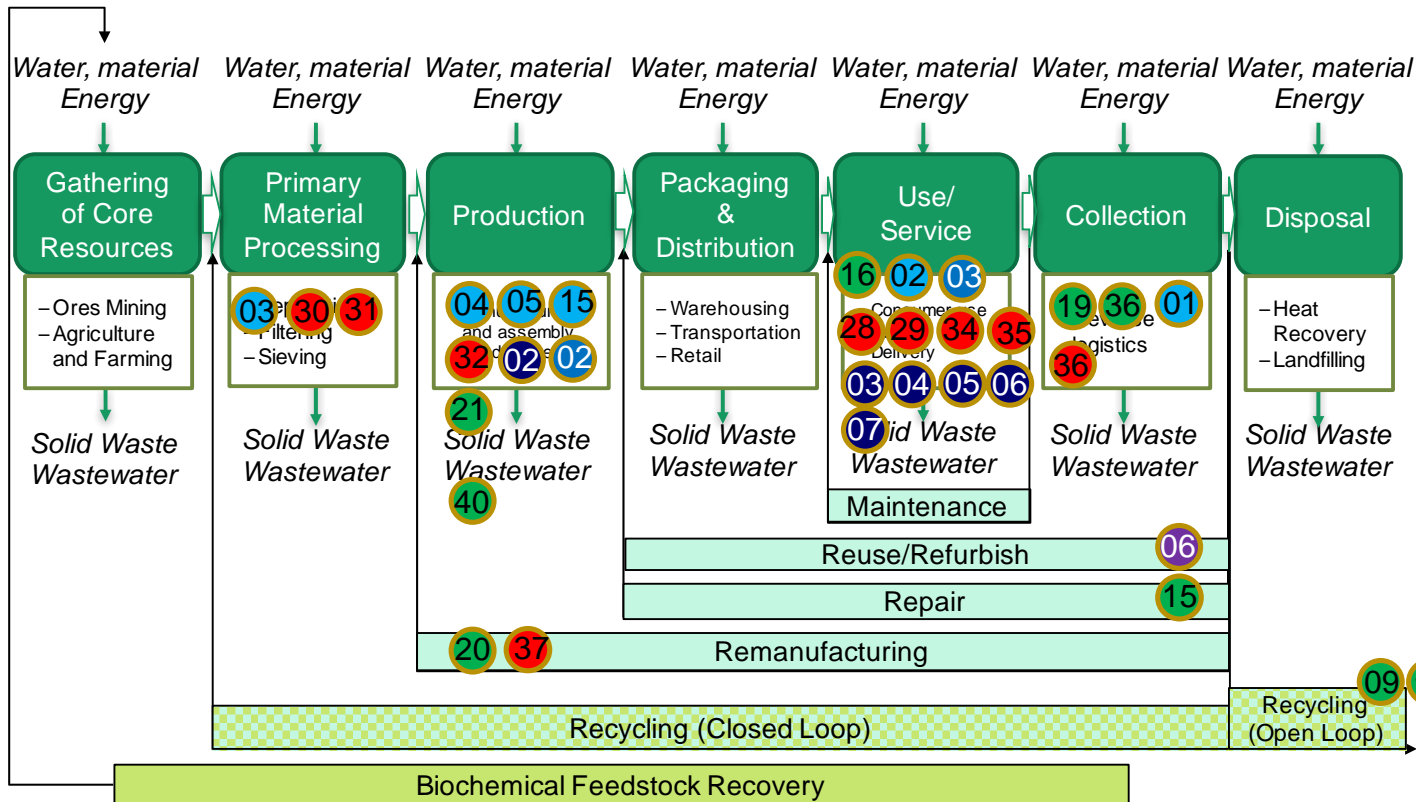
Opportunities in the Textile sector

Opportunities belonging to the **Textile sector** are analysed through the value chain approach

Opportunity ID	Opportunity name
Lombardy09	Implementation of a web platform
Lombardy15	Increase the recover of waste clothes
Lombardy16	Increase the percentage of recycled materials
Lombardy18	Reuse of textiles in other sectors
Lombardy19	Increase second-hand clothes collection and redistribution
Lombardy20	Influencing fashion designer in the use of secondary raw materials (textiles)
Lombardy21	Greater involvement of fashion companies
Lombardy36	Reverse logistics in every sector (see opportunity n° 5)
Lombardy40	Standardization on waste management from collection to recycling (see opportunity n° 7)
Catalonia01	INCREASE SORTING AND COLLECTING CAPACITY OF POST-CONSUMER CLOTHING AND HOME TEXTILES
Catalonia02	PROMOTE NEW BUSINESS MODELS TO INCREASE SHARE, REUSE, REPAIR & REFURBISHMENT
Catalonia03	INCREASE RECYCLABILITY, RECYCLING AND USE OF RECYCLED OF FIBRES, TAINES AND FABRICS
Catalonia04	INTENSIFY SEARCH OF ALTERNATIVES FOR SUBSTANCES OF CONCERN AND MICROFIBER RELEASE (DURING PRODUCT LIFE CYCLE)
Catalonia05	INCREASE ENERGY AND WATER EFFICIENCY IN THE PRODUCTION PROCESS
Catalonia14	EXPLORE NEW WAYS OF UPCYCLING PRECONSUMER TEXTILE WASTE FOR
Catalonia15	PROMOTE ECODESIGN FOR DURABILITY
Gelderland02	Young start-ups
Gelderland03	Demand in stead of supply input
LWARB28	· Increase knowledge and expertise by incorporating circular economy design into relevant textile design courses and create design competitions to
LWARB29	· Offer business support to textiles industry start-ups and existing SMEs to help them transition to more circular economy business models.

Outcomes of the analysis

Opportunities in the Textile sector



●	Catalonia
●	Cd2e
●	Gelderland
●	Lombardia
●	Lower Silesia
●	LWARB
●	Sofia Municipality
●	SOS

97,2% of the **Opportunities** present a complete data set, useful to be mapped within the value chain

Title of Good Practice/Opportunity
Sustainable textile manufacturing

Name and Type of Stakeholders

Citizens, industry, SMEs, companies, Advance London

Type of action

- Gathering of core resources
- Primary material processing
- Production
- Packaging and Distribution
- Use and Service
- Collection
- Disposal

Brief description









Opportunities:

- Catalonia03 Increase recyclability and availability of recycled of fibers, yarns and manufactured clothes.
- LWARB30 Invest in circular economy textile SMEs and in technologies that allow for more sustainable textile manufacture.

Complementary Data

Although it is technically 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. At the same time, Advance London offer support through Advance London programme within LWARB.

Matching cross-regional opportunities, TRL 4-5

	Catalonia
	Cd2e
	Gelderland
	Lombardia
	Lower Silesia
	LWARB
	Sofia Municipality
	SOS

Title of Good Practice/Opportunity
Support for new circular textile start-ups

Name and Type of
Stakeholders

Citizens, SMEs, start-ups, MODINT,
TEXPERIUM, Advance London

Type of action

- Gathering of core resources
- Primary material processing
- Production
- Packaging and Distribution
- Use and Service
- Collection
- Disposal

Brief description

Opportunities:







- Gelderland02: Young start-ups.
- LWARB29: Offer support through Advance London program within LWARB.

Complementary Data

New young start-ups are aware of the need for working circular. They are the new economy and realize that a change is needed.

Advance London offers business support to textiles industry start-ups and existing SMEs to help them transition to more circular economy business models. Cooperation and knowledge sharing within region could be fruitful for both.

Matching cross-regional opportunities, TRL 4-5

	Catalonia
	Cd2e
	Gelderland
	Lombardia
	Lower Silesia
	LWARB
	Sofia Municipality
	SOS

Title of Good Practice/Opportunity
 Second-hand textile

 Name and Type of
 Stakeholders

Citizens, SMEs, start-ups, MODINT,
TEXPERIUM, Advance London

Type of action

- Gathering of core resources
- Primary material processing
- Production
- Packaging and Distribution
- Use and Service
- Collection
- Disposal

Brief description









Opportunities:

- Lombardy19 Increase second-hand clothes collection and redistribution.
- Catalonia01 Increase sorting and collecting capacity of clothing and home textiles.
- LWARB36 Assess how collections and infrastructure for textile re-use could be improved.

Complementary Data

In textile clothing we deal with two kind 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. 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 organizations). In the case of municipal 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).

 Matching cross-regional
 opportunities, TRL 4-5

	Catalonia
	Cd2e
	Gelderland
	Lombardia
	Lower Silesia
	LWARB
	Sofia Municipality
	SOS

Textile

Catalonia,
Lombardy

Title of Good Practice/Opportunity

Reduction of structural waste during production, use and maintenance (along the value chain)

Name and Type of Stakeholders

Citizens, sectorial company, R&D, project consortium

Type of action

- Gathering of core resources
- Primary material processing
- Production
- Packaging and Distribution
- Use and Service
- Collection
- Disposal

Brief description

Opportunity:

- Catalonia05 Reduction of structural waste during production, use and maintenance (along the value chain).

Cross-cutting Project:

- Lombardy55 MERMAIDS - Mitigation of microplastics impact caused by textile washing processes.

Complementary Data

Opportunity 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 microfibras (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 filtering technologies can be implemented at the very origin of the problem by sorting microfibras out of laundry wastewater saving thousand of tons of microplastics to pollute our water streams.

Cross-cutting project The main objective of the LIFE - MERMAIDS project is to contribute to the mitigation of the environmental impact of microplastic and nanoplastic particles resulting from laundry wastewater on European sea ecosystems. This objective will be achieved by demonstrating and implementing innovative technologies, and additives for laundry processes and textile finishing treatments.

Matching cross-cutting projects and opportunities, TRL 6-7

	Catalonia
	Cd2e
	Gelderland
	Lombardia
	Lower Silesia
	LWARB
	Sofia Municipality
	SOS

Title of Good Practice/Opportunity

Standardization on waste management from collection to recycling

Name and Type of Stakeholders

Customers, citizens, public administration, municipalities, large retail, sectorial companies, Policy Lab, Centrocot, ECAP consortium

Type of action

- Gathering of core resources
- Primary material processing
- Production
- Packaging and Distribution
- Use and Service
- Collection
- Disposal

Brief description

Opportunity:

- Lombardy15 Increase the recover of waste clothes.
- Lombardy40 Standardization on waste management from collection to recycling.

Cross-cutting Project:

- LWARB13 ECAP – the European Clothing Action Plan.

Complementary Data

Opportunities 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. At the same time, build a common rules on waste management from collection to recycling of end of life products can help a better recover and recycling of goods.

Cross-cutting project The European Clothing Action Plan – ECAP – is an exciting project that will bring environmental and economic benefit to the clothing sector. It is the first EU LIFE funded project to address clothing sustainability. Its approach encompasses sustainable design, production, consumption, public procurement, collection, recycling and reprocessing. The project focuses on the clothing supply chain, specifically to reduce waste and to bring about effective waste recovery. Retailers, brands, suppliers, public sector, re-use and recycling organisations, and charities are encouraged to commit to a target-based plan that is supported by a consumer campaign to change behaviour. Over the three and a half year life of the project, participants will have the opportunity to develop a more circular approach to reducing clothing waste across Europe.

Matching cross-cutting projects and opportunities, TRL 6-7

	Catalonia
	Cd2e
	Gelderland
	Lombardia
	Lower Silesia
	LWARB
	Sofia Municipality
	SOS

Textile

Lombardy,
Gelderland

Title of Good Practice/Opportunity
Reuse of textiles in other sectors

Name and Type of
Stakeholders

Citizens, textile companies, construction companies, R&D, Denimtex.

Type of action

- Gathering of core resources
- Primary material processing
- Production
- Packaging and Distribution
- Use and Service
- Collection
- Disposal
- Reuse

Brief description

Opportunities:

- Lombardy18 Reuse of textiles in other sectors.

Good Practice:







- GelderlandGP08 Denimtex.

Complementary Data

Opportunity: 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.

Good practice: Denimtex is a circular wall and ceiling decoration, made of use clothes and/or bio-based textile fiber. These materials are produced to a decorative sound proofing and sustainable wall covering.

Matching good practices and opportunities, TRL 7-8

	Catalonia
	Cd2e
	Gelderland
	Lombardia
	Lower Silesia
	LWARB
	Sofia Municipality
	SOS

Title of Good Practice/Opportunity
Second-hand clothes

 Name and Type of
Stakeholders

Customers, citizens, public administration, municipalities, sectorial company, La Terza Piuma, Humana.

Type of action

- Gathering of core resources
- Primary material processing
- Production
- Packaging and Distribution
- Use and Service
- Collection
- Disposal
- Reuse

Brief description

Opportunities:

- LWARB35: Love Your Clothes campaign.

Good Practice:








- LombardyGP30: Second-hand clothes (La Terza Piuma).
- CataloniaGP03: Second-hand clothes (Humana).

Complementary Data

Opportunity: Love Your Clothes campaign aims to educate people to a more responsible behaviour in clothes field. This movement goes from smart buy to repair, upgrade and second hand market.

Good practice: La Terza Piuma focuses on collection, recovery and sale of second-hand garments for children and adults. At the same time, HUmana promotes reusing and recycling textiles by collecting used clothing from 5.000 containers throughout Spain in 2.000 municipalities. Classifies clothes at its headquarters in Atmella del Vallès (Barcelona) for reuse or recycling.

 Matching good practices and
opportunities, TRL 7-8

	Catalonia
	Cd2e
	Gelderland
	Lombardia
	Lower Silesia
	LWARB
	Sofia Municipality
	SOS

Preliminary analysis of the value-chains

Built Environment value chain

Data gathered from the CircE Tools of the Partners in the Built Environment sector:

- **32 Industrial Stakeholders in the Built Environment sector**
- **7 Research Stakeholders in the Built Environment sector**
- **3 Education Stakeholders in the Built Environment sector**
- **2 Policy Stakeholders in the Built Environment sector**

- **15 Cross-cutting Projects in the Built Environment sector**
- **23 Good Practices in the Built Environment sector**

- **30 Opportunities in the Built Environment sector**

Outcomes of the analysis

Regional Stakeholders in the Built Environment sector

Region	Industrial Stakeholder
Lombardy04	Rivierasca
Lombardy33	Colombo Costruzioni
Lombardy34	Pessina Costruzioni
Lombardy46	VEZZOLA SpA
Lombardy47	PRANDELLI SANTO Srl
Lombardy48	CORBAT S.r.l
Lombardy49	REMEDI S.r.l
Lombardy50	ROFFIA S.R.L - ECOMAS S.R.L
Lombardy51	BINDA SRL
Lombardy74	Sirti Spa
Lombardy83	Holcim Lafarge
Lombardy86	Officina dell'Ambiente
Lombardy96	ANCE Lombardia
Lombardy97	ANPAR
LowerSilesia10	EnergAsh Sp. z o.o.
Gelderland02	Pioneering

Region	R&D&I Stakeholder
Lombardy	Politecnico di Milano
Lombardy	Università degli Studi di Brescia
LWARB	University College London
LWARB	University College London
LWARB	Imperial College
LWARB	BRE
LWARB	CIRIA (construction industry research and information association)

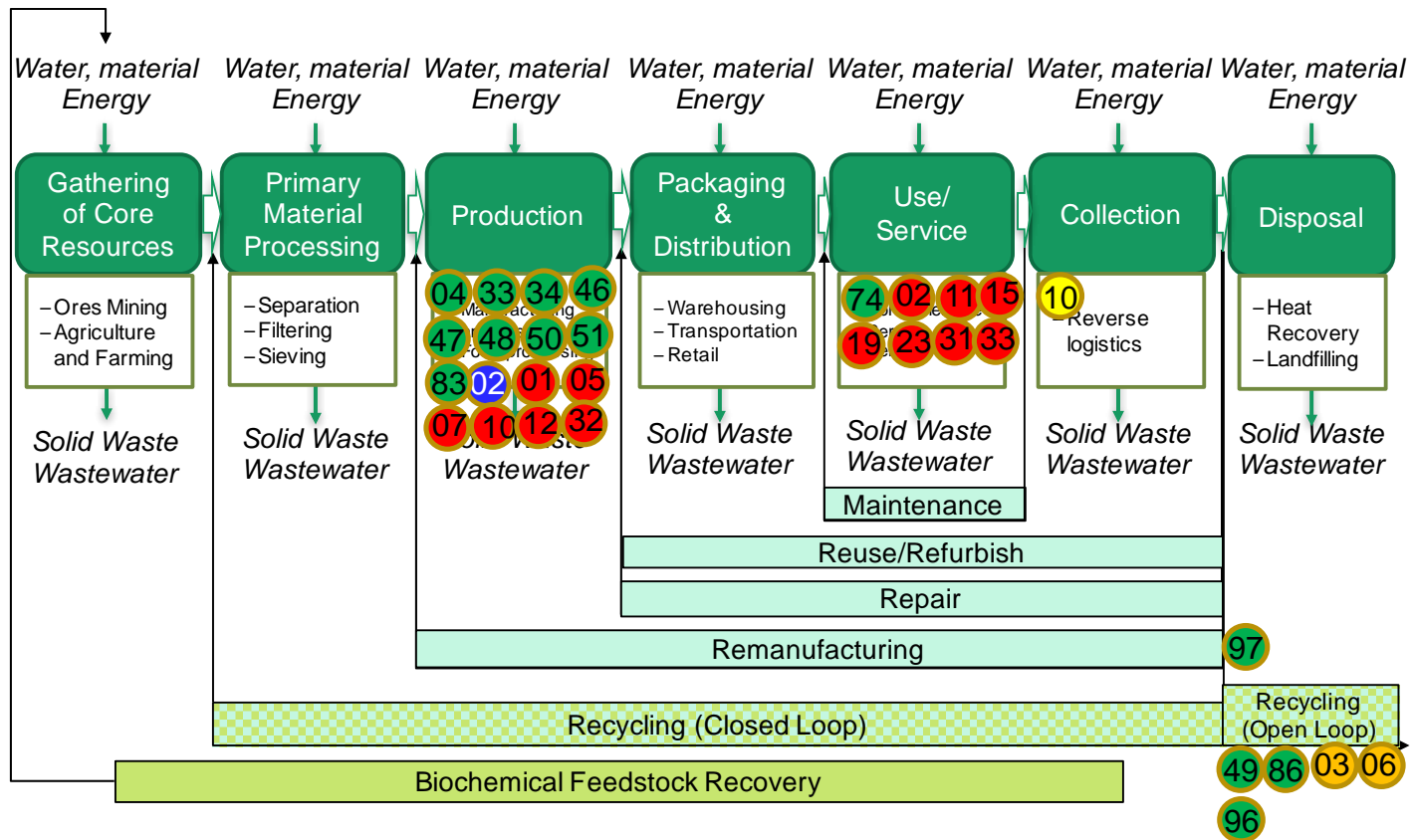
Region	Education Stakeholder
LWARB	University College of London
LWARB	London School of Economics and Political Sciences
Sofia Municipality	UNIVERSITY OF FORESTRY Sofia

Region	Policy Stakeholder
Lombardy	Regione Lombardia, Directorate Environment, Unit Waste Planning
LWARB	Greater London Authority (GLA), the Mayor of London and the London Assembly

Regional Stakeholders belonging to the **Built Environment sector** are analysed through the value chain approach

Outcomes of the analysis

Industrial Stakeholders in the Built Environment sector



96,9% of the Regional Stakeholders present a complete data set, useful to be mapped within the value chain

Outcomes of the analysis

Projects and Good practices in the Built Environment sector

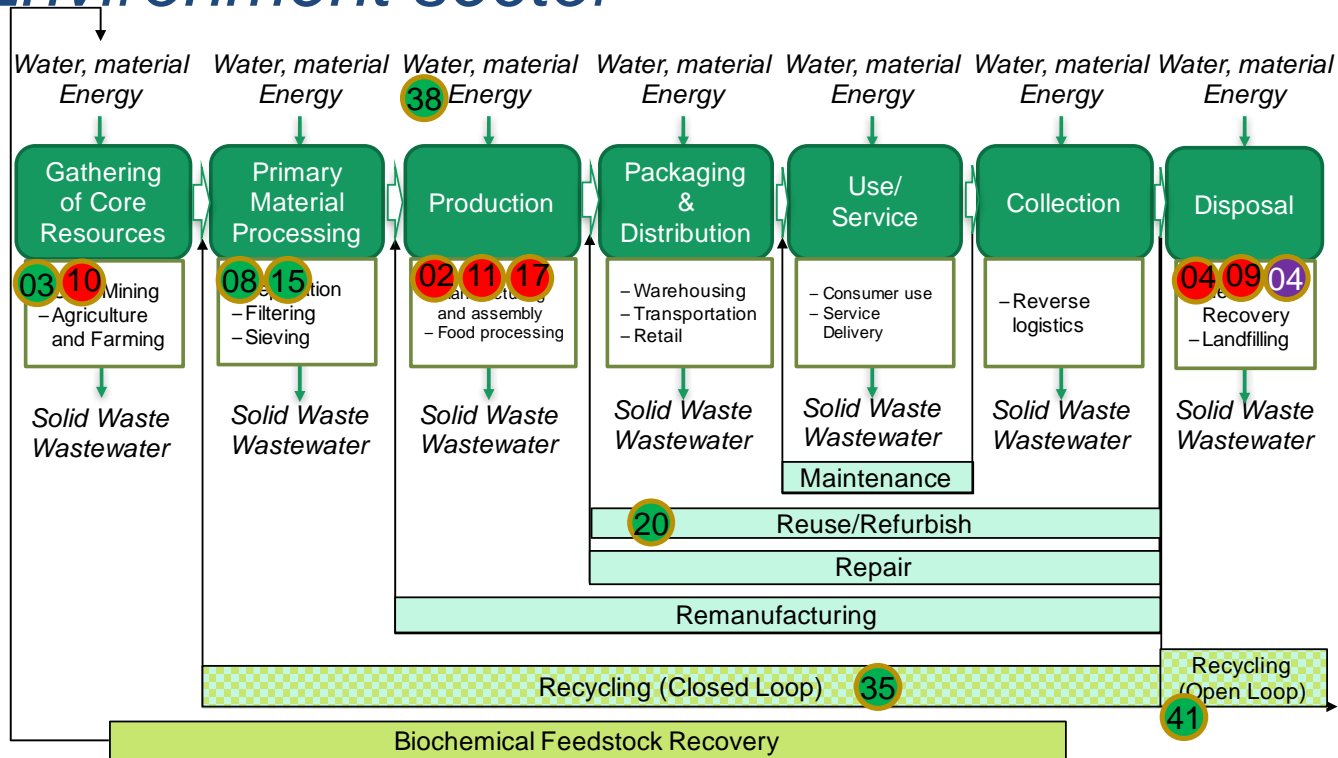
Region	Project Name (past and ongoing projects)
Lombardy03	LIFE GPPinfoNET - The Green Public Procurement Information Network
Lombardy08	NATURALMENTE: Nuove Applicazioni di fibre naTURALi riciclate funzionalizzate per Migliorare l'efficienza ENergeTica degli Edifici
Lombardy15	NINIVE - Nano Intonaco Isolante a base di Vetro Ecologico
Lombardy20	LIFE COSMOS - COLloidal Silica Medium to Obtain Safe inert: the case of incinerator fly ash
Lombardy35	FISSAC - Fostering industrial symbiosis for a sustainable resource intensive industry across the extended construction value chain
Lombardy38	RetroKit - Toolboxes for systemic retrofitting
Lombardy41	SUS-CON SUStainable, Innovative and energy efficient concrete, based on integration of all-waste materials
Lombardy50	LIFE BIOREST - Bioremediation and revegetation to restore the public use of contaminated land
LWARB02	REBUS
LWARB04	Buildings As Material Banks (BAMB)
LWARB09	Circular and Sharing Economy Study for Old Oak and Park Royal Development Corporation
LWARB10	HS2 Circular Economy Opportunity
LWARB11	The Alliance for Sustainable Building Products
LWARB17	The Green Construction Board
SOS04	ECCA – European Circular Construction Alliance; adopting Circular Economy for internationalization and global competitiveness of European SMEs in Building and Construction

Good Practice ID	Good Practice name
LombardyGP17	New Office Building (LEED GOLD)
LombardyGP18	Cantiere Autostradale (BS)
LombardyGP19	Cantiere stradale (CR)
LombardyGP20	Cantiere Autostradale (VE)
LombardyGP21	Intervento di Strip Out (milano)
LombardyGP22	Isola Ecologica "ELNOS"
LombardyGP23	Progetto CORIN
LombardyGP25	Protocollo d'Intesa con regione Lombardia per la promozione degli aggregati riciclati
LombardyGP36	EU Construction & Demolition Waste Management Protocol
LombardyGP40	Green Public Procurement mandatory
LombardyGP41	ReMade in Italy certification
LowerSilesiaGP05	IPANTERM Sp. z o.o.
GelderlandGP01	Circular modular Roundabout Ermelo
GelderlandGP02	Service Houses
GelderlandGP07	BERST
GelderlandGP09	Denimtex
LWARBGP06	BREEAM (BRE Environmental Assessment Method)
LWARBGP07	SMARTWaste
LWARBGP12	London living lab
LWARBGP24	Aeropowder
LWARBGP25	LOOP HUB
Cd2eGP04	the Metisse
SofiaGP03	Legislative CDW targets clarification

Cross-cutting Projects and Good Practices belonging to the **Built Environment sector** are analysed through the value chain approach

Outcomes of the analysis

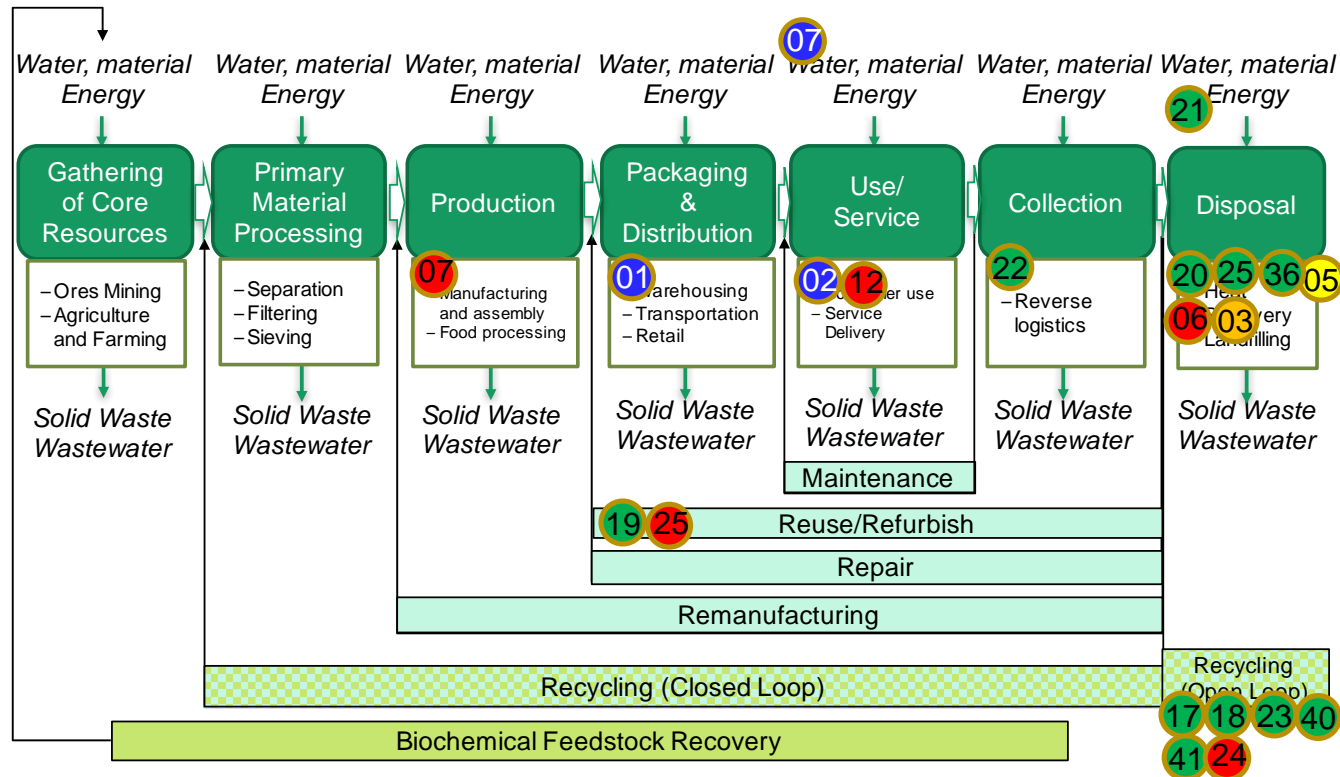
Cross-cutting Projects in the Built Environment sector



93,3% of the Cross-cutting Projects present a complete data set, useful to be mapped within the value chain

Outcomes of the analysis

Good practices in the Built Environment sector



91,3% of the Good practices present a complete data set, useful to be mapped within the value chain

	Catalonia
	Cd2e
	Gelderland
	Lombardia
	Lower Silesia
	LWARB
	Sofia Municipality
	SOS

Outcomes of the analysis

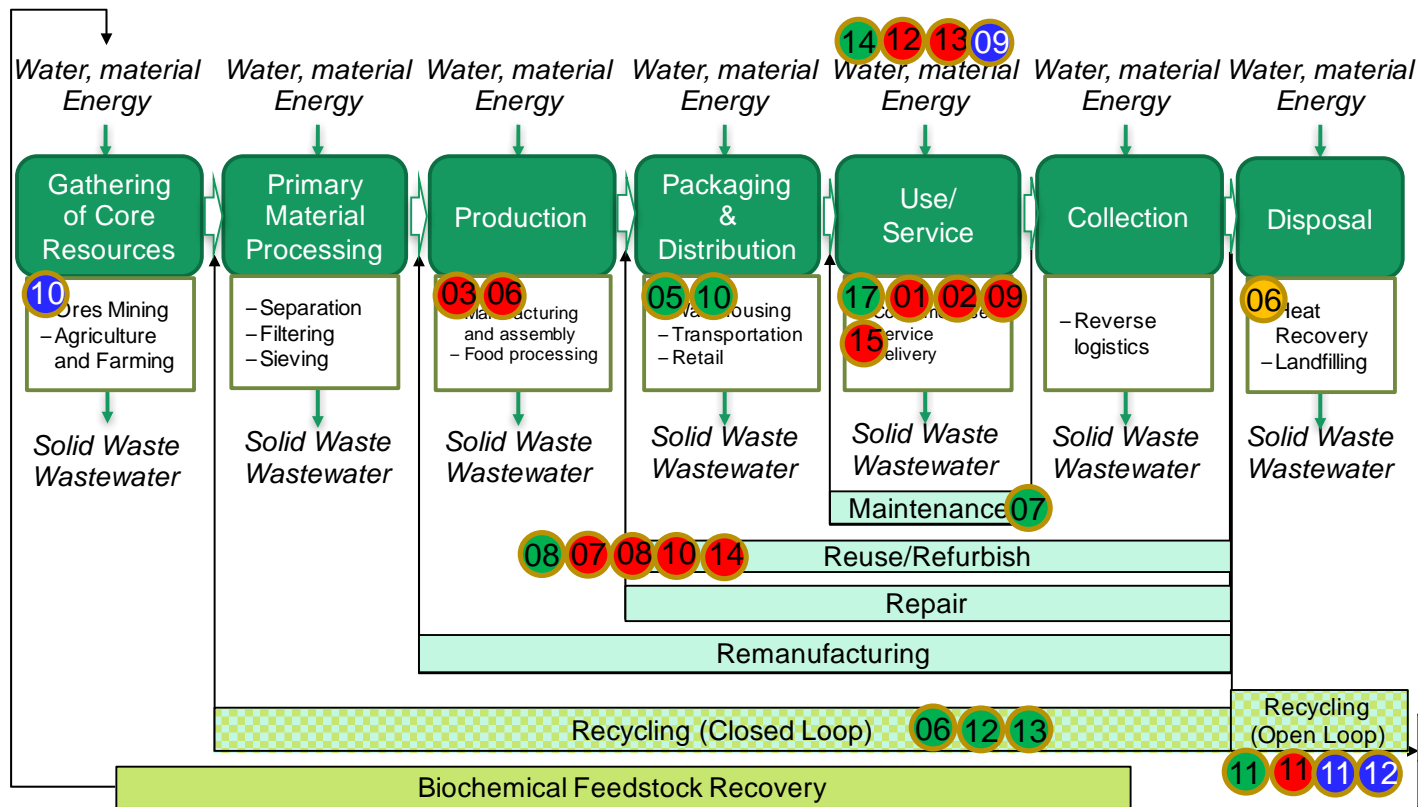
Opportunities in the Built Environment sector

Opportunity ID	Opportunity name
Lombardy05	Reverse logistics in built environment
Lombardy06	Waste recover from renovation activities
Lombardy07	Increase the (quality of the) regeneration of (target) city areas and thus increase the recovery of construction and demolition waste
Lombardy08	Selective demolition
Lombardy10	Enhance (the quality and traceability of) the procedure of waste management, from collection to recycling in built environment
Lombardy11	Enhance (the quality and traceability of) the procedure of waste management, from collection to recycling in built environment
Lombardy12	Increase of secondary raw materials use in the built environment
Lombardy13	Reuse of built environment waste materials in other sectors
Lombardy14	Certification for sustainable buildings
Lombardy17	Increase the percentage of recycled materials
Gelderland09	Energy positive buildings
Gelderland10	Demanding % waste material in new products
Gelderland11	Urban mining
Gelderland12	Databank for using waste material
LWARB01	- Introduce circular economy principles into relevant university courses.
LWARB02	- 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.
LWARB03	Promote novel technologies that enable circular economy within the built environment.
LWARB04	Incorporate relevant circular economy principles into London Plan and local plans.

Opportunities belonging to the **Built Environment sector** are analysed through the value chain approach

Outcomes of the analysis

Opportunities in the Built Environment sector



93,3% of the **Opportunities** present a complete data set, useful to be mapped within the value chain

Title of Good Practice/Opportunity
Selective demolition operations

Name and Type of Stakeholders

Built environment stakeholders, ANPAR, ANCE, Sofia Municipality, entities, business, industry

Type of action

- Gathering of core resources
- Primary material processing
- Production
- Packaging and Distribution
- Use and Service
- Collection
- Disposal
- Maintenance
- Reuse
- Recycling Open Loop

Brief description

Opportunities:

- Sofia06: Guidelines preparation.
- Lombardy08: Selective and precise demolition.

Complementary Data

- Preparation of guidelines containing sequence actions taken in case of destruction of buildings and the subsequent treatment of generated waste;
- 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.

Matching cross-regional opportunities, TRL 4-5

Title of Good Practice/Opportunity
Increase buildings energy efficiency

Name and Type of Stakeholders

Regione Lombardia and Ministero dell'Istruzione, dell'Università e della Ricerca, Regione Liguria, Italy; Regione Sardegna, Italy; Coordinamento Agende 21 Locali - Modena, Italy; Ecosistemi - Roma, Italy; Amministrazione Provinciale di Cremona, Italy.

Type of action

- Gathering of core resources
- Primary material processing
- Production
- Packaging and Distribution
- Use and Service
- Collection
- Disposal

Brief description

Opportunities:

- Gelderland09 Energy positive buildings.
- LWARB13 Share good practice amongst facilities managers to implement circular economy principles in the running of their buildings.

Cross-cutting project:

- Lombardy08 NATURALMENTE: Nuove Applicazioni di fibre naTURALi riciclate funzionalizzate per Migliorare l'efficienza ENergeTica degli Edifici.

Complementary Data

Opportunity: Built energy positive buildings, who can support their own energy needs, Share good practice amongst facilities managers to implement circular economy principles in the running of their buildings.

Cross-cutting project: The purpose is to improve the energy efficiency of the building with fibres from paper and cardboard waste. Adding then PCM (Phase Change Materials) and cement, panel with high thermal propriety are obtained. The utilization is in sustainable building.

Matching cross-cutting project and opportunities, TRL 6-7

BUILT ENVIRONMENT

LWARB, Gelderland, Lombardy

Title of Good Practice/Opportunity Online platform for building waste materials

Name and Type of Stakeholders

Loop HUB, Globechain, all the stakeholders belonging to Gelderland, construction building and materials companies, Waste producers in the C&D sector.

Type of action

- Gathering of core resources
- Primary material processing
- Production
- Packaging and Distribution
- Use and Service
- Collection
- Disposal
- Recycling Open Loop

Brief description

Opportunities

- LWARB11: Create/work with existing online web platform for trading of recovered building materials.
- Gelderland12: Databank for using waste material.

Good practice.

- LombardyGP23: Progetto CORIN.

Complementary Data

Opportunities:

- Waste material become ingredients. A databank which connects companies who have waste materials and companies who are looking for ingredients.
- Investigate market need, and learn from other existing platforms such as Globe-chain and Flow to set up web platform for building materials

Good practice:

- CORIN was born from the idea of 5 Mantuan companies in the construction chain. Through the establishment of a Business Network, experiences and research were shared with the aim of building an integrated system for the management and recycling of materials from construction and demolition waste from the Province of Mantua. The success of the project is ensured by the participation in the network of companies operating in all the rings of the C & D waste cycle: Construction, Demolition, Collection, Specialized Transport, Selection, Treatment and Recycling, Disposal, Extraction of virgin material. CORIN's main mission is to realize, through a process capable of involving the largest number of stakeholders in the construction chain, a voluntary system of certified procedures and shared behavioral rules to replace and eliminate the need for inspections and ex-post controls by public surveillance bodies.

Matching opportunities and good practice, TRL 7-8

Title of Good Practice/Opportunity
Green Public Procurement

Name and Type of Stakeholders

Public administration, municipalities, large retail, companies, citizens, building sector.

Type of action

- Gathering of core resources
- Primary material processing
- Production
- Packaging and Distribution
- Use and Service
- Collection
- Disposal
- Reuse
- Recycling Close Loop
- Recycling Open Loop

Brief description

Opportunity

- LWARB08: Encourage or require reuse of materials : Work towards setting a re-use target for construction projects in London.
- Gelderland10: Demanding % waste material in new products.

Good practice

- LombardyGP40: Green Public Procurement mandatory.

Complementary Data

Opportunities:

- 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;
- The government can demand that % for new products come from waste material;

Good practice: In Italy, as first country in Europe, Green Public procurement became compulsory with the adoption of the Decree 50/2016. All Public administrations must apply minimum environmental criteria set by the Ministry of the Environment for 100% of the value of all purchases of goods and services. Gpp is an opportunity to increase not only the quantity but also the quality of materials and goods resulting from the recycling of waste and therefore really may stimulate the Circular Economy (as the European Commission also supports in the Circular Economy Package) as the system requires that the public Administration buy only certified products and corresponding to the minimum environmental criteria set by the Ministry of the Environment.

Matching opportunities and good practice, TRL 7-8

Preliminary analysis of the value-chains

Plastics value chain

Data gathered from the CircE Tools of the Partners in the Plastics sector:

- **34 Industrial Stakeholders in the Plastics sector**
- **16 Research Stakeholders in the Plastics sector**
- **4 Education Stakeholders in the Plastics sector**
- **0 Policy Stakeholders in the Plastics sector**

- **9 Cross-cutting Projects in the Plastics sector**
- **8 Good Practices in the Plastics sector**

- **16 Opportunities in the Plastics sector**

Outcomes of the analysis

Regional Stakeholders in the Plastics sector

Region	Industrial Stakeholder
Lombardy05	Brianza Plastica S.p.A.
Lombardy06	Sintostamp S.r.l.
Lombardy07	Magniplast S.p.A.
Lombardy08	Polynt
Lombardy27	OCV Owenscorning
Lombardy31	ENKI
Lombardy35	Rollwasch Italiana
Lombardy39	Vibram
Lombardy60	SOGIS
Lombardy71	CAUTO
Lombardy79	
Lombardy80	Montello S.p.A.
Lombardy81	Breplast S.p.A.
Lombardy82	Tramonto Antonio Srl
Lombardy92	Giochisport
Lombardy93	Forniture Industriali B.M.G.
Lombardy94	S.C.V.S.
LowerSilesia02	ERGIS S.A. branch in Oława
LowerSilesia12	B&K PLAST
LWARB01	BAM Construct UK

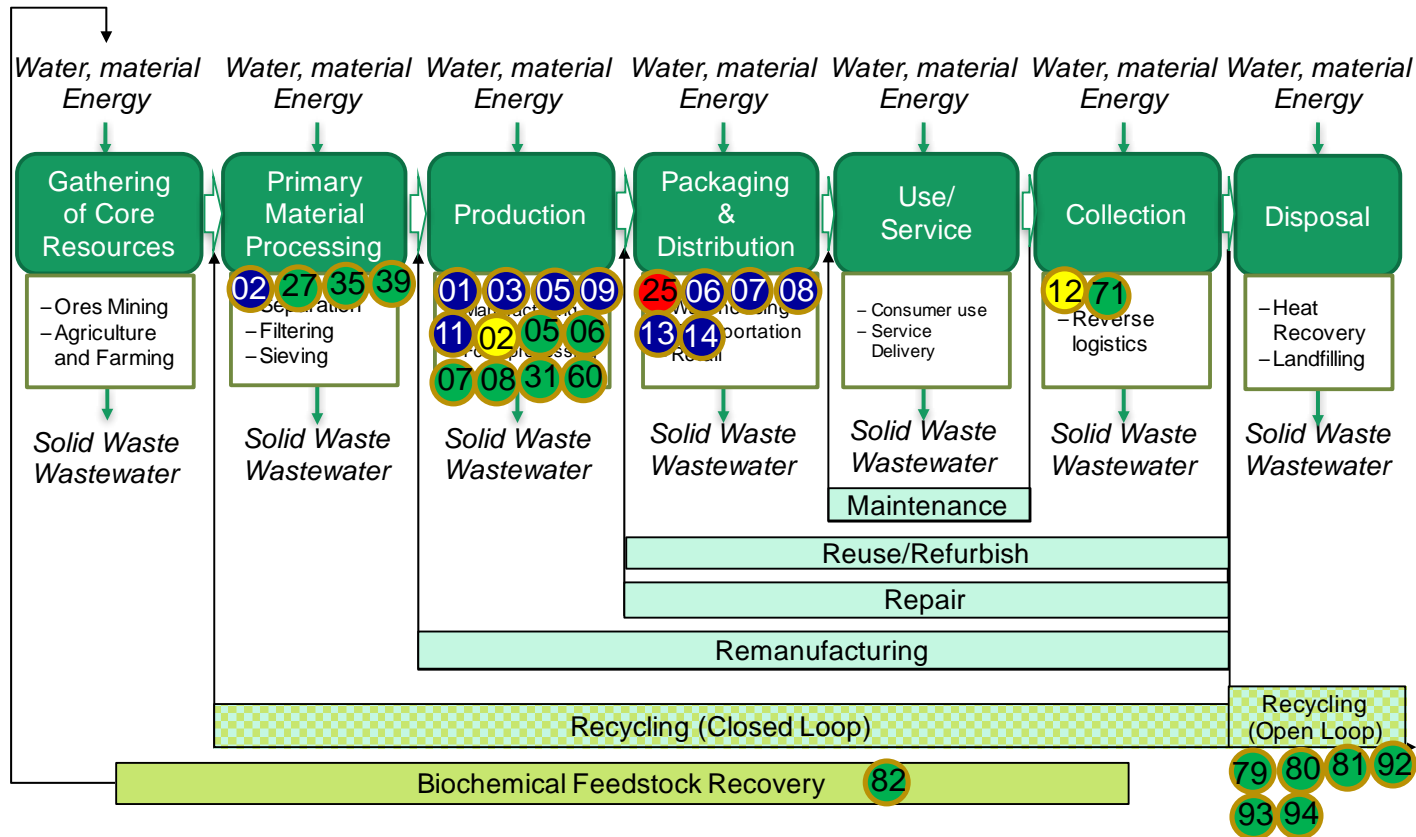
Region	R&D&I Stakeholder
Lombardy	Politecnico di Milano
Lombardy	CNR <i>National Council of</i>
Lombardy	Innovhub Stazioni <i>Sperimentali per</i>
Lombardy	COREPLA RA.DI. S.r.l.
Lombardy	CONAI COREPLA
Lombardy	COREPLA GARBO S.r.l.
Lombardy	COREPLA FOREVER PLAST S.p.A.
Catalonia	Leitat
Catalonia	Eurecat
Catalonia	Centre Català del Plàstic
Catalonia	Institut de Química Avançada
Cd2e	UCCS (Unité de catalyse et de chimie du solide)
Cd2e	LASIR (Laboratoire de Spectrochimie Infrarouge)
Cd2e	IMMCL (Institut des Molécules et de la
Cd2e	PC2A (Laboratoire de Physicochimie des
Cd2e	ENSCL (National School of Chemistry of Lille)

Region	Education Stakeholder
Lombardy	Politecnico di Milano
Lombardy	Università di Bergamo
Cd2e	Ecole Nationale Supérieure de Chimie
Sofia Municipality	University of Chemical Technology and Metallurgy Sofia

Regional Stakeholders belonging to the **Plastics sector** are analysed through the value chain approach

Outcomes of the analysis

Industrial Stakeholders in the Plastics sector



	Catalonia
	Cd2e
	Gelderland
	Lombardia
	Lower Silesia
	LWARB
	Sofia Municipality
	SOS

91,2% of the Regional Stakeholders present a complete data set, useful to be mapped within the value chain

Outcomes of the analysis

Projects and Good practices in the Plastics sector

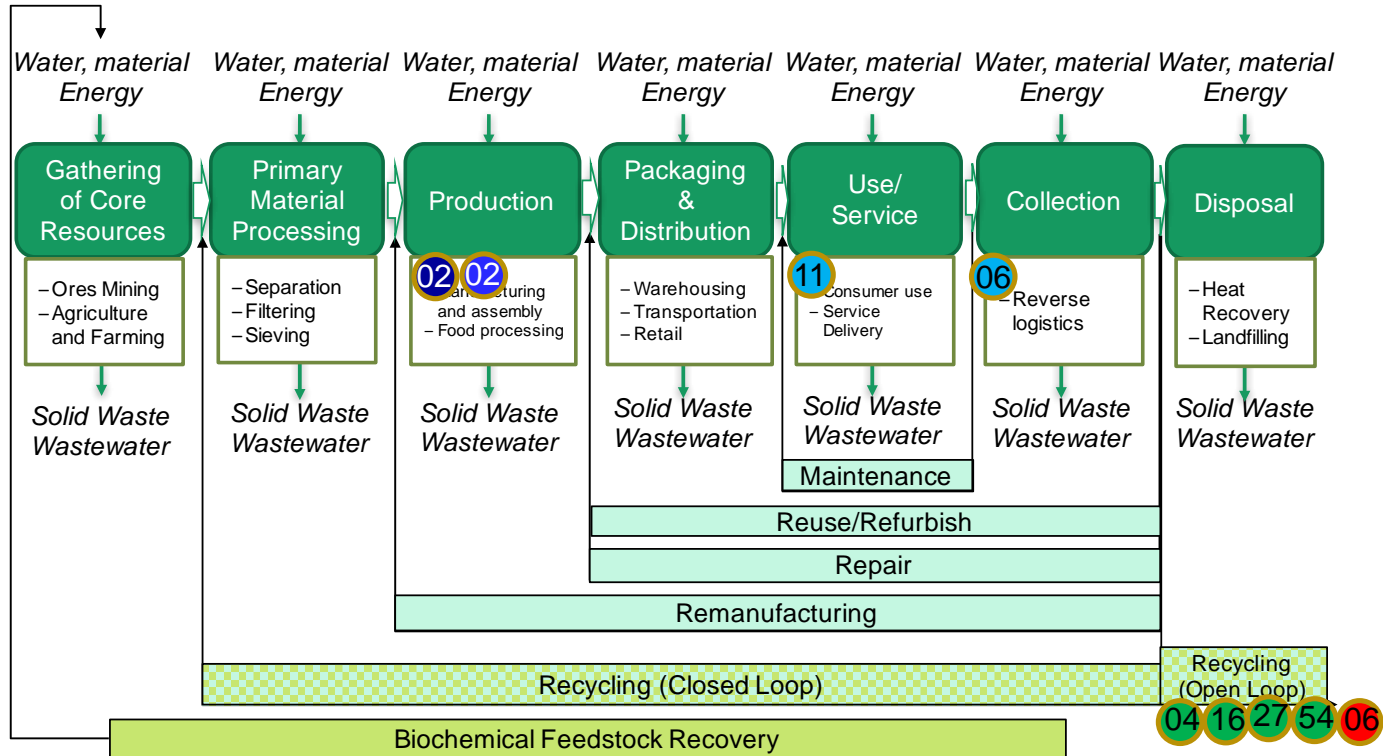
Region	Project Name (past and ongoing projects)
Lombardy04	LIFE AUTOPLAST - From plastic to plastic, with professionalism and respecting the environment
Lombardy16	IMPreSA - Materiali innovativi a matrice polimerica di recupero per le realizzazione di sistemi infrastrutturali ad uso viario a basso impatto ambientale
Lombardy27	FiberEUse - Large scale demonstration of the tecno-economical benefits of new circular economy value chains based on the reuse on the end of life fibre-reinforced composites
Lombardy54	EuCertPlast - European Certification for post consumer plastics Recyclers
Catalonia06	ACT4Litter
Catalonia11	Mermaids
Gelderland02	DRIVE4EU: www.drive4eu.eu
LWARB06	New Plastics Economy
Cd2e02	SSUCHY (Sustainable structural and multifunctional biocomposites from hybrid natural fibres and bio-based polymers)

Good Practice ID	Good Practice name
LombardyGP10	New concept of surface finishing media for dry process
LombardyGP11	New composite material from production waste
LombardyGP16	Innovative paper packaging
LombardyGP38	COREPLA - mixed plastic waste sorting and recycling contracts
LombardyGP39	LAROS S.r.l.
LWARBGP21	Ooho
LWARBGP22	Riz Boardshorts
LWARBGP26	Circular Plastics Commitment

Cross-cutting Projects and Good Practices belonging to the **Plastics sector** are analysed through the value chain approach

Outcomes of the analysis

Cross-cutting Projects in the Plastics sector

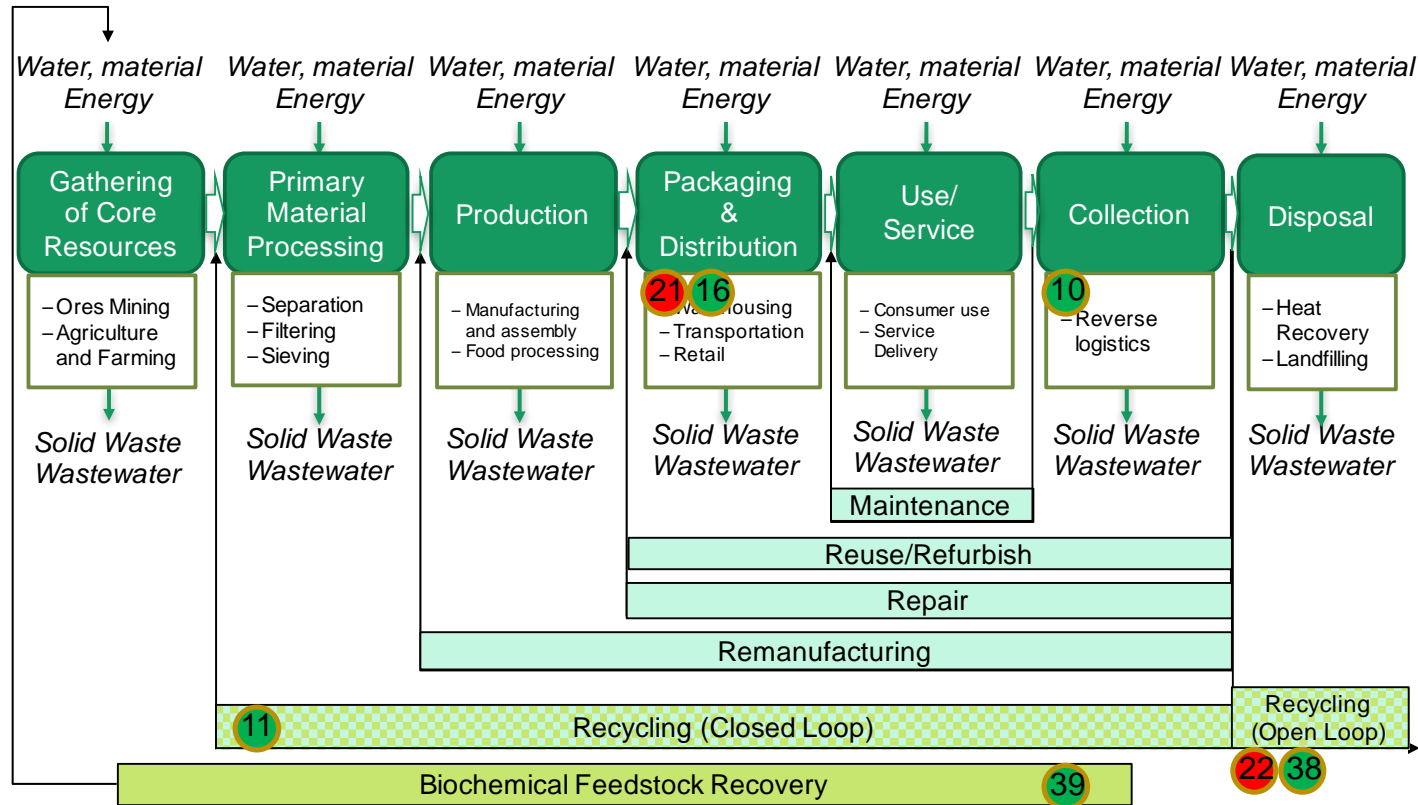


100% of the Cross-cutting Projects present a complete data set, useful to be mapped within the value chain

	Catalonia
	Cd2e
	Gelderland
	Lombardia
	Lower Silesia
	LWARB
	Sofia Municipality
	SOS

Outcomes of the analysis

Good practices in the Plastics sector



88,9% of the Good practices present a complete data set, useful to be mapped within the value chain

	Catalonia
	Cd2e
	Gelderland
	Lombardia
	Lower Silesia
	LWARB
	Sofia Municipality
	SOS

Outcomes of the analysis

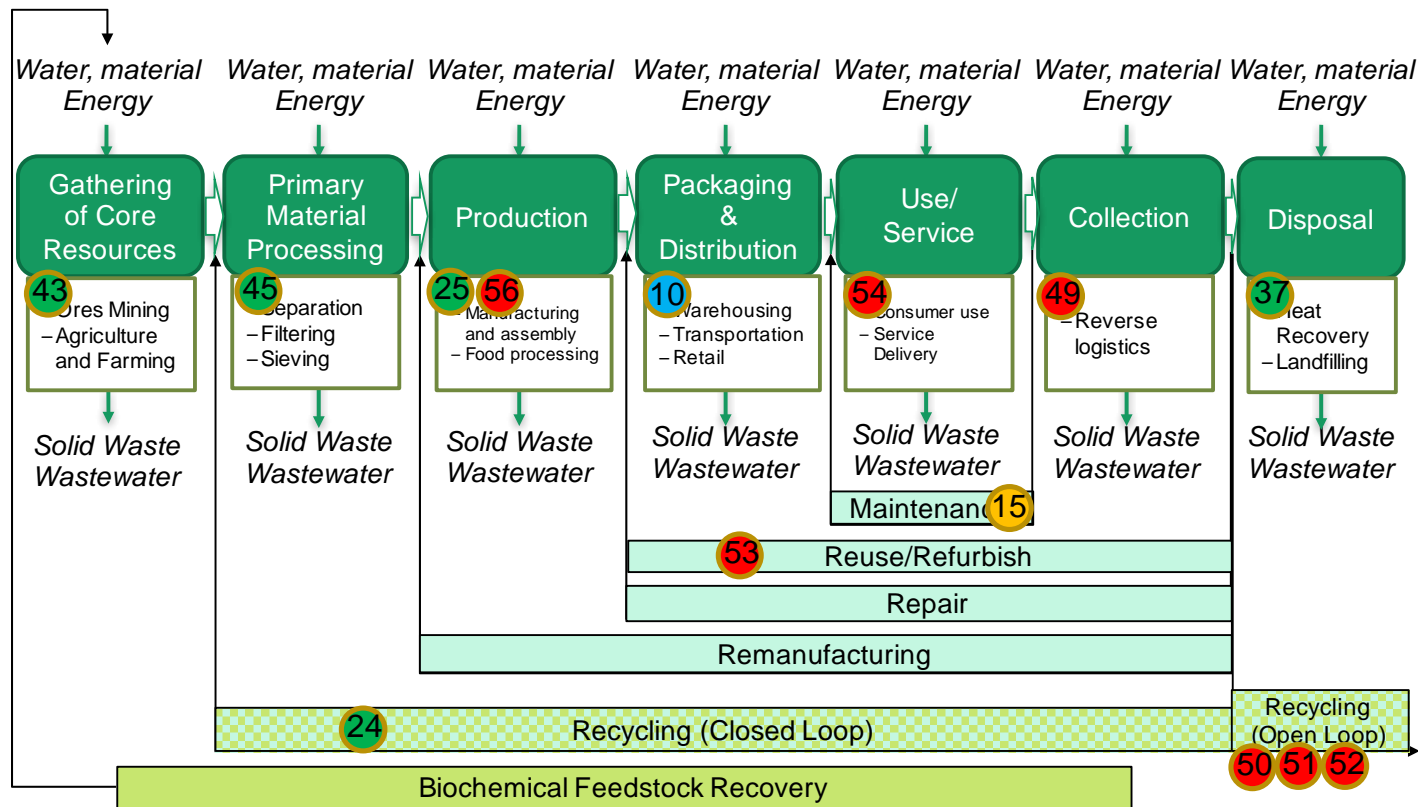
Opportunities in the Plastics sector

Opportunity ID	Opportunity name
Lombardy24	Increase percentage of recycled plastics into new products
Lombardy25	Increase the production of sustainable and biodegradable plastics
Lombardy33	Reverse logistics in every sector (see opportunity n° 5)
Lombardy37	Standardization on waste management from collection to recycling (see opportunity n° 7)
Lombardy43	Increase of secondary raw materials uses in every sector (see opportunity n°11)
Lombardy45	Increase the percentage of secondary raw materials used in the production of goods (see opportunity n° 13) - Sustainable certification for goods
Catalonia10	USE OF BIO-BASED PACKAGING SOLUTIONS WHERE BENEFICIAL
LWARB49	· Support London boroughs to harmonise collection systems across the capital, in line with emerging national and/or international standards (e.g. Global Plastics Protocol).
LWARB50	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.
LWARB51	· 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
LWARB52	· Provide more widely available recycling services in public areas.
LWARB53	· Encourage and support consumers and private and public organisations to procure items that are re-usable, easily recyclable and/or include recycled content.
LWARB54	· Collate procurement needs across public organisations, private organisations and other cities to drive change by retailers and manufacturers.
LWARB55	· Work with the New Plastics Economy to develop collaborative ways of working to drive change within the global plastics supply chain.
LWARB56	Work with SMEs and innovators to create alternatives to plastics e.g. bioplastics

Opportunities belonging to the **Plastics sector** are analysed through the value chain approach

Outcomes of the analysis

Opportunities in the Plastics sector



87,5% of the Opportunities present a complete data set, useful to be mapped within the value chain

	Catalonia
	Cd2e
	Gelderland
	Lombardia
	Lower Silesia
	LWARB
	Sofia Municipality
	SOS

PLASTICS

LWARB, Lombardy, Catalonia, Cd2e

Title of Good Practice/Opportunity Bioplastics production

Name and Type of Stakeholders

Plastics companies, manufacturers, citizens, matikem, ASSOCIATION INDUSTRIES ET AGRO-RESSOURCES, Laon (Partner).

Type of action

- Gathering of core resources
- Primary material processing
- Production
- Packaging and Distribution
- Use and Service
- Collection
- Disposal

Brief description

Opportunities:

- Lombardy25: Increase the production of sustainable and biodegradable plastics.
- LWARB56: Work with SMEs and innovators to create alternatives to plastics e.g. bioplastics.
- Catalonia10 Use of bio-based packaging solutions where beneficial.
- Cd2e01 Bio-sourced materials.

Cross-cutting project:

- Cd2e02 SSUCHY - Sustainable structural and multifunctional biocomposites from hybrid natural fibres and bio-based polymers.

Complementary Data









Opportunities:

- 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).
- Offer support through the Advance London programme within LWARB.
- Use of bio-sourced materials for all sectors.

Cross-cutting project:

The project SSUCHY falls within the framework of the development and optimization of innovative and eco-efficient processes and constituents for structural and multifunctional bio-based composites. It is fully integrated into the research program of the Bio-Based Industries (BBI) Joint Technology Initiative operating under Horizon 2020, and particularly focused on BBI Value Chains 1 which is dedicated partly to the transformation of lignocellulosic feedstock to advanced bio-based materials. Our project is clearly positioned on the development of composite constituents, based on a renewable resource (i.e. biopolymers and plant fibre reinforcements) for the development of multifunctional biodegradable and/or recyclable bio-based composites with advanced functionalities for applications in transportation (automotive and aerospace) and a high value market niche (acoustic and electronics). It is dedicated to the development of specific concepts, technologies and materials to achieve a complete value chain and prove the principle at the scale of product demonstrators.

Matching cross-cutting projects and opportunities, TRL 6-7

	Catalonia
	Cd2e
	Gelderland
	Lombardia
	Lower Silesia
	LWARB
	Sofia Municipality
	SOS

Title of Good Practice/Opportunity Recycled material into products

Name and Type of Stakeholders

Plastics companies, Lombardy Region, VALSIR S.p.a, Italy; CAUTO, Italy; CSMT, Italy., BDM Riflex S.r.l., Italy; CO.ME.T. S.r.l., Italy; Fimet S.p.A., Italy; Università degli Studi di Milano-Bicocca, Politecnico di Milano, CNR, Italy.

Type of action

- Gathering of core resources
- Primary material processing
- Production
- Packaging and Distribution
- Use and Service
- Collection
- Disposal
- Recycling Closed Loop
- Recycling Open Loop

Matching cross-cutting projects and opportunities, TRL 6-7

Brief description

Opportunities:

- LWARB53: Encourage and support consumers and private and public organisations to procure items that are re-usable, easily recyclable and/or include recycled content.
- Lombardy24 Increase percentage of recycled plastics into new products.

Cross-cutting projects:

- Lombardy04 "LIFE AUTOPLAST - From plastic to plastic, with professionalism and respecting the environment"
- Lombardy16 IMPReSA - Materiali innovativi a matrice polimerica di recupero per le realizzazione di sistemi infrastrutturali ad uso viario a basso impatto ambientale.
- Lombardy27 FiberEUUse- Large scale demonstration of the tecno-economical benefits of new circular economy value chains based on the reuse on the end of life fibre-reinforced composites.









Complementary Data

Opportunities:

- Work with GLA to develop projects and guidance to include circular economy in public procurement.
- 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.

Cross-cutting projects:

- The AUTOPLAST-LIFE project aims to develop a system for the recovery and recycling of special plastic waste from the automotive sector. The system will include a network for the selective collection of vehicles' waste tanks and reservoirs, as well as a pilot recycling plant to generate recyclable secondary material. The project will design, construct and start up a large-scale industrial plant for treatment of waste tanks and reservoirs from the recovery and recycling of ELVs. The plant will granulate the special plastic waste for transformation into material with the chemical and technological properties appropriate for recycling.
- The project IMPRESA aims at develop an innovative composite material, obtained from plastic waste, to be utilized in streets construction.
- The project FiberEUUse aims at developing eight innovative products incorporating recycled glass and carbon fibers with a cross-sectorial approach.

	Catalonia
	Cd2e
	Gelderland
	Lombardia
	Lower Silesia
	LWARB
	Sofia Municipality
	SOS

Title of Good Practice/Opportunity Plastics collection and sorting systems

Name and Type of Stakeholders

London citizens and boroughs, COREPLA, citizens, Lombardy Region, Plastic sorting and recycling plants, plastic product manufacturers, RTOs (Polimi, CNR).

Type of action

- Gathering of core resources
- Primary material processing
- Production
- Packaging and Distribution
- Use and Service
- Collection
- Disposal

Brief description

Opportunities:

- LWARB49 Support London boroughs to harmonise collection systems across the capital, in line with emerging national and/or international standards (e.g. Global Plastics Protocol).
- LWARB50 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.

Good practice:

- LombardyGP38 COREPLA - mixed plastic waste sorting and recycling contracts.

Complementary Data

Opportunities:









- 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.
- 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.

Good practice:

Valorized mixed plastics waste is not as advantageous (in terms of economical and technical factors) as the homogeneous plastic waste which are quietly easy destined to a recycling process; therefore, the destination of this type of plastic is generally the energy recovery.

In order to let able that mixed plastic to be processed in a recycling process and so valorized, according to the EU waste management hierarchy, COREPLA has developed (with his customers and suppliers) a mixed plastic waste sorting and recycling contracts, increasing the volume of total plastic packaging waste recycled. Company contracted by COREPLA for this type of activity and included in Step 3.1, are pioneers in the recycling plastic waste sector.

Matching opportunities and good practice, TRL 7-8.

	Catalonia
	Cd2e
	Gelderland
	Lombardia
	Lower Silesia
	LWARB
	Sofia Municipality
	SOS

Preliminary analysis of the value-chains

Raw materials sector

Data gathered from the CircE Tools of the Partners in the Raw materials sector:

- **11 Industrial Stakeholders in the Raw materials sector**
- **6 Research Stakeholders in the Raw materials sector**
- **1 Education Stakeholders in the Raw materials sector**
- **3 Policy Stakeholders in the Raw materials sector**

- **5 Cross-cutting Projects in the Raw materials sector**
- **4 Good Practices in the Raw materials sector**

- **15 Opportunities in the Raw materials sector**

Outcomes of the analysis

Regional Stakeholders in the Raw materials sector

Region	Industrial Stakeholder
Lombardy36	Tenova
Lombardy41	X-Next
LowerSilesia03	Jeleniogórskie Kopalnie Surowców Mineralnych Lipiński Spółka Jawna
LowerSilesia04	KGHM S.A.
LowerSilesia09	Prodigo Sp. z o.o.
LWARB01	BAM Construct UK
LWARB04	Aecom
LWARB13	National Grid
SofiaMunicipality01	Eltechresource JSC
SOS02	SIJ Metal Ravne, Petrol Energetika in Občina Ravne na Koroškem,
SOS07	Inštitut za celulozo in papir

Region	R&D&I Stakeholder
Lower Silesia	Poltegor Institute
Lower Silesia	KGHM Cuprum
Lower Silesia	Wałbrzyskie surowce cluster
Lower Silesia	Stone cluster
LWARB	Brunel University
Cd2e	LMCPA (Laboratoire des Matériaux Céramiques et Procédés Associés)

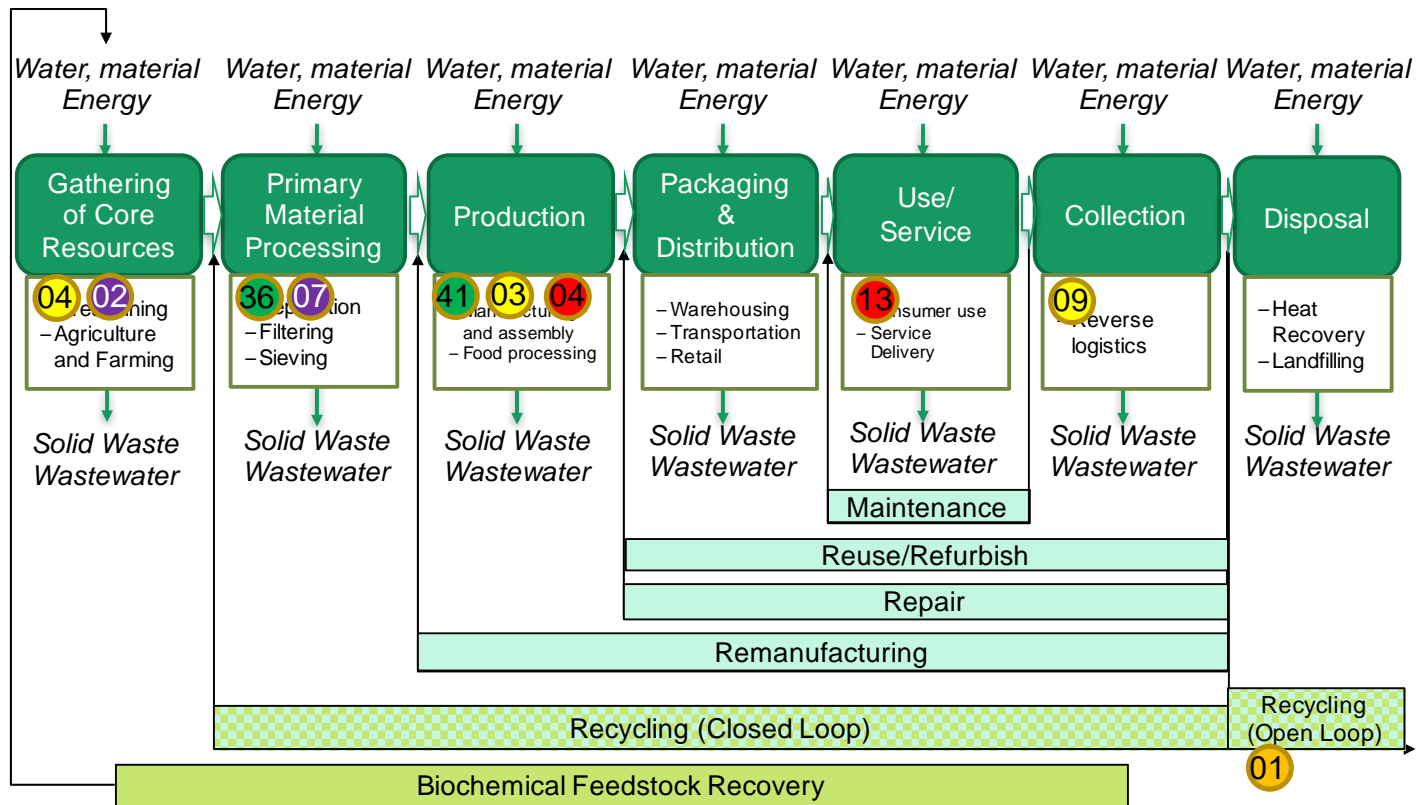
Region	Education Stakeholder
Sofia Municipality	University of Chemical Technology and Metallurgy - Sofia

Region	Policy Stakeholder
Lower Silesia	Ministry of Environment
Lower Silesia	Ministry of Environment
Lower Silesia	the Council of Ministers

Regional Stakeholders belonging to the **Raw materials sector** are analysed through the value chain approach

Outcomes of the analysis

Industrial Stakeholders in the Raw materials sector



	Catalonia
	Cd2e
	Gelderland
	Lombardia
	Lower Silesia
	LWARB
	Sofia Municipality
	SOS

90,9% of the Regional Stakeholders present a complete data set, useful to be mapped within the value chain

Outcomes of the analysis

Projects and Good practices in the Raw materials sector

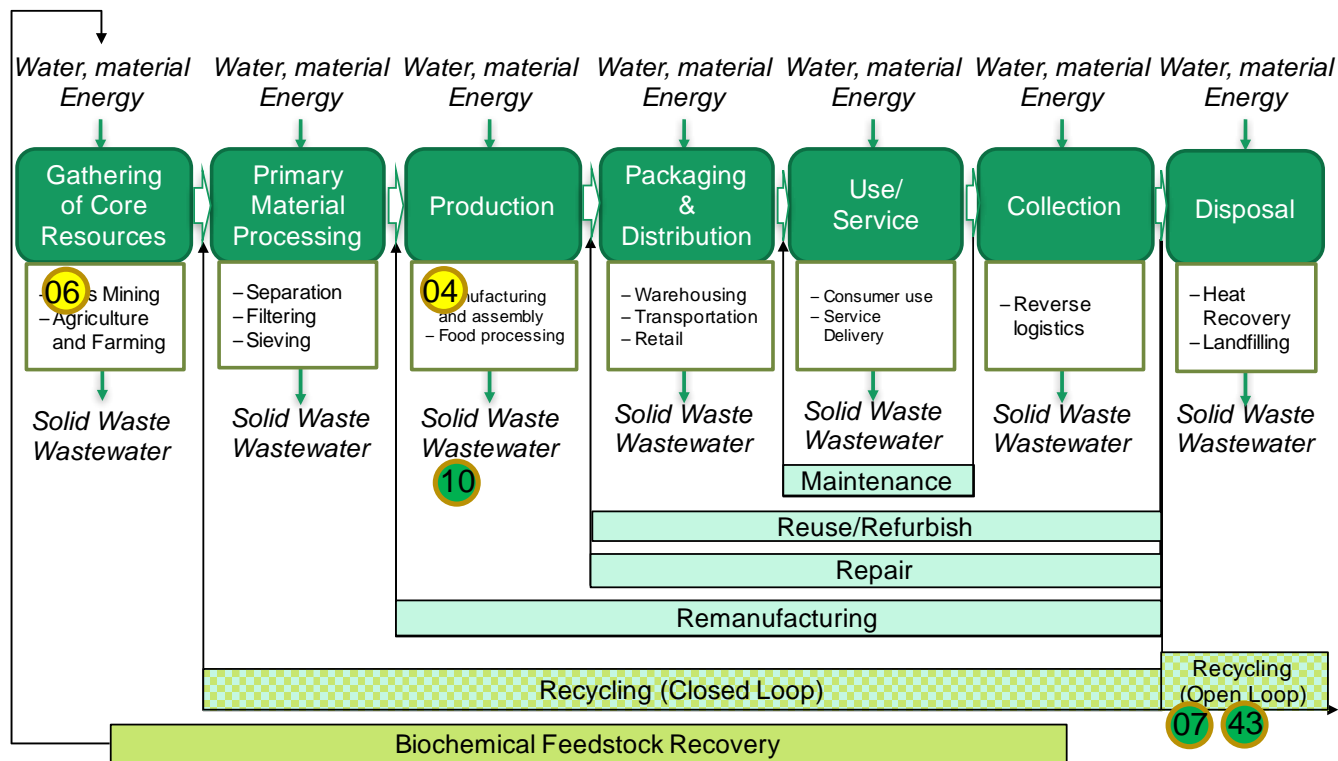
Region	Project Name (past and ongoing projects)
Lombardy07	LIFE GREEN SINKS - Realization of green composite sinks substituting organic and mineral primary materials by recovered waste
Lombardy10	Studio e realizzazione di un impianto prototipale basato sull'impiego di microorganismi per la rimozione ed il recupero dei metalli pesanti dalle acque reflue dell'industria galvanica
Lombardy43	REMAGHIC - New Recovery Processes to produce Rare Earth - Magnesium Alloys of High Performance and Low Cost
LowerSilesia04	REMIX
LowerSilesia06	BIOMORE: Research on future mining

Good Practice ID	Good Practice name
LombardyGP13	Production materials recovery
LowerSilesiaGP01	Granite waste Management
LowerSilesiaGP03	Tołpa
LWARBGP28	Closed Loop glass recycling

Cross-cutting Projects and Good Practices belonging to the **Raw materials sector** are analysed through the value chain approach

Outcomes of the analysis

Cross-cutting Projects in the Raw materials sector

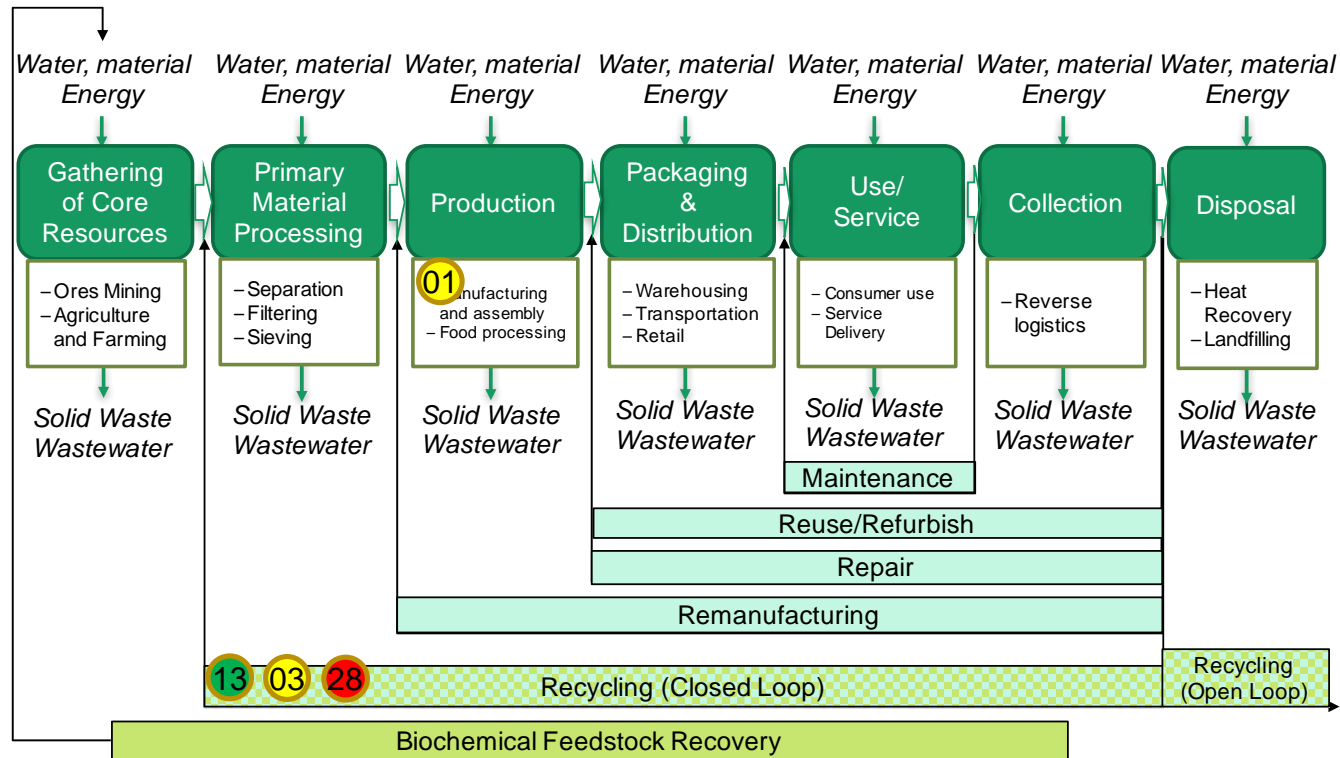


100% of the Cross-cutting Projects present a complete data set, useful to be mapped within the value chain

●	Catalonia
●	Cd2e
●	Gelderland
●	Lombardia
●	Lower Silesia
●	LWARB
●	Sofia Municipality
●	SOS

Outcomes of the analysis

Good practices in the Raw materials sector



100% of the Good practices present a complete data set, useful to be mapped within the value chain

	Catalonia
	Cd2e
	Gelderland
	Lombardia
	Lower Silesia
	LWARB
	Sofia Municipality
	SOS

Outcomes of the analysis

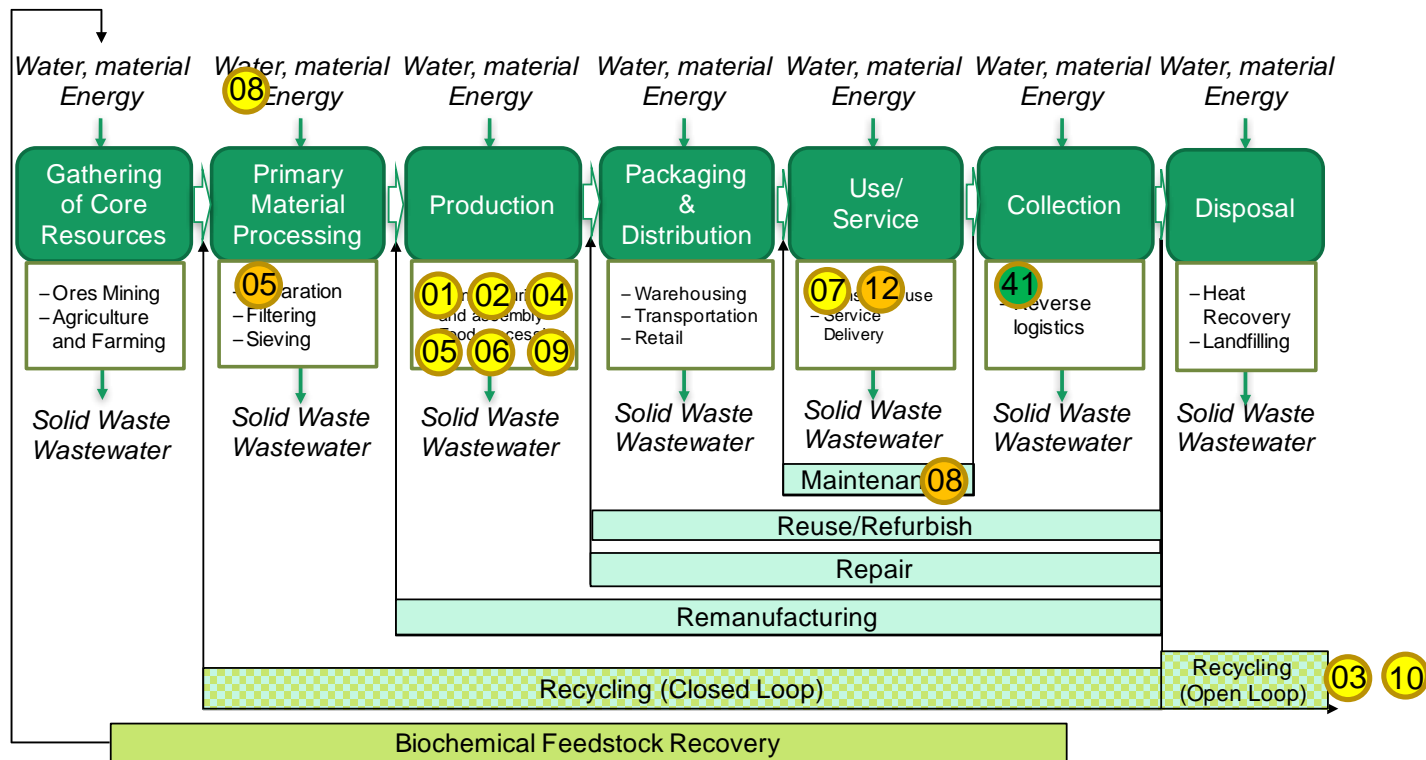
Opportunities in the Raw materials sector

Opportunities belonging to the **Raw materials sector** are analysed through the value chain approach

Opportunity ID	Opportunity name
Lombardy41	Implementation of a web platform (see opportunity n° 9 and good practice n° 6)
LowerSilesia01	development of a technology that minimizes the impact of mining on the environment
LowerSilesia02	production of processing machines and equipment for the mining industry and the processing of raw materials
LowerSilesia03	the use of hard-to-sell materials
LowerSilesia04	the technology of the system of exploitation of copper ore deposits in associated conditions at depths below 1200 m
LowerSilesia05	development potential of the industry
LowerSilesia06	range of scientific research and teaching facilities of the region
LowerSilesia07	growing demand for innovative products/services
LowerSilesia08	development of environmentally friendly technologies
LowerSilesia09	fuller use of the products of KGHM
LowerSilesia10	exploitation of rare-earth elements
Gelderland01	Technological innovation
Sofia05	Industrial symbiosis
Sofia08	ECO-INDUSTRIAL PARK
Sofia12	Partnership

Outcomes of the analysis

Opportunities in the Raw materials sector



93,3% of the Opportunities present a complete data set, useful to be mapped within the value chain

●	Catalonia
●	Cd2e
●	Gelderland
●	Lombardia
●	Lower Silesia
●	LWARB
●	Sofia Municipality
●	SOS

Title of Good Practice/Opportunity
Innovative and sustainable mining technologies

Name and Type of Stakeholders

KGHM Polska Miedź S.A., KGHM CUPRUM Research and Development Centre, Marshal's Office of Lower Silesian Voivodeship, Frankenhuus Texperium;

Type of action

- Gathering of core resources
- Primary material processing
- Production
- Packaging and Distribution
- Use and Service
- Collection
- Disposal

Brief description

Opportunities:

- LowerSilesia01: Technology that minimizes the impact of mining on the environment
- LowerSilesia08: Environmentally friendly technologies
- Gelderland01 Technological innovation

Cross-cutting projects:

- LowerSilesia04: REMIX
- LowerSilesia06: BIOMOre - Research on future mining

Complementary Data

Opportunities: Sustainable extraction solutions are an opportunity for the development of the industry, increasing its potential for environmentally safe extraction and processing.

Cross-cutting projects: The BIOMOre objective is to develop an optimized technological concept for in-situ recovering of metals from the surface without the need of establishing an underground infrastructure. The BIOMOre concept will reduce the environmental impacts of mining exploitation as a whole and improve chances for better public acceptance.

REMIX Project encourages resource efficient and environmentally and socially acceptable production of raw materials, including critical raw materials. Growth and competitiveness of European industry is currently limited by the state of play in these two areas and policy instruments have been set up across Europe to address these important topics. The selected regions are at different stages in the mining cycle and have complementary resources and profiles. The REMIX project will advance innovation in their regional mining value chains, of large and small scale companies.

Matching cross-cutting projects and opportunities, TRL 6-7

Title of Good Practice/Opportunity Rare Earth Material recovery from Landfill

Name and Type of Stakeholders

Żelazny Most, Relight.

Type of action

- Gathering of core resources
- Primary material processing
- Production
- Packaging and Distribution
- Use and Service
- Collection
- Disposal
- Recycling Open Loop

Brief description

Opportunities:

- LowerSilesia10: Exploitation of rare-earth elements

Cross-cutting project

- Lombardy43: REMAGHIC - New Recovery Processes to produce Rare Earth -Magnesium Alloys of High Performance and Low Cost
- Lombardy33: HYDROWEEE - Innovative hydrometallurgical processes to recover metals from WEEE including lamps and batteries

Complementary Data

Opportunity: recovery of rare-earth from heaps and landfills.

Cross-cutting project: REMAGHIC is focused on contributing to Europe's rare earth recovery and magnesium recycling technologies, improving the efficiencies of these processes and advancing the technology readiness levels for a new generation of industrial processes that will produce new low cost competitive alloys for a wide variety of sectors across Europe's manufacturing value chain.

The idea of HydroWEEE is to develop a mobile plant using hydrometallurgical processes to extract metals like Copper (Cu), Manganese (Mn), Zinc (Zn), Yttrium (Y), Indium (In), in a high purity (above 95%).

Matching cross-cutting projects and opportunities, TRL 6-7

Title of Good Practice/Opportunity
Raw materials Library-Tool

Name and Type of
Stakeholders

Regione Lombardia, CENTROCOT, Material Connexion, Unione degli Industriali della Provincia di Varese.

Type of action

- Gathering of core resources
- Primary material processing
- Production
- Packaging and Distribution
- Use and Service
- Collection
- Disposal

Brief description

Opportunities:

- Lombardy41: Implementation of a web platform.

Cross-cutting projects:

- Lombardy37: LIFE M3P - Material Match Making Platform for promoting the use of industrial waste in local networks.

- LombardyGP06: Regional platform "Open Innovation".

Complementary Data

Opportunity: In order to support a real and effective "secondary raw materials" route it can be strategic to develop a web platform to match demand and supply of secondary raw materials for multi-sector applications.

Cross-cutting project: M3P – it aims at developing a match-making platform for meeting demand and supply of raw materials with particular focus to the textile sector. The platform is extendible to all the sectors and can be integrated within the Lombardy Region open innovation platform. This platform includes a community that joins the main stakeholders of each sector, sharing best practices and innovation strategies.

Matching cross-cutting projects
and opportunities, TRL 6-7

Title of Good Practice/Opportunity
Innovation Infrastructures for raw materials circular solutions

Matching cross-cutting projects and opportunities, TRL 6-7

Name and Type of Stakeholders

Quadruple helix in the participating regions.

Type of action

- Gathering of core resources
- Primary material processing
- Production
- Packaging and Distribution
- Use and Service
- Collection
- Disposal
- ✓ All circular economy options

Brief description

Opportunities:

- Sofia 08: ECO-INDUSTRIAL PARK.
- LowerSilesia08: development of environmentally friendly technologies.
- LowerSilesia06: range of scientific research and teaching facilities of the region.
- Sofia10: Clean technologies for sustainable environment.

Cross-cutting projects:

- Lombardy 56: Vanguard Initiative "De-and Remanufacturing for Circular Economy".
- LIFE ETA-BETA - Environmental Technologies Adopted by small Businesses operating in Entrepreneurial Territorial Areas.

Complementary Data

Opportunities:

- Sofia 08: 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
- LowerSilesia06: 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.
- Sofia10: 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
- LowerSilesia08: 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.

Cross-cutting projects:

- Vanguard Initiative "De-and Remanufacturing for circular economy" demo-case aims at establishing a network of innovation infrastructure that will deliver services to companies, mainly SMEs, to demonstrate innovative circular economy solutions and business models in order to de-risk future private investments, thus boosting circular economy in industry.
- LIFE ETA-BETA The project will strengthen and promote the creation and development of EEPAs within the EU's economic system and regulatory framework, thus fostering sustainability

Title of Good Practice/Opportunity Industrial Symbiosis in the raw materials sector

Name and Type of Stakeholders

Sofia Municipality, Government Office for Development and European cohesion policy in Slovenia, FUNDECYT, Feralpi Siderurgica S.p.a., CSM, Rina Group.

Type of action

- Gathering of core resources
- Primary material processing
- Production
- Packaging and Distribution
- Use and Service
- Collection
- Disposal
- Reuse
- Recycling Close Loop

Brief description

Opportunity:

- Sofia05: Industrial symbiosis.

Cross-cutting projects:

- SOS03: SYMBI - Industrial symbiosis for a resource efficient economy.
- Lombardy 35: FISSAC - Fostering industrial symbiosis for a sustainable resource intensive industry across the extended construction value chain.

Complementary Data

Opportunities: Preparing business models to promote cross-sectorial links, by creating secondary raw materials markets or promoting so-called "Industrial symbiosis"

Cross-cutting projects:

SYMBI project contributes to improvement the implementation of regional development policies and programmes related to the promotion and dissemination of Industrial Symbiosis and Circular Economy from 7 participating countries faced to policies alignment with the Circular Economy strategy of the European Commission to transform Europe into a more competitive resource-efficient economy. SYMBI General objective is to empower regions to build sustainable economies, resilient to environmental pressures and climate change. The project support the implementation of policy instruments and measures for the diffusion of industrial symbiosis, to add value, reduce production costs and relieve environmental pressures through increased resource efficiency and green house gas emissions.

The overall objective of FISSAC project is to develop and demonstrate a new paradigm built on an innovative industrial symbiosis model towards a zero waste approach in the resource intensive industries of the construction value chain, tackling harmonized technological and non technological requirements, leading to material closed-loop processes and moving to a circular economy.

Matching cross-cutting project and opportunities, TRL 6-7

Preliminary analysis of the value-chains

WEEE value chain

Data gathered from the CircE Tools of the Partners in the WEEE sector:

- **25 Industrial Stakeholders in the WEEE sector**
- **5 Research Stakeholders in the WEEE sector**
- **1 Education Stakeholders in the WEEE sector**
- **1 Policy Stakeholders in the WEEE sector**

- **10 Cross-cutting Projects in the WEEE sector**
- **10 Good Practices in the WEEE sector**

- **18 Opportunities in the WEEE sector**

Outcomes of the analysis

Regional Stakeholders in the WEEE sector

Region	Industrial Stakeholder
Lombardy09	Safety Global Service Srl
Lombardy10	Stena Technoworld Srl
Lombardy11	Lavoro E Ambiente
Lombardy12	MIGLIOLI
Lombardy13	Amq Ambiente di Qarri Arber
Lombardy14	Feragame
Lombardy15	Amsa S.p.a
Lombardy16	RELIGHT S.r.l.
Lombardy17	S.e.val - Societa' Elettrica Valtellinese S.r.l.
Lombardy18	Seveso Recuperi S.r.l
Lombardy19	2C Ecologia In Elettronica S.r.l
Lombardy20	CEG S.r.l
Lombardy21	Valcart S.n.c.
Lombardy22	IL TRASPORTO SPA
Lombardy23	Immark Italia
Lombardy24	A.R.O.
Lombardy25	Gruppo Mercantile Servizi
Lombardy26	AMBIENTHESIS

Region	R&D&I Stakeholder
Lombardy	Politecnico di Milano
Lombardy	CNR <i>National Council of Research</i>
LWARB	WRAP (Waste & Resources Action Programme)
LWARB	Imperial College
LWARB	Brunel University

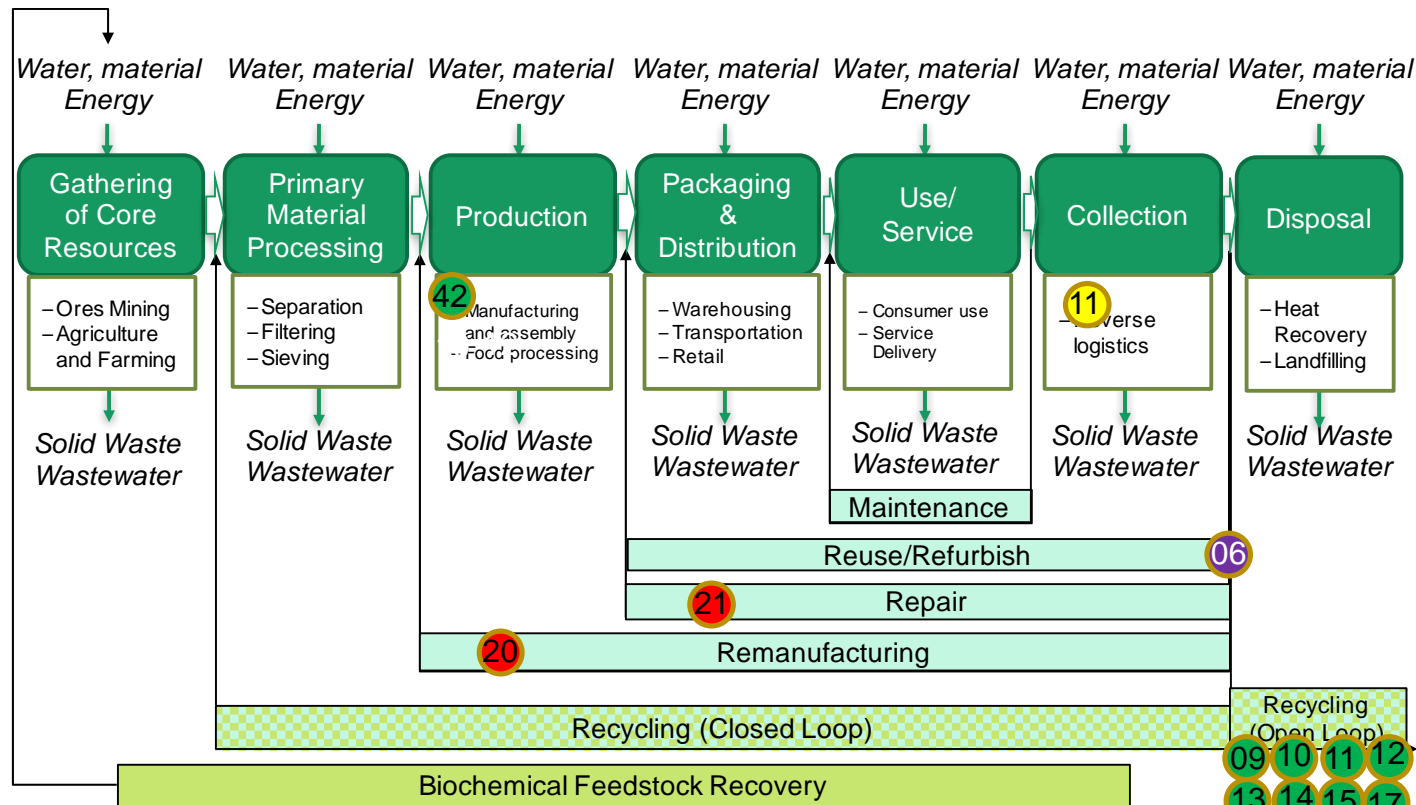
Region	Education Stakeholder
Catalonia	Universitat Politècnica de Catalunya

Region	Policy Stakeholder
Lower Silesia	Ministry of Environment

Regional Stakeholders belonging to the **WEEE sector** are analysed through the value chain approach

Outcomes of the analysis

Industrial Stakeholders in the WEEE sector



100% of the Regional Stakeholders present a complete data set, useful to be mapped within the value chain

●	Catalonia
●	Cd2e
●	Gelderland
●	Lombardia
●	Lower Silesia
●	LWARB
●	Sofia Municipality
●	SOS

Outcomes of the analysis

Projects and Good practices in the WEEE sector

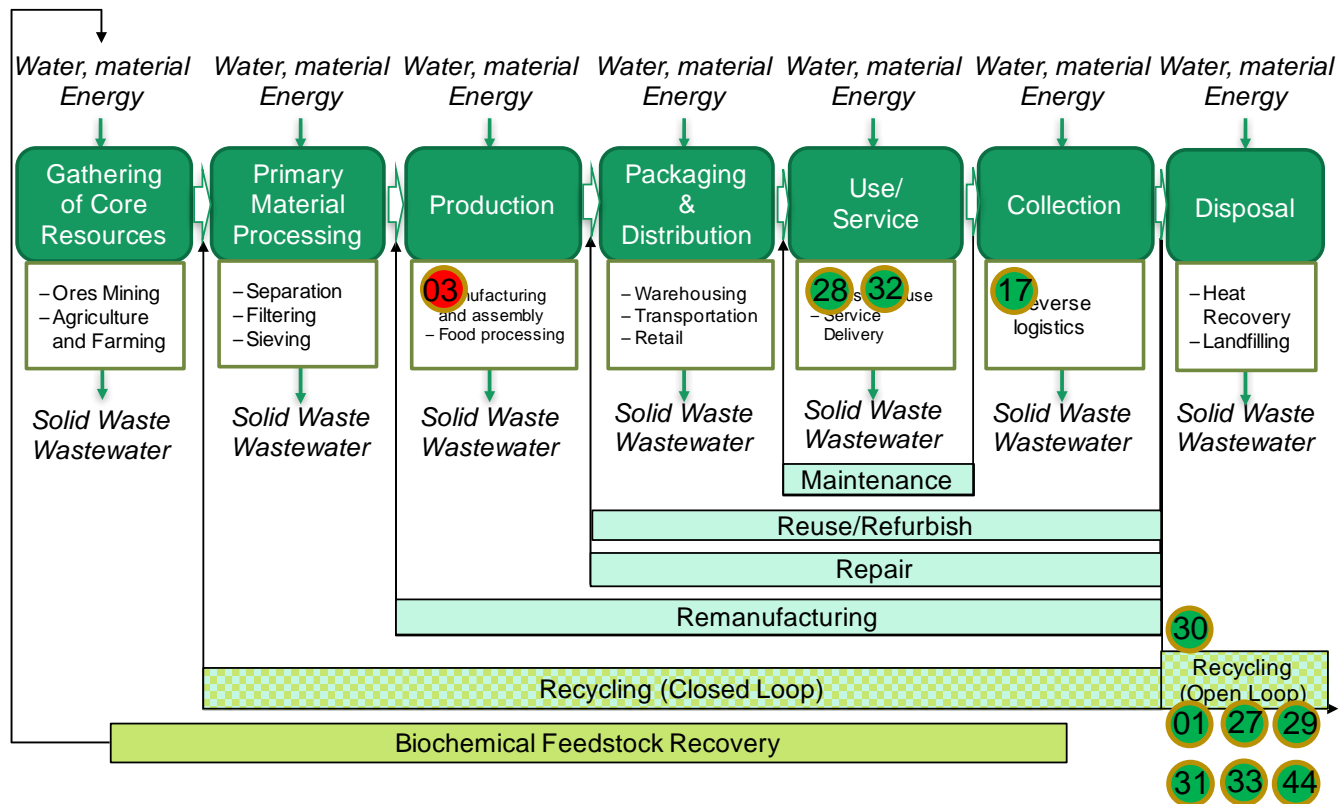
Region	Project Name (past and ongoing projects)
Lombardy01	HYDROWEEE DEMO - Innovative Hydrometallurgical Processes to recover Metals from WEEE including lamps and batteries - Demonstration.
Lombardy17	LIFE MED (Medical Equipment Discarded) – A new Integrate system to reduce waste by medical equipment and medical WEEE
Lombardy28	PCREC NOI - Network of Infrastructure on Product Centric RECYcling
Lombardy29	Zero Waste PCBs - Integrated Technological Solutions for Zero Waste Recycling of Printed Circuit Boards (PCBs)
Lombardy30	FIDEAS - Fabbrica Intelligente per la Deproduzione Avanzata e Sostenibile
Lombardy31	WEEE Reflex - Highly Evolvable E-waste Recycling Technologies and Systems
Lombardy32	Advent - ADvanced Virtualization for Enabling Network Technology
Lombardy33	HYDROWEEE - Innovative hydrometallurgical processes to recover metals from WEEE including lamps and batteries
Lombardy44	RECLAIM Project - Recovery of Yttrium and Europium from electronic waste, a new hydrometallurgical process
LWARB03	REBUS

Good Practice ID	Good Practice name
LombardyGP05	WEEE in Prison
LombardyGP07	CdC RAEE Special Project: Mobile environmental Center
LombardyGP08	CdC RAEE Special Project: Extension of WEEE collection
LombardyGP09	RAEE@scuola
LombardyGP12	Critical raw materials recovery from electronic waste
LombardyGP37	Infrastructure building system with low environmental impact
LWARBGP01	Fully refurbishing, testing and PAT approving reused WEEE.
LWARBGP05	Sustainable Electricals
LWARBGP11	Restart Project
SofiaGP01	WEEE door to door collection

Cross-cutting Projects and Good Practices belonging to the **WEEE sector** are analysed through the value chain approach

Outcomes of the analysis

Cross-cutting Projects in the WEEE sector

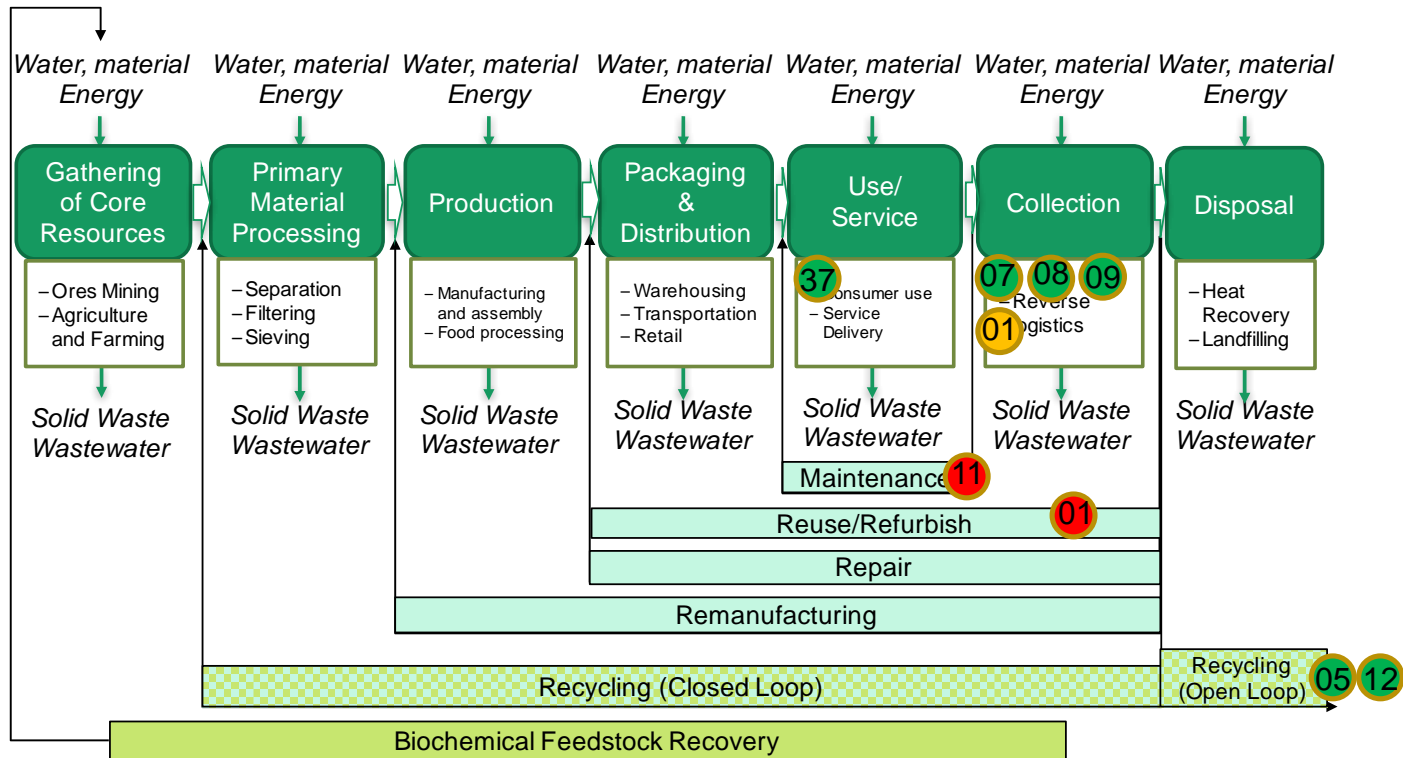


100% of the Cross-cutting Projects present a complete data set, useful to be mapped within the value chain

●	Catalonia
●	Cd2e
●	Gelderland
●	Lombardia
●	Lower Silesia
●	LWARB
●	Sofia Municipality
●	SOS

Outcomes of the analysis

Good practices in the WEEE sector



90% of the Good practices present a complete data set, useful to be mapped within the value chain

●	Catalonia
●	Cd2e
●	Gelderland
●	Lombardia
●	Lower Silesia
●	LWARB
●	Sofia Municipality
●	SOS

Outcomes of the analysis

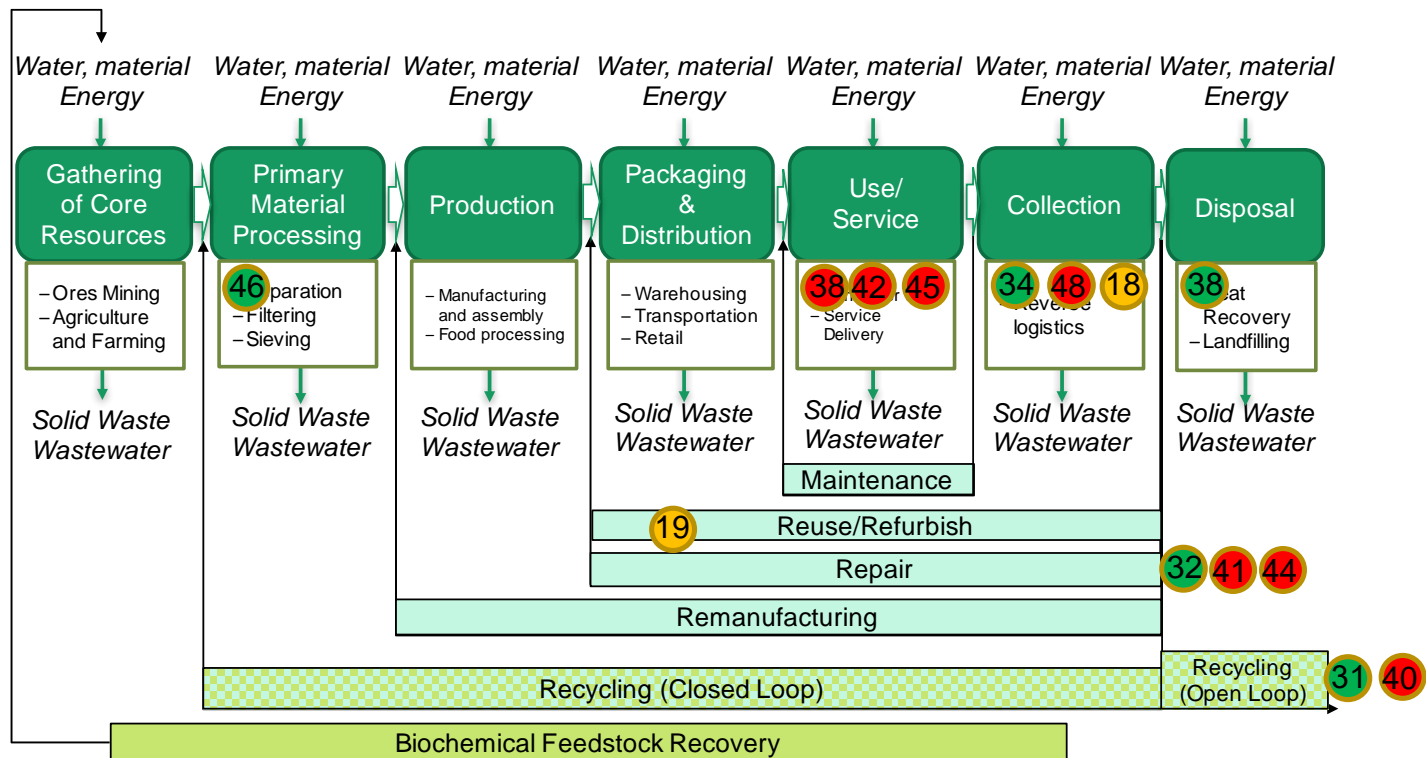
Opportunities in the WEEE sector

Opportunities belonging to the **WEEE sector** are analysed through the value chain approach

Opportunity ID	Opportunity name
Lombardy31	Increase the percentage of materials (eg rare elements metals...) recovered from WEEE
Lombardy32	Increase the life time of EEE devices through the maintenance and repair
Lombardy34	Reverse logistics in every sector (see opportunity n° 5)
Lombardy38	Standardization on waste management from collection to recycling (see opportunity n° 7)
Lombardy46	Increase the percentage of secondary raw materials used in the production of goods (see opportunity n° 13) - Sustainable certification for goods
LWARB38	· Use the joint procurement power of cities to influence the design of office equipment so as to embrace circular economy principles.
LWARB39	Engage with university courses to embed circular economy thinking into relevant courses on electricals design.
LWARB40	· Pilot a consumer campaign to promote re-use, repair and recycling of electrical equipment.
LWARB41	· Develop a larger repair economy in London by raising awareness of existing repair businesses and encouraging others.
LWARB42	· 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.
LWARB43	· Review organisational IT strategies including procurement, replacement cycles and disposal routes.
LWARB44	· Support SMEs that repair, re-use or remanufacture electrical equipment or new start ups in this field.
LWARB45	· Invest in businesses that improve product lifetimes.
LWARB46	· Bring together producer compliance schemes to consider service packages to local authorities.
LWARB47	· Lobby for more stretching targets for producer compliance schemes.
LWARB48	· Support innovative ideas on collection, recycling and WEEE treatment.

Outcomes of the analysis

Opportunities in the WEEE sector



77,8% of the Opportunities present a complete data set, useful to be mapped within the value chain

●	Catalonia
●	Cd2e
●	Gelderland
●	Lombardia
●	Lower Silesia
●	LWARB
●	Sofia Municipality
●	SOS

Title of Good Practice/Opportunity

Boost EEE repair, reuse and remanufacturing economy

Name and Type of Stakeholders

WEEE collectors, WEEE recyclers, WEEE remanufacturers, municipalities, citizens, end users, manufacturers

Type of action

- Gathering of core resources
- Primary material processing
- Production
- Packaging and Distribution
- Use and Service
- Collection
- Reuse, remanufacturing, repair







Brief description

- Lombardy32: Increase the life time of EEE devices through the maintenance and repair.
- LWARB41: Develop a larger repair economy in London by raising awareness of existing repair businesses and encouraging others.
- LWARB44: Support SMEs that repair, re-use or remanufacture electrical equipment or new start ups in this field.

Complementary Data

The idea of developing and making more efficient the logistics action from the end-of-life product collection to repair/remanufacturing/recycling of components could be widespread and applied to all the products and goods. A cooperation between the two regions could lead to relevant benefits, enabling larger repair and remanufacturing economies and supporting the creation of new SMEs and start-ups in these fields.

Matching cross-regional opportunities, TRL 4-5

	Catalonia
	Cd2e
	Gelderland
	Lombardia
	Lower Silesia
	LWARB
	Sofia Municipality
	SOS

Title of Good Practice/Opportunity
Increase product durability and lifetime

Name and Type of
Stakeholders

WEEE collectors, WEEE recyclers, WEEE remanufacturers, municipalities, citizens, end users, manufacturers, SMEs.

Type of action

- Gathering of core resources
- Primary material processing
- Production
- Packaging and Distribution
- Use and Service
- Collection
- Disposal

Brief description

- Lombardy32: Increase the life time of EEE devices through the maintenance and repair.
- LWARB45: Invest in businesses that improve product lifetimes.

Complementary Data

Increase the lifetime of products, in particular Electrical and Electronic Equipment, is a fundamental enabler of Circular Economy principles. Different European regions as Lombardy and London present several opportunities in this field, showing synergies and similar efforts, acting not only on logistics but along the whole value chain.

Matching cross-regional opportunities, TRL 4-5

	Catalonia
	Cd2e
	Gelderland
	Lombardia
	Lower Silesia
	LWARB
	Sofia Municipality
	SOS

Title of Good Practice/Opportunity

Increase fractions of recovered materials from WEEE

Name and Type of Stakeholders

WEEE collectors, WEEE recyclers, municipalities, citizens, end users, manufacturers, SMEs
 Specific: Centro Coordinamento RAEE

Type of action

- Gathering of core resources
- Primary material processing
- Production
- Packaging and Distribution
- Use and Service
- Collection
- Disposal

Brief description

- Lombardy31: Increase the percentage of materials (eg rare elements metals...) recovered from WEEE.
- LWARB48: Support innovative ideas on collection, recycling and WEEE treatment.

Complementary Data

Recycling of Waste from Electrical and Electronic Equipment plays a fundamental role in Circular Economy. Main primary materials extractors are extra EU Countries (e.g. China). Meanwhile, WEEE flow is currently the most rapidly increasing in Europe. For these reasons, several opportunities are rising in different region (as in Lombardy and London) to increase the recovery of precious materials and to support new technologies and ideas in this field, making WEEE a real secondary raw materials urban mine.

Matching cross-regional opportunities, TRL 4-5

	Catalonia
	Cd2e
	Gelderland
	Lombardia
	Lower Silesia
	LWARB
	Sofia Municipality
	SOS

Title of Good Practice/Opportunity

New generation of smart WEEE recycling processes and systems

Name and Type of Stakeholders

Food retailers, customers, citizens, public administration, municipalities, large retail, sectorial company.
Specific Circe SH: Relight, AFIL, ITIA-CNR, Politecnico di Milano.

Type of action

- Gathering of core resources
- Primary material processing
- Production
- Packaging and Distribution
- Use and Service
- Collection
- Disposal

Brief description

Opportunities:

- LWARB48: Support innovative ideas on collection, recycling and WEEE treatment.

Cross-cutting Project:









- Lombardy31: WEEE Reflex - Highly Evolvable E-waste Recycling Technologies and Systems.
- Lombardy33: HYDROWEEE - Innovative hydrometallurgical processes to recover metals from WEEE including lamps and batteries.
- Lombardy29: Zero Waste PCBs - Integrated Technological Solutions for Zero Waste Recycling of Printed Circuit Boards (PCBs)
- Lombardy30: FIDEAS - Fabbrica Intelligente per la Deproduzione Avanzata e Sostenibile

Complementary Data

Opportunity: Support innovative ideas on collection, recycling and WEEE treatment

Cross-cutting project: The recycling market is one of the key industries for closing material loops and achieving a global sustainable development. Waste from Electric and Electronic Equipment (WEEE) is the fastest growing waste stream in EU, with 5% increase per year. The WEEE flows are in continuous evolution as new products and materials are entering the WEEE streams. Furthermore, the high volatility of the price of recovered materials and the variability in the input material compositions are posing serious challenges on the current rigid designs of mechanical recycling systems. WEEE ReFlex will develop the technological solutions to address the product, process, system co-evolution problem at recycling system level. The WEEE ReFlex solution will integrate and demonstrate in-line WEEE characterization hyperspectral technologies, new reconfigurable particles' routing modules supported by integrated process, system and strategy-oriented models for profitably driving the recycling system evolution. Therefore the HydroWEEE project deals with the recovery of base and precious metals from WEEE including lamps and spent batteries by hydrometallurgical processes. The idea is to develop a mobile plant using hydrometallurgical processes to extract metals like Copper (Cu), Manganese (Mn), Zinc (Zn), Yttrium (Y), Indium (In), ... in a high purity (above 95%). By making this plant mobile (in a container) several SMEs can benefit from the same plant at different times and therefore limit the necessary quantities of waste as well as investments.

Matching cross-cutting projects and opportunities, TRL 6-7

	Catalonia
	Cd2e
	Gelderland
	Lombardia
	Lower Silesia
	LWARB
	Sofia Municipality
	SOS

Title of Good Practice/Opportunity

Testing and certification of refurbished WEEE for reuse

Name and Type of Stakeholders

WEEE collectors, WEEE recyclers, WEEE remanufacturers, municipalities, citizens, end users, manufacturers, SMEs
 Specifics: Envirocom, Centro di Coordinamento RAEE

Type of action

- Gathering of core resources
- Primary material processing
- Production
- Packaging and Distribution
- Use and Service
- Collection
- Disposal
- Reuse

Brief description

Opportunities:

- Lombardy32 Increase the life time of EEE devices through the maintenance and repair.

Good Practice:

- LWARBGP01 Fully refurbishing, testing and PAT approving reused WEEE.

Complementary Data

Opportunity: Increase the life time of EEE devices through the maintenance and repair.

Good practice: Envirocom multi-site operation processes is in excess of 100,000 tonnes of domestic and business electronic waste each year. Environcom's re-use site in North London employs 50 people and produces more than 100 re-used white good products a day, fully refurbished, tested and PAT approved. The company re-use where possible rather than recycling, already re-using more than 15% of the product that comes to them.

Matching good practices and opportunities, TRL 7-8

	Catalonia
	Cd2e
	Gelderland
	Lombardia
	Lower Silesia
	LWARB
	Sofia Municipality
	SOS

Preliminary analysis of the value-chains

Biomass value chain

Data gathered from the CircE Tools of the Partners in the Biomass sector:

- **25 Industrial Stakeholders in the Biomass sector**
- **1 Research Stakeholders in the Biomass sector**
- **3 Education Stakeholders in the Biomass sector**
- **5 Policy Stakeholders in the Biomass sector**

- **12 Cross-cutting Projects in the Biomass sector**
- **8 Good Practices in the Biomass sector**

- **14 Opportunities in the Biomass sector**

Outcomes of the analysis

Regional Stakeholders in the Biomass sector

Region	Industrial Stakeholder
Lombardy01	Ghelfi Ondulati
Lombardy32	Cap Holding
Lombardy40	Alkematec S.r.l.
Lombardy43	Cartonspecialist S.r.l.
Lombardy53	APSOVSEMENTI S.P.A.
Lombardy56	EUROVIX S.R.L.
Lombardy57	HYGENE - RID S.R.L.
Lombardy62	CIB - Italian Biogas Consortium
Lombardy84	Agromatrici
Lombardy87	Gruppo Mauro Saviola
Lombardy88	Gruppo Frati
Lombardy89	Ecoblocks
Lombardy95	SUMUS
LowerSilesia05	BioBag
LowerSilesia06	Skropak
LowerSilesia07	Wratislavia-BIODiesel
LowerSilesia08	Südzucker Polska S.A.

Region	Education Stakeholder
Lombardy	Università degli Studi di Brescia
Sofia Municipality	UNIVERSITY OF FORESTRY - Sofia
Sofia Municipality	Sofia University

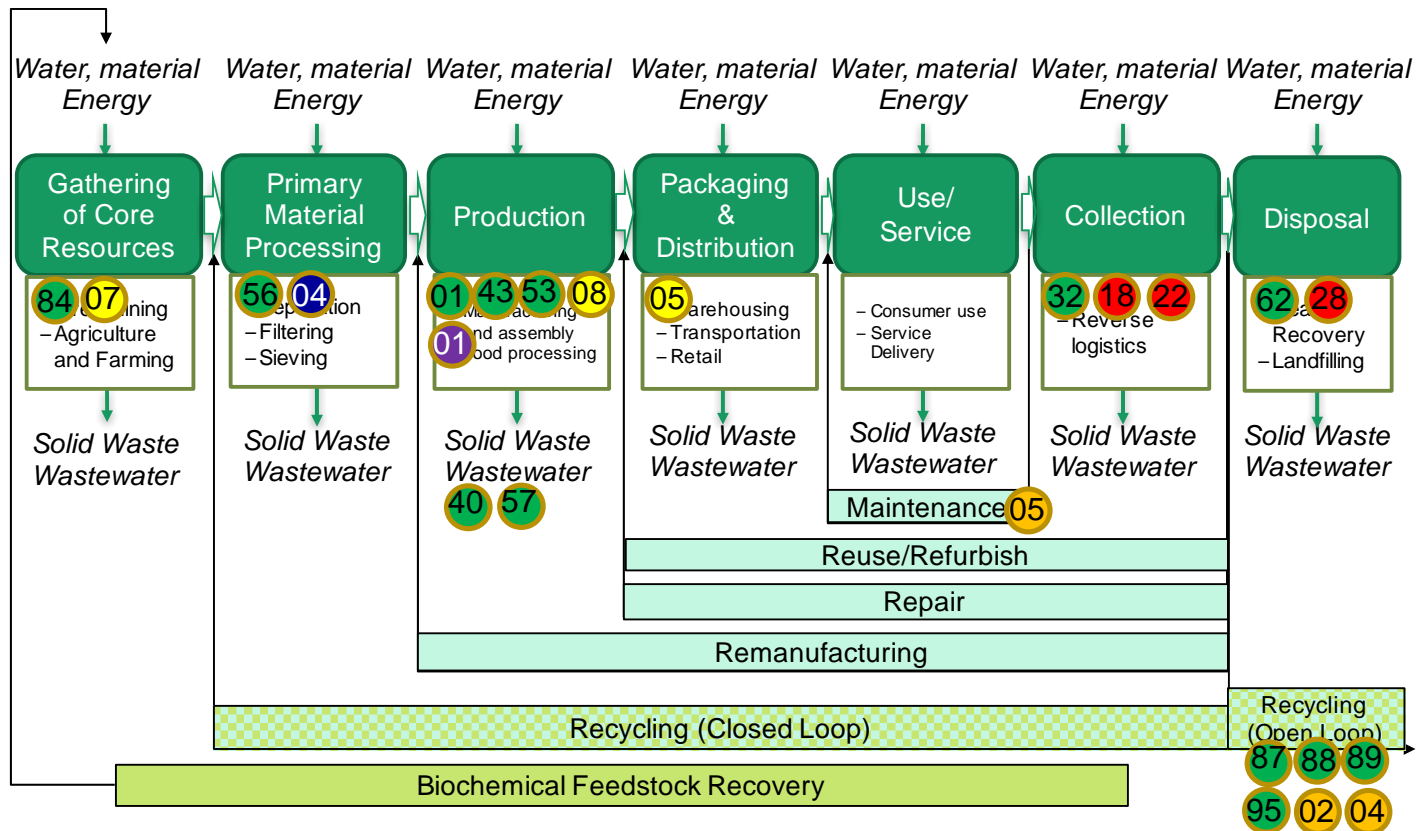
Regional Stakeholders belonging to the **Biomass sector** are analysed through the value chain approach

Region	Policy Stakeholder
Lombardy	Regione Lombardia, Directorate Environment, Unit Waste planning
Lower Silesia	Ministry of Investment and Economic Development/ Ministry of Economy (till 2015)
Lower Silesia	Ministry of Investment and Economic Development/ Ministry of Economy (till 2015)
Lower Silesia	Ministry of Investment and Economic Development/ Ministry of Economy (till 2015)
Lower Silesia	Ministry of Environment

Region	R&D&I Stakeholder
Lombardy	Università degli Studi di Brescia

Outcomes of the analysis

Industrial Stakeholders in the Biomass sector



96% of the Regional Stakeholders present a complete data set, useful to be mapped within the value chain

●	Catalonia
●	Cd2e
●	Gelderland
●	Lombardia
●	Lower Silesia
●	LWARB
●	Sofia Municipality
●	SOS

Outcomes of the analysis

Projects and Good practices in the Biomass sector

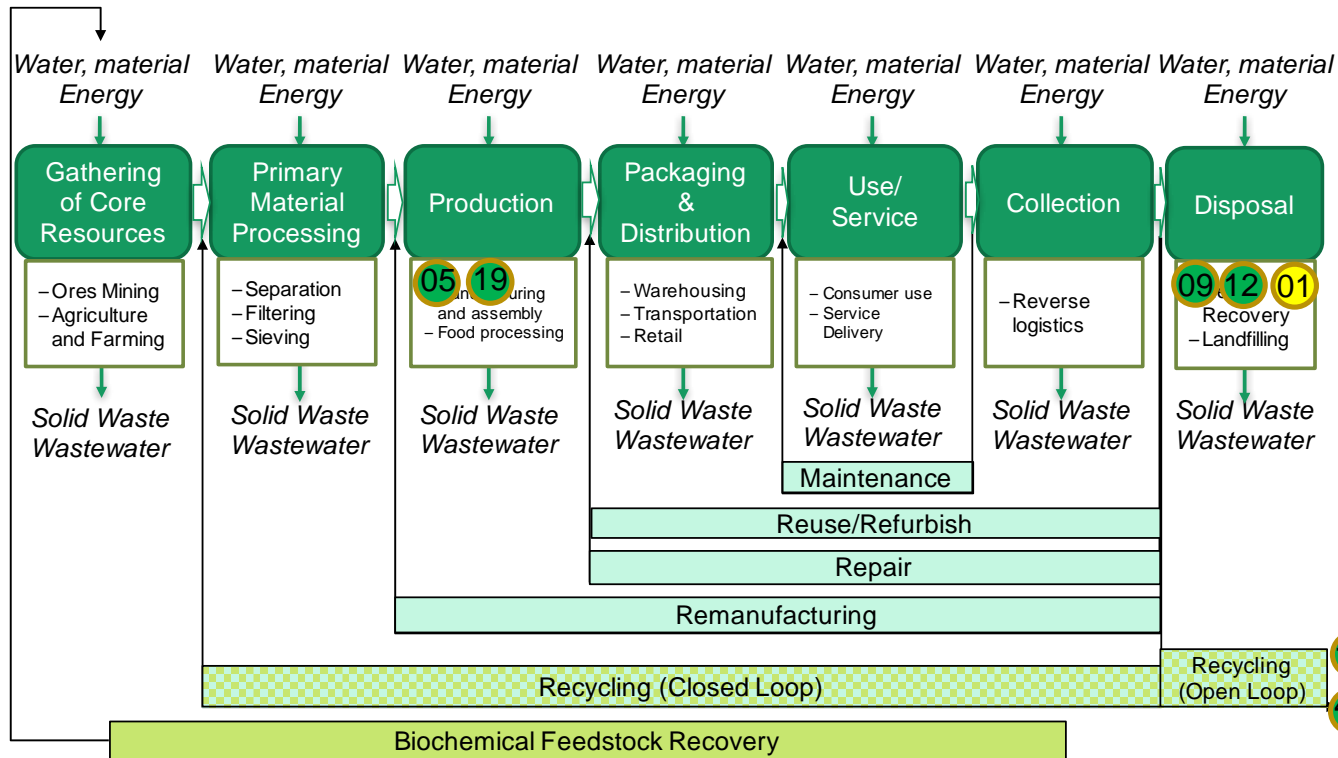
Region	Project Name (past and ongoing projects)
Lombardy05	LIFE RESAFE - Innovative fertilizer from urban waste, bio-char and farm residues as substitute of chemicals fertilizers
Lombardy09	Micro.Biogas
Lombardy12	Ge.Di.S. (Gestione digestato sostenibile)
Lombardy13	Agromatrici Bioattive
Lombardy14	DI.GAS.
Lombardy19	LIFE VITISOM - VITiculture Innovative Soil Organic Matter management: variable-rate distribution system and monitoring of impacts
Lombardy39	BIOCOPAC - Development of bio-based coating from tomato processing wastes intended for metal packaging
Lombardy48	SMARTPILOTS - Improving policies in support of shared pilot facilities to increase their impact on the Key Enabling Technology Industrial Biotech and the European Bio-economy
Lombardy49	CoWBoy - Cheese-industry waste to added-value compounds and bio-materials: an integrated biorefinery
Lombardy51	DANCE - Integrated algae based biorefinery from renewable carbon sources to produce high value products
LowerSilesia01	REMOWE (Regional Mobilizing of Sustainable Waste-to-Energy Production) ABOWE project (Implementing Advanced Concepts for Biological Utilization of Waste)
SOS06	Applause

Good Practice ID	Good Practice name
LombardyGP03	Preventing waste
LombardyGP14	Wastewater recycling in industrial applications
LombardyGP24	Sistemazione ambientale (CO)
GelderlandGP06	BERST
LWARBGP27	Biobean
Cd2eGP01	French Institute of Agro-Sourced Materials - IFMAS
SofiaGP02	Old Paper for New Book
SofiaGP05	Waste recovery

Cross-cutting Projects and Good Practices belonging to the **Biomass sector** are analysed through the value chain approach

Outcomes of the analysis

Cross-cutting Projects in the Biomass sector



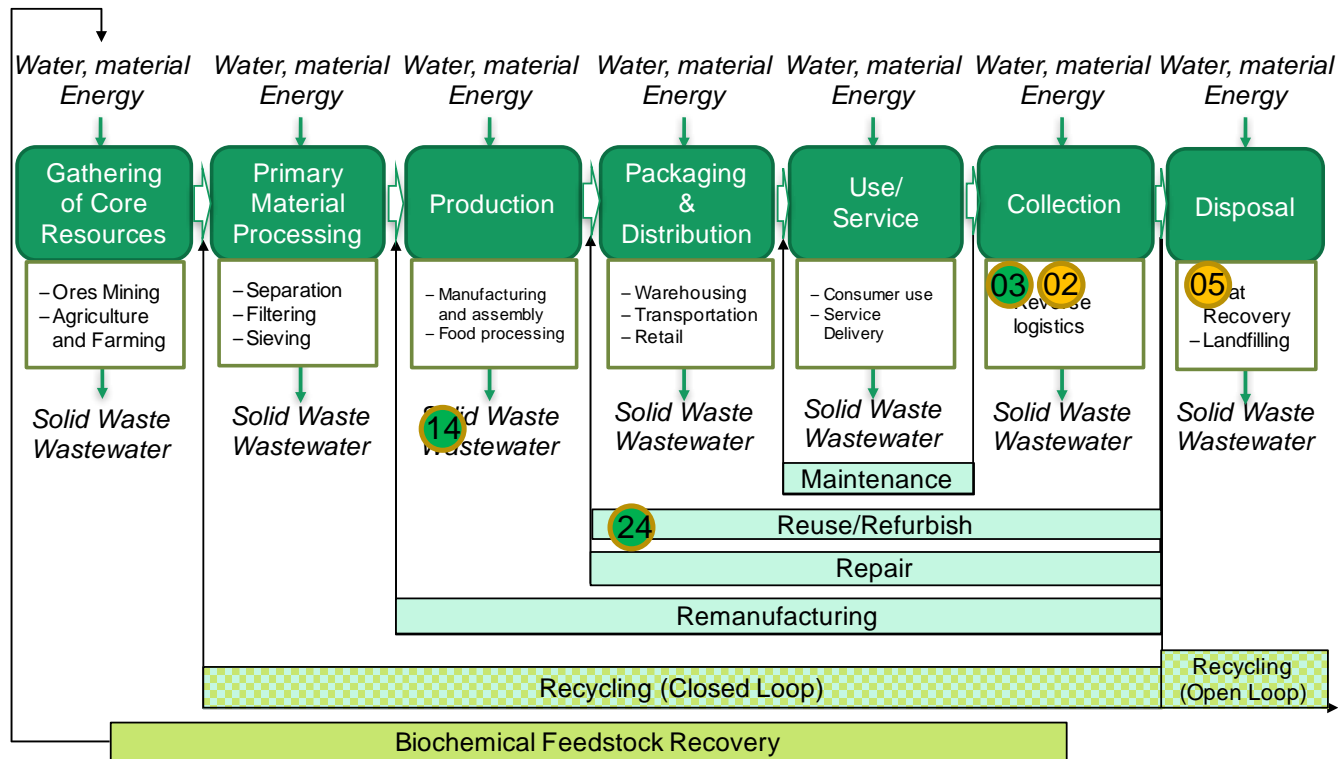
48 All along the value chain

100% of the Cross-cutting Projects present a complete data set, useful to be mapped within the value chain

●	Catalonia
●	Cd2e
●	Gelderland
●	Lombardia
●	Lower Silesia
●	LWARB
●	Sofia Municipality
●	SOS

Outcomes of the analysis

Good practices in the Biomass sector



62,5% of the Good practices present a complete data set, useful to be mapped within the value chain

	Catalonia
	Cd2e
	Gelderland
	Lombardia
	Lower Silesia
	LWARB
	Sofia Municipality
	SOS

Outcomes of the analysis

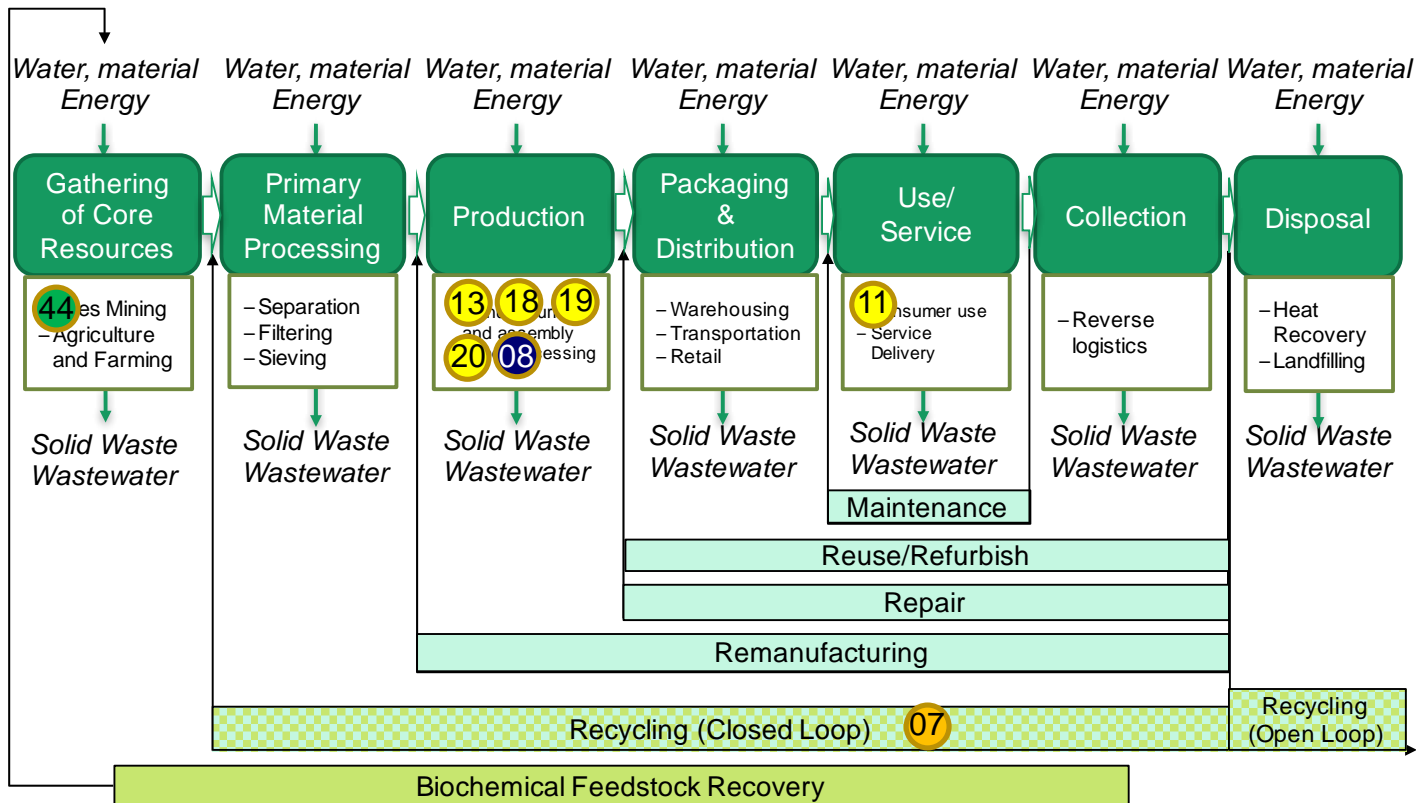
Opportunities in the Biomass sector

Opportunities belonging to the **Biomass sector** are analysed through the value chain approach

Opportunity ID	Opportunity name
Lombardy44	Increase of secondary raw materials uses in every sector (see opportunity n°11)
LowerSilesia11	identification of potential of local biomass
LowerSilesia12	creating local links between entitles cooperating within chain of values
LowerSilesia13	creating local biorafinery
LowerSilesia14	models of economic activities in bioeconomy
LowerSilesia15	increase of local biomass usage and increase of usage of biomass waste for power industry
LowerSilesia16	creation of environment to develop around one installation of biogas plant in rural municipality and rural-urban municipality (agricultural biomass producers)
LowerSilesia17	stimulating demand for bioproducts

Outcomes of the analysis

Opportunities in the Biomass sector



●	Catalonia
●	Cd2e
●	Gelderland
●	Lombardia
●	Lower Silesia
●	LWARB
●	Sofia Municipality
●	SOS

57,1% of the Opportunities present a complete data set, useful to be mapped within the value chain

Biomass

LowerSilesia, Cd2e

Title of Good Practice/Opportunity
Local production – consumption chains of biomass

Name and Type of Stakeholders
Waste collectors, energy producers, biomass treatment societies, municipalities, citizens, secondary raw materials treatment industry.

- Type of action
- Gathering of core resources
 - Primary material processing
 - Production
 - Packaging and Distribution
 - Use and Service
 - Collection
 - Disposal

- Brief description
- LowerSilesia15: Increase of local biomass usage and increase of usage of biomass waste for power industry.
 - LowerSilesia 11: identification of potential of local biomass .
 - LowerSilesia 13: creating local biorefineries.
 - Cd2e01: bio-sourced materials

Complementary Data
The opportunity regards the activities to increase production of domestic biomass for energy production, from local sources located not further than 200km. There will be proposed policy changes in this regard. 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.

Matching cross-regional opportunities, TRL 4-5

	Catalonia
	Cd2e
	Gelderland
	Lombardia
	Lower Silesia
	LWARB
	Sofia Municipality
	SOS

Biomass

Sofia, SOS

Title of Good Practice/Opportunity
Local production – consumption chains of biomass

Name and Type of Stakeholders
Waste collectors, energy producers, wood production chain, wood treatment facilities.

- Type of action
- Gathering of core resources
 - Primary material processing
 - Production
 - Packaging and Distribution
 - Use and Service
 - Collection
 - Disposal

Brief description

- Sofia07: Pellet plant.
- SOS02 : Wood production chains.

Complementary Data
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.

Matching cross-regional opportunities, TRL 4-5

	Catalonia
	Cd2e
	Gelderland
	Lombardia
	Lower Silesia
	LWARB
	Sofia Municipality
	SOS

Biomass

Lombardy, Lower Silesia

Title of Good Practice/Opportunity
 Creating norms and standards for bio-products

Name and Type of Stakeholders
 Policy makers, municipalities, bioeconomy actors, biotechnology industries.

- Type of action**
- Gathering of core resources
 - Primary material processing
 - Production
 - Packaging and Distribution
 - Use and Service
 - Collection
 - Disposal

Brief description

Opportunities:
 - LowerSilesia18 Creating norms and standards for bioproducts









Cross-cutting Project:
 • Lombardy48 SMARTPILOTS - Improving policies in support of shared pilot facilities to increase their impact on the Key Enabling Technology Industrial Biotech and the European Bio-economy

Complementary Data

Opportunity: the activities to standardize bioproducts should increase consumer confidence.

Cross-cutting project: SmartPilots, an INTERREG Europe project co-funded by the European Fund for Regional Development (ERDF), brings together six leading European Shared Pilot Facilities (SPF) specialized in the Key Enabling Technology 'Industrial Biotechnology' and bioeconomy, with the aim to discuss and share best funding and operating practices and improve policies in support of such facilities. Enhanced support for Shared Pilot Facilities should substantially improve Europe's sustainable innovation capacity and is a crucial element in dealing with societal challenges such as developing a sustainable, innovative and knowledge-based economy in Europe, creating jobs and meeting climate targets.

Matching cross-cutting projects and opportunities, TRL 6-7

	Catalonia
	Cd2e
	Gelderland
	Lombardia
	Lower Silesia
	LWARB
	Sofia Municipality
	SOS

Biomass

Lombardy, LWARB

Title of Good Practice/Opportunity
New business models in bioeconomy

Name and Type of Stakeholders

SMEs, new start-ups, customers, citizens, public administration, municipalities, sectorial company.
Specific Circe SH: WUR, UMWD.

Type of action

- Gathering of core resources
- Primary material processing
- Production
- Packaging and Distribution
- Use and Service
- Collection
- Disposal

Brief description

Opportunities:

- LowerSilesia14 Models of economic activities in bioeconomy.
- LowerSilesia19 Support start-up development which specialize in industrial biotechnology.

Good Practice:

- GelderlandGP06 BERST.









Complementary Data

Opportunities:

- 1) identification of promotional activities of attractive areas for agroturism development and new forms of services development
- 2) Proposed support programs for new entrepreneurs operating in the economy sector and realizing idea of CE

Good practice: BERST aims to explore the bioeconomy potential of EU regions.

Matching good practices and opportunities, TRL 7-8

	Catalonia
	Cd2e
	Gelderland
	Lombardia
	Lower Silesia
	LWARB
	Sofia Municipality
	SOS

OTHER

LWARB

Matching opportunities, TRL 4-5

Title of Good Practice/Opportunity Circular Economy Metrics

Name and Type of Stakeholders

LWARB

Type of action

- Gathering of core resources
- Primary material processing
- Production
- Packaging and Distribution
- Use and Service
- Collection
- Disposal
- Circular Economy Options

Brief description

Opportunities:

- LWARB57: Circular economy metrics and tracking of progress.
- LWARB58: Need for a high level cross sectoral vision and plan which stakeholders can buy in to and which is kept updated

Complementary Data

Creation of metrics to baseline and track progress and illustrate the need for further action. LWARB created Route Map , this can be shared with partners and should be kept updated and integrated with metrics (could also include municipality level route maps).

Matching cross-cutting projects and opportunities, TRL 6-7

Title of Good Practice/Opportunity

Enhance the role of customers towards circular economy

Name and Type of Stakeholders

Municipality of Maribor (SI), Institute for comprehensive development solutions (SI), City of Freiburg (GER), City of Goetzis (AT), City of Trento (IT), Informatica Trentina Spa (IT), Rhônealpi nergie-Environnement (FR), Pays Viennois Local Authority (FR), Liechtenstein Institute for Strategic Development (LI), CESBA – Common European Sustainable Built Environment Assessment (AT), Sofia municipality.

Type of action

- Gathering of core resources
- Primary material processing
- Production
- Packaging and Distribution
- Use and Service
- Collection
- Disposal
- Circular Economy Options

Brief description

Opportunities:

- Gelderland05: Communication.
- Gelderland07: Launching customer.
- Sofia11: Public campaigns.

Cross-cutting projects:

- Sofia02: BAS (Benefit As you Save) - Stimulating citizens participation to recycle processes”.
- SOS01: GREENCYCLE - Introducing circular economy system to Alpine Space to achieve low-carbon targets

Complementary Data

Opportunity: The 'customer' needs to be more aware of their power to change the way companies produce their products. The province needs to become the launching customer for the changes that are needed in the sectors. Conduct of campaigns, meetings, seminars and public discussions on raising awareness of the transition to a circular economy opportunities.

Cross-cutting project: The project GREENCYCLE aims to introduce a circular economy system as a holistic approach to support the implementation of low-carbon strategies and provide an additional 2-4% greenhouse emission reduction in the participating cities. Cities as biggest producers of emissions and major consumers of energy and materials will play a pioneering role by developing circular economy implementation strategies where key target groups (utilities, SMEs, citizens, research organizations) will be actively involved in the process.

The BAS Project aims – preparation and creation of joint strategies, action plans and tools to encourage citizens to participate in the recycling and re-use of materials.

OTHER

Lombardia, Sofia,
SOS

Title of Good Practice/Opportunity
Inter-regional waste management protocols

Name and Type of
Stakeholders

Lombardy Region, Ljubljana City,
Municipality of Sofia.

Type of action

- Gathering of core resources
- Primary material processing
- Production
- Packaging and Distribution
- Use and Service
- Collection
- Disposal

Matching good practices and
opportunities, TRL 7-8

Brief description

Opportunities:

- Lombardy42: Enhance (the quality and traceability of) the procedure of waste management, from collection to recycling in every sector.
- Sofia13: Legislaton Development

Good Practices:

- SofiaGP07: IT waste management system
- SOSGP01: ZERO WASTE

Complementary Data

Opportunity: This opportunity can be significantly supported through building a common protocol on waste management from collection to recycling of end of life products. It can help a better revocer and recycling of goods. This opportunity comes from a cross-sectorial analysis and it is of course considerable as a policy option.

Good Practices: ICT system Implemented in Sofia municipality integrated waste management system

Currently, Ljubljana is already the EU capital with best performance regarding waste separation and waste avoidance; it separately collects 60 % of municipal waste and generates less than 150kg of residual waste –what is not recycled or composted- per person yearly. With adopting their Zero waste plan they commit to increase separate collection to 78 % and decrease the amount of residual waste to 60 kg per person per year until 2025. With this commitment for zero waste, Ljubljana officially rules out building any incinerator in order to have the flexibility to continue reducing the non-recyclable waste and push for prevention and recycling.

OTHER

All Regions

Title of Good Practice/Opportunity
Education in Circular Economy

Name and Type of
Stakeholders

Universities.

Type of action

- Gathering of core resources
- Primary material processing
- Production
- Packaging and Distribution
- Use and Service
- Collection
- Disposal
- Circular Economy Options

Brief description

Opportunities:

- Sofia12: Partnership
- LowerSilesia32: Introduce circular economy principles into relevant university courses

Education capabilities: active in most of the Regions (Lombardy, Lower Silesia, Gelderland, Cd2e, LWARB, Sofia, SOS).

Good Practices:

SofiaGP06: Education to practical sector expectations

Complementary Data

Opportunity: 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.).

Good Practice:

Highlighting the learning process towards innovative elements and approaches to addressing risky and key financial and environmental issues.

Matching good practices
(education) and opportunities,
TRL 7-8