European Union
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CircE
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CircE - European regions toward Circular Economy"

INTERREG Europe Project

Synoptic report

Opportunities, Barriers and Value Chain analyses

Province of Gelderland
Catalonia
Lombardia

13 August 2018

Contents

Interreg Europe project CircE

1. Rationale

The aim of the second semester is to collect the Stakeholders' consideration on opportunities and barriers, to achieve the analysis of the opportunities and define the barriers for CE opportunities for each region and sector chosen. This synoptic report gives an overview of opportunities and barriers across the target sectors. It will provide us information concerning different types of opportunities and barriers, the distribution among sectors and position in value chains.

2. Methodology of Analysis

During the project Circe-partners have gathered and defined a great number of opportunities and barriers that apply to their target sectors. These input is collected, defined, reported and disseminated among the project partners. Mostly via the Circe Tool, the regional Opportunity Reports, the Barrier Questionnaire and by the Barcelona workshop (November 2017) dealing with good practices. From these sources the province of Gelderland and Catalonia derived data and started our analysis of opportunities and barriers.

3. Barriers

Circe Partner Catalonia made the report Analysis of the Barriers to the development of Circular Economy, see report annex 2.

In order to move forward in the development of a Circular Economy, it is important to understand those aspects (social, economic, regulatory, etc) that may impair it. The report presents the results of the assessment performed by the project partners of the CircE project on the **main barriers to the development of Circular Economy (CE) in relevant sectors of the different EU regions participating in the project.**

Previous studies on the development of a CE identified a wide variety of aspects that could, somehow, hinder a complete and vast implementation of a CE. We grouped and classified these aspects into six categories called Barrier groups that we analysed thoroughly throughout specific questions.

The Barrier groups taken into account for this study were:

- Economic- financial aspects.
- Regulatory failures- legislation and government support.
- Social factors- social acceptance and attitudes.
- Market failures- aspects that the current market has not been able to regulate.
- Business structure- businesses organization and governance issues.
- Technology - access to technology and demand for new skills.

We believe that addressing all these barrier groups will bring a holistic approach to the subject, thus giving a founded vision of the state of CE inclusion in Europe.

Developing a circular economy implies a change in the mindsets of both society and businesses. It means creating a new socio-economic model, where linear production and consumption patterns are left behind and substituted by circular recipes. Incremental changes are needed but also disruptive and radical innovation. Therefore, to be effective and successful, such a change requires economic resources and leadership. The results from this study are coherent with this statement, as costs and culture are the main barriers to the development of a CE that have been identified.

Costs include upfront investments (capital), financial costs and non-financial costs. Culture refers to abilities and attitudes required at all levels to build a new reality. In this sense, culture relates not only to social attitudes to consumption –preference for new products, low-cost culture,…- but also to prejudices and fears towards sharing information, transparency and collaboration among businesses, that are all fundamental to create a proper business ecosystem. Last but not least, it also refers to the institutional conviction and determination to lead and support this change. In fact, most respondents believed that while CE integration in the business world depended upon the attitudes and leadership of company managers (or owners), which had the responsibility to trickle down the inclusion of CE among most departments; governments should lead the transition at national level.

Other potential barriers analyzed in the study, such as externalities, technology, skills and regulatory frameworks could be understood as mere tools to support the transition. In that sense, these aspects that are currently observed as potential hinderers, if properly adjusted and used, could play an important role to enhance and assist the transition to a CE by setting up the required environment –legal, technological, market - to move on.

These results match with other studies' conclusions that also identified social and business attitudes, financial needs and institutional deficiencies as the main barriers to a full deployment of CE. We can conclude that the barriers identified in this study are the same or similar to the barriers in the literature: financial, structural, operational, attitudinal and technological.

It is of mention a sense of misunderstanding of the concept 'externalities', which we believe is critical to properly assess the costs/gains of introducing CE initiatives.

Some general differences between SMEs and Big corporations can be withdrawn. Big Corporations have the size and economic power to move on, hence their dependence on capital, regulatory frameworks or government support is lower than SMEs. Instead, their internal structure is complex and large, which makes it less apt for sharing information, and triggering down managerial decisions on CE.

BARRIER	BARRIER SUBTYPE	H	H-M	M	M-L	L
ECONOMIC	PROFIT					
	CAPITAL					
	COSTS					
REGULATORY FAILURES	REGULATORY FRAMEWORKS					
	GOVERNMENT SUPPORT					
SOCIAL FACTORS	INTERNAL BUSINESS CULTURE					
	CUSTOMERS AND SOCIETY					
MARKET FAILURES	EXTERNALITIES					
	BUSINESS ECOSYSTEM					
BUSINESS	GOVERNANCE					
	ADDITIONAL COSTS					
TECHNOLOGY + KNOWLEDGE	ACCESSIBILITY					
	SKILLS					

Table 1: Most and least important barriers to the development of a circular economy

4. Opportunities

As a first result a total number of 158 opportunities have been identified across 8 sectors. As can be observed the opportunities cover a wide range of initiatives and actions. In order to get a better understanding of the types of opportunities we ranked the total number opportunities into the defined categories in the Circe tool.

First, we ranked the opportunities into the 8 sectors. This gives us an idea which sectors are most active and relevant when it comes to opportunities. Secondly, we classified initiatives according to their type of action. The Circe-tool methodology distinguish several types of actions e.g. in terms of education, research and development or policy making. Thirdly we scored initiatives on their expected impact in the circular economy. The Circe tool methodology distinguishes between opportunities that bridge an internal gap, opportunities with cross sectoral impact and opportunities with cross regional importance.

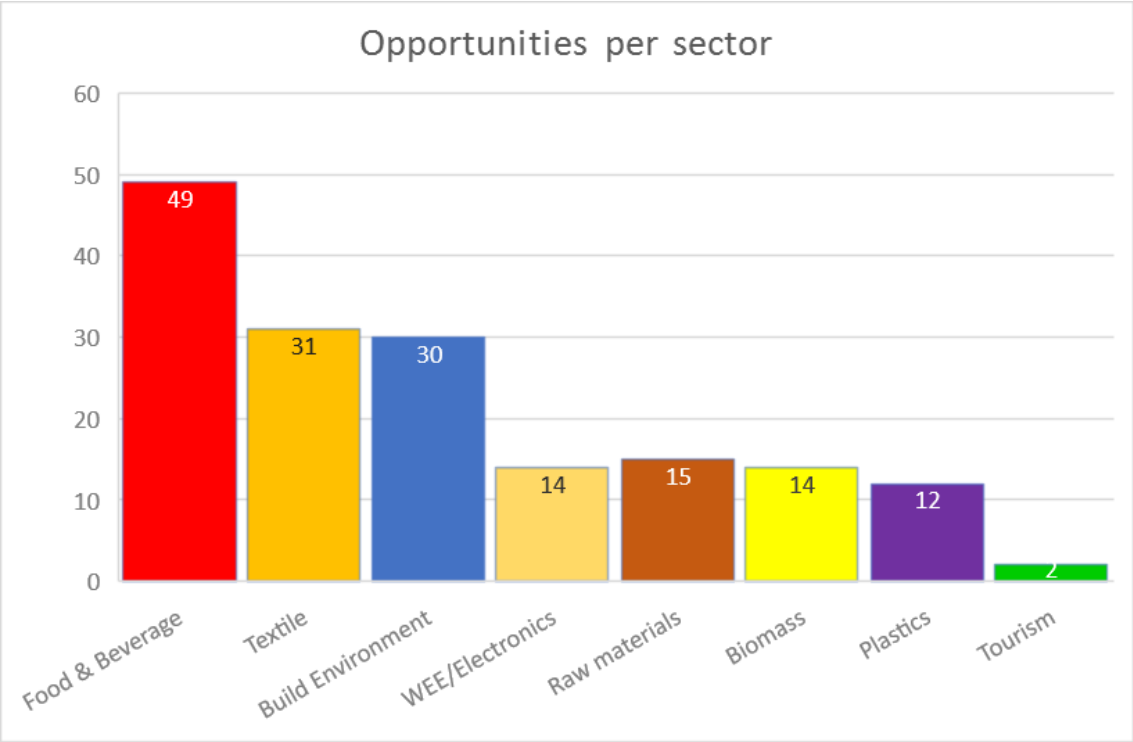
Furthermore, opportunities can derive from the different sectors in the value chain. This will give us better understanding of the origin and expected impact of actions. Therefore, as a fourth category, we also scored the opportunities regarding their position in the value chain.

This report reflects first the result of our analysis of the data in the Circe tool. In addition, we selected and included the best practices derived from the sector opportunity reports and Barcelona workshop. All together it gives a broad overview of opportunities and highlights opportunities that may have the most significant impact.

Opportunities per sector

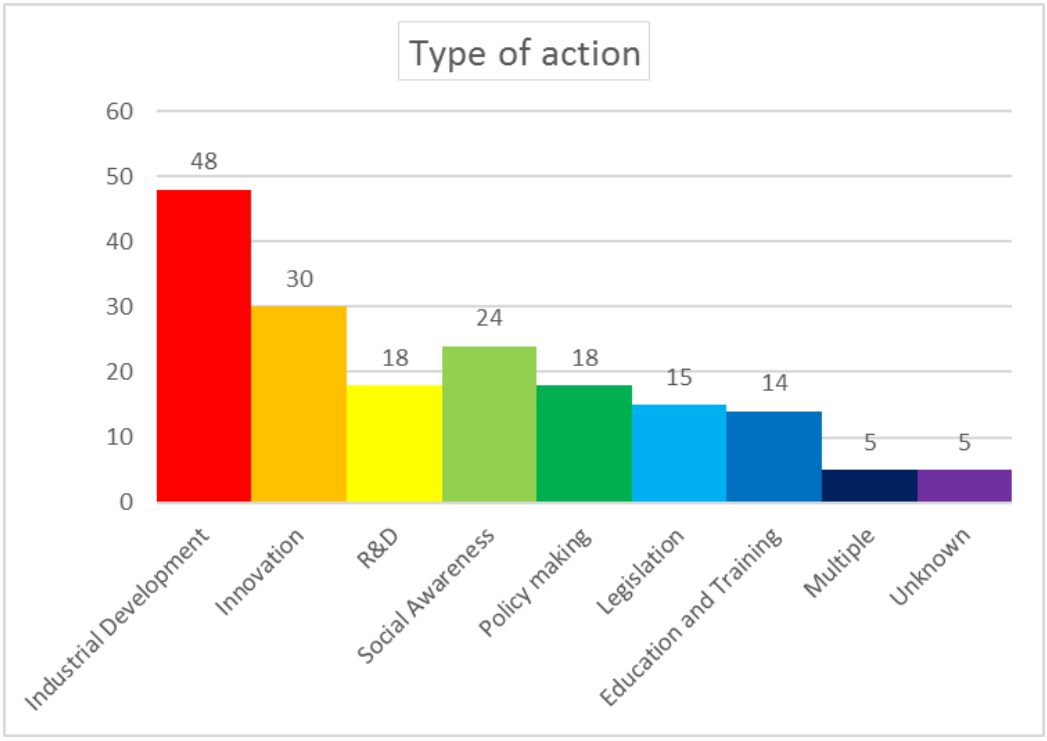
The joint effort of project partners and stakeholders has resulted in a gross list of 180 opportunities to boost circular economy within the 8 sectors. Almost 2/3 (#110) of all the opportunities (#180) are collected from three sectors, namely Food and Beverage #49), Textile (# 31) and Build environment (#30).

The rest of the opportunities (#70) are divided by Raw Materials (#15), Biomass and WEE (each #14), Plastics (#13) and Tourism (#2). There are #12 opportunites that were assigned to different sectors then the CircE sectors.



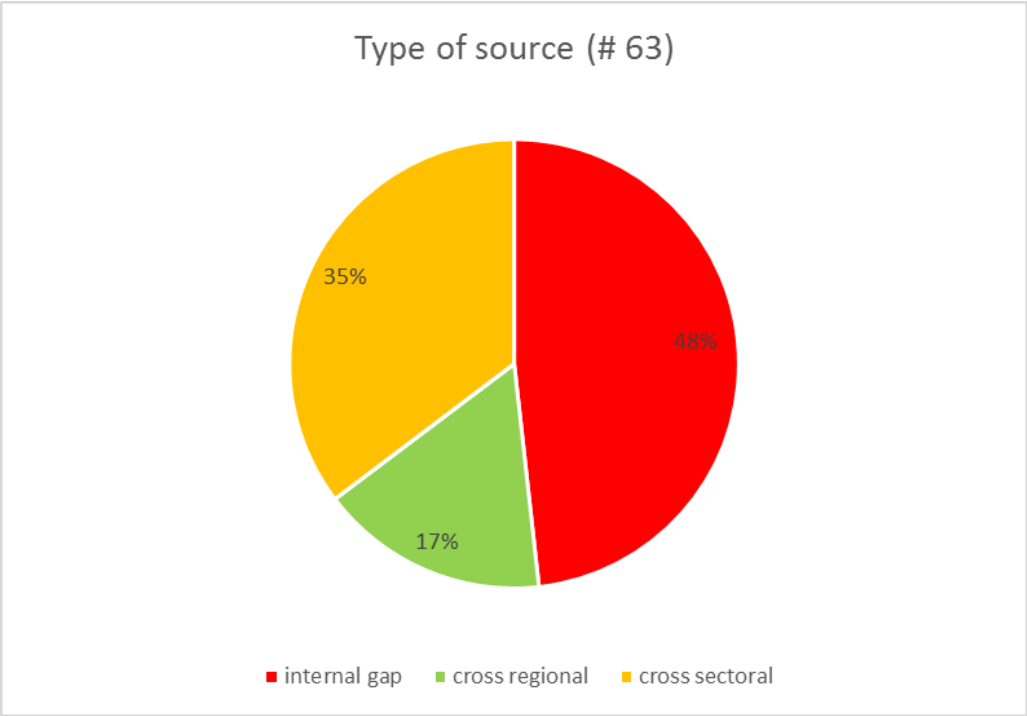
Type of action (#180)

Maybe not surprisingly, more than half of all actions (#96) are directly related to R&D (#18) industrial development (#48) and innovation (#30). Other types of actions are social awareness (#24); education and training (#14); legislation (#15); policy making (#18). In many cases it was not possible to make a clear choice between type of actions and 'multiple' (#5) or 'unknown' (#5) was filled in.



Source

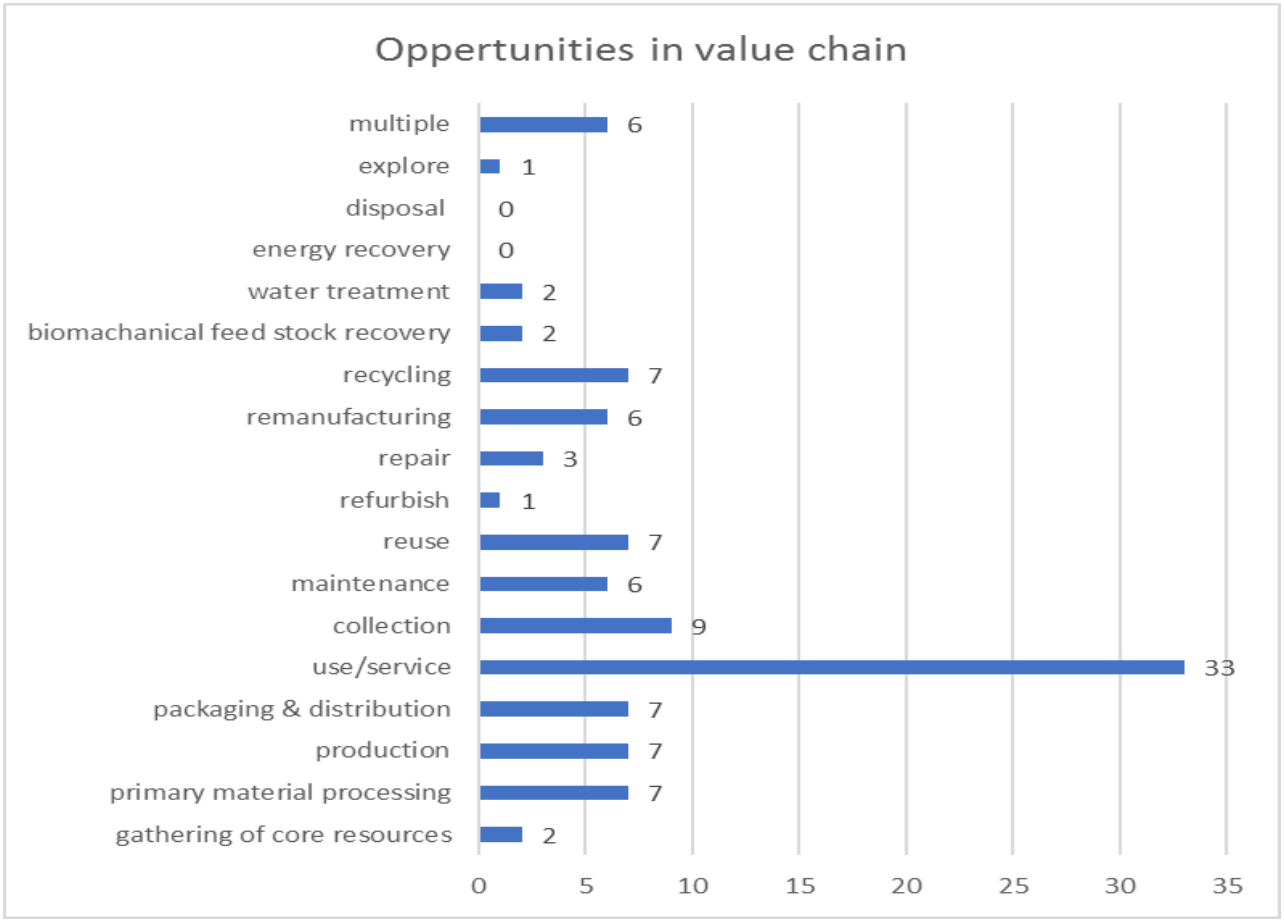
The category 'Source' in the Circe tool shifts initiatives according to the impact within sectors and regions. Opportunities can bridge an internal gap; affect cross regional and/or cross sectorial relations. In practice however, a clear distinction between the three categories seemed to be difficult. In only 85 cases opportunities were classified as bridging an internal gap (48%); cross regional (17%) and cross sectorial (35%). In 95 cases this is unknown. Nevertheless, the opportunities that concentrate on sectoral and local actions clearly outnumber the opportunities with cross sectoral and cross regional impact.



Position in the value chain.
In order to assess the relevance of opportunities for policy actions it is important to plot actions in the value chain. What actors are in a position to change the current linear line of production. To pinpoint initiatives in their value chain the Circe tool provides a wide variety of options. Nevertheless, identifying opportunities in value chains is not easy. In 71 cases the link to the value chain is not determined and therefore unknown.

The 106) results: gathering of core resources (#2); primary material processing (#7); production (#7); packaging & distribution (#7); use/service (#33); collection (#9); disposal (0); maintenance (#6); reuse (#7); refurbish (#1); repair (#3); remanufacturing (# 6); recycling (closed and open loops) (#7); biochemical feedstock recovery (#2); water treatment (#2); energy recovery (0); explore (#1)and multiply (# 6).

We can conclude that most opportunities (# 33) focus on a switch from classical ways of linear production (produce/take/waste) towards new service-oriented business models ('use/service'). The 'Collection' of used product attributes to 9 initiatives and another 7 initiatives deal with innovations in 'packaging & distribution' processes.



The results for individual sectors will be presented in the annex 1, chapters 4.1 till 4. 9.
For every sector we will highlight the results in terms 'type of action', 'source and 'position in the value chain'. Sector paragraphs will be completed with a selection op best practices derived from the sector reports en workshops

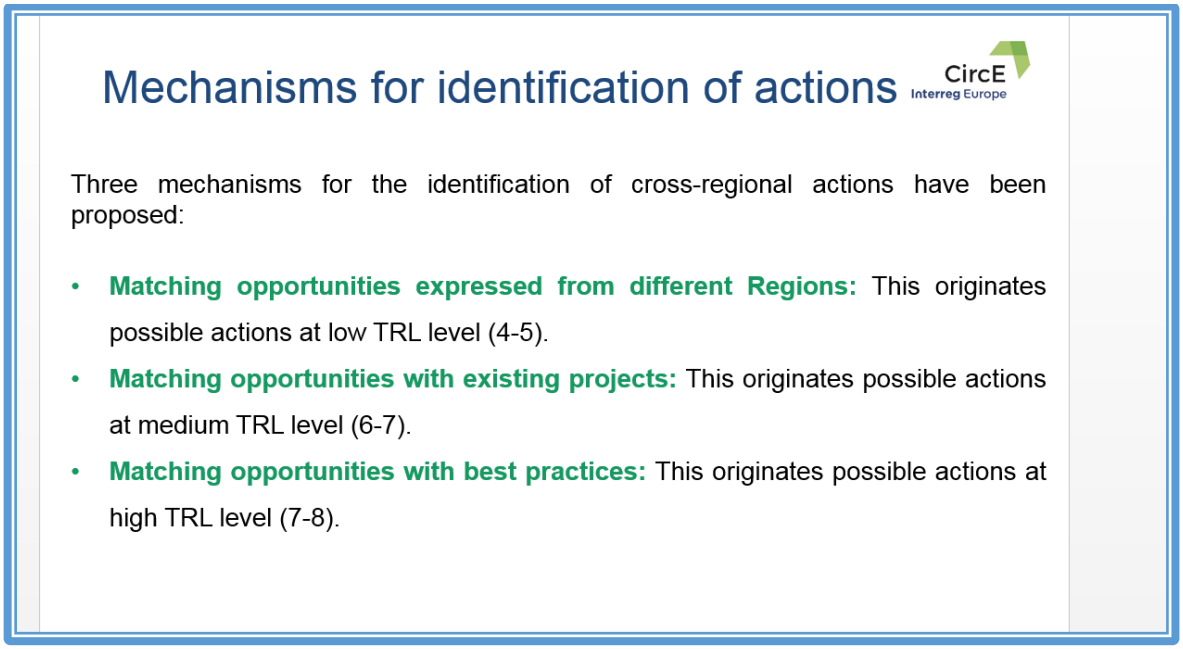
5. Value Chain analyses

Lead Partner Lombardia (by ITIA-CNR) made a analysis of the Value Chain, see annex 3.
For each sector they looked at the stakeholders, cross cutting projects, good practices and opportunities.
The results per sector are reported below.
Before showing them we provide just a short description of this analysis.

The analysis

The CircE tool leads to identify cross regional and cross-sectorial opportunities through the value chain analysis, triggered by the combined analysis of all the regional data collected in the CircE tools on sectors, actors, projects, good practices, opportunities by the CircE partners. These analysis identified new opportunities by linking opportunities, good practices, projects and stakeholders in different sectors or regions; in these cases for addressing these opportunities the value chain collaboration among stakeholders is crucial.

The actions or opportunities, found out and to be addressed by the PPs were identified in 3 different manners.



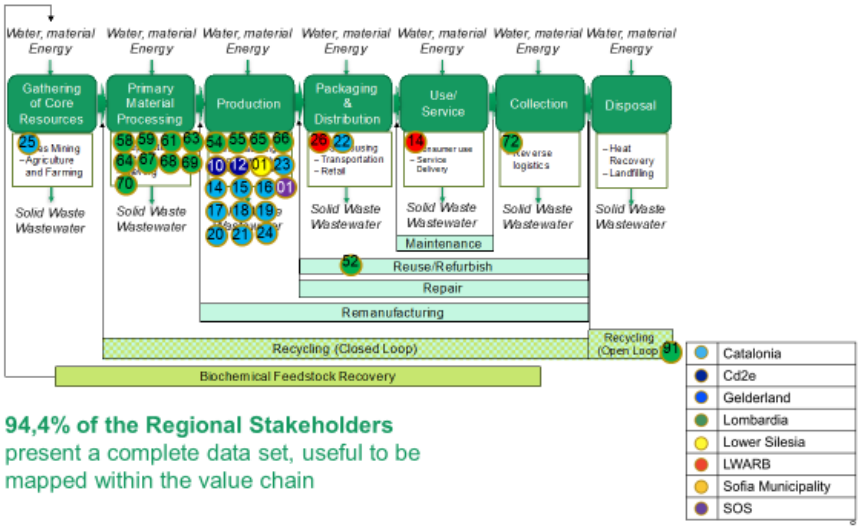
The Technology readiness level (TRL) of the new opportunities-actions identified means the level of their development. For instance, if a new action-opportunity was identified matching regional opportunities and good practices, the TRL is high because a concrete, alive and sustainable example or similar case of the action-opportunity already exists.

The overall results for each sector and further information are provided in Annex 3.

Food

Outcomes of the analysis

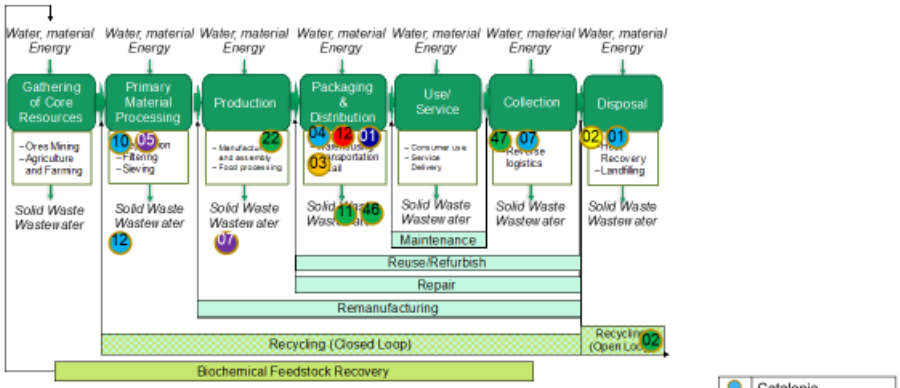
Industrial Stakeholders in the Food Waste sector



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

Outcomes of the analysis

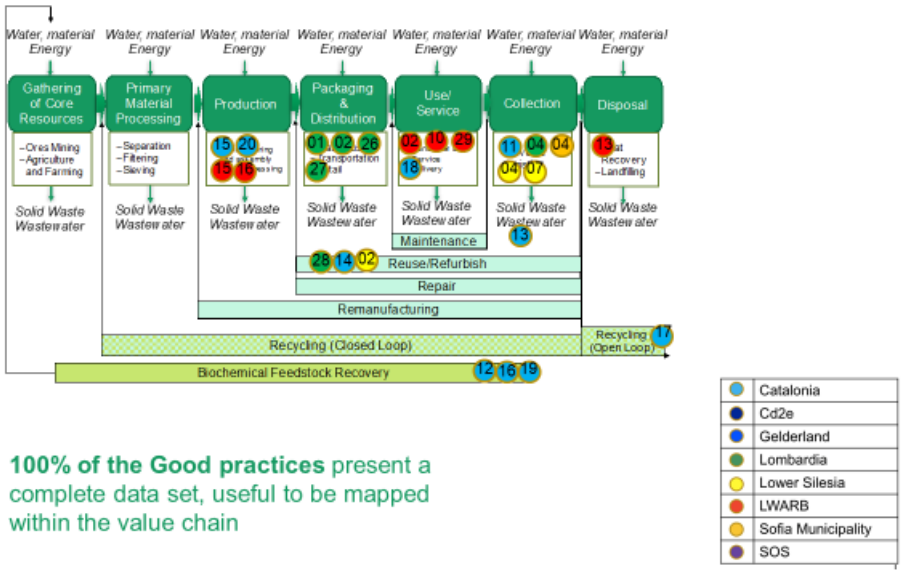
Cross-cutting Projects in the Food Waste sector



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

Outcomes of the analysis

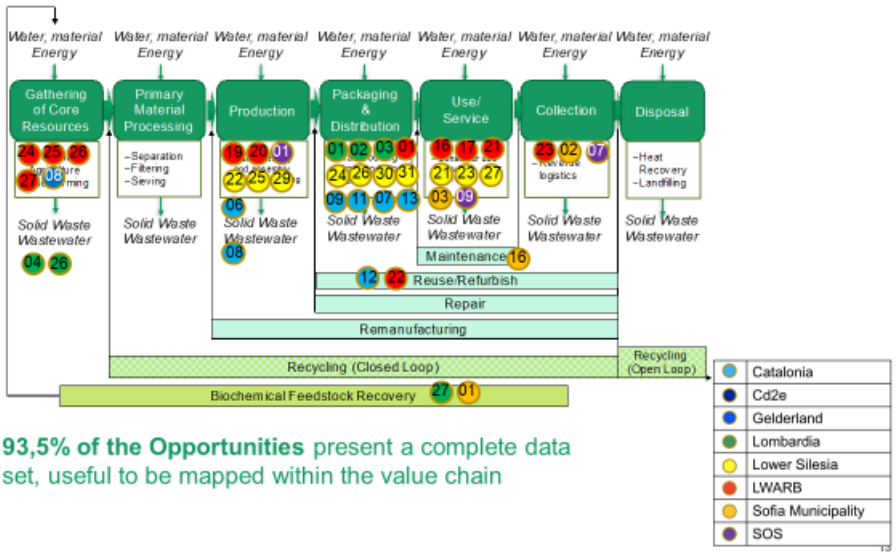
Good practices in the Food Waste sector



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

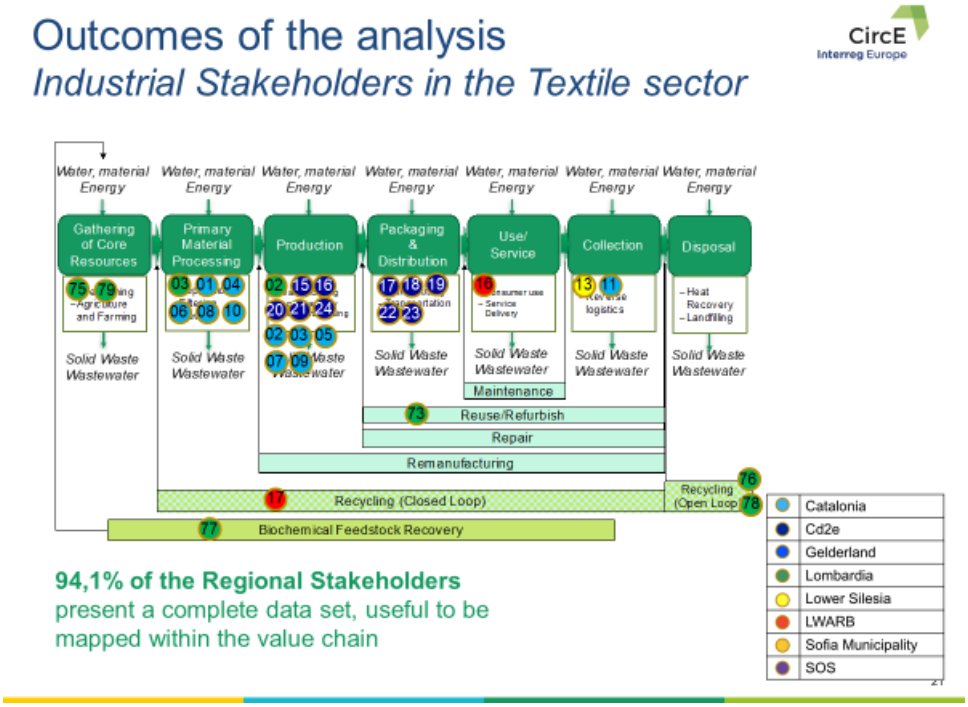
Outcomes of the analysis

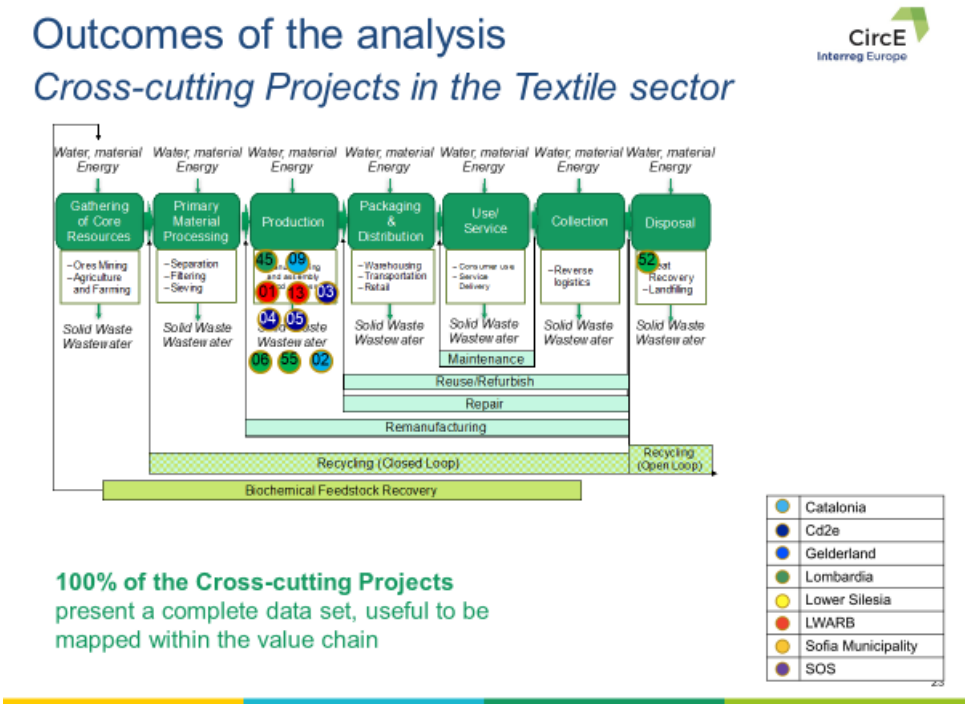
Opportunities in the Food Waste sector



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

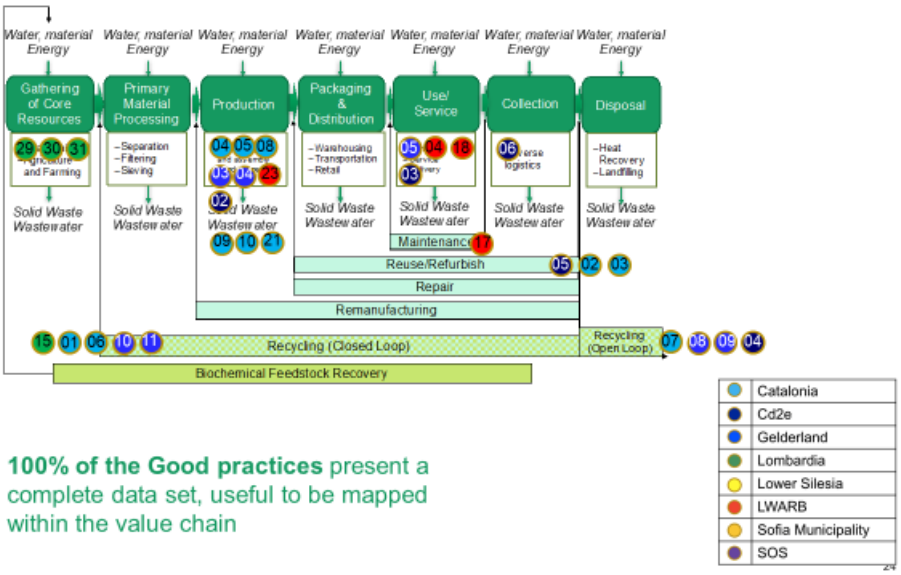
Textile





Outcomes of the analysis

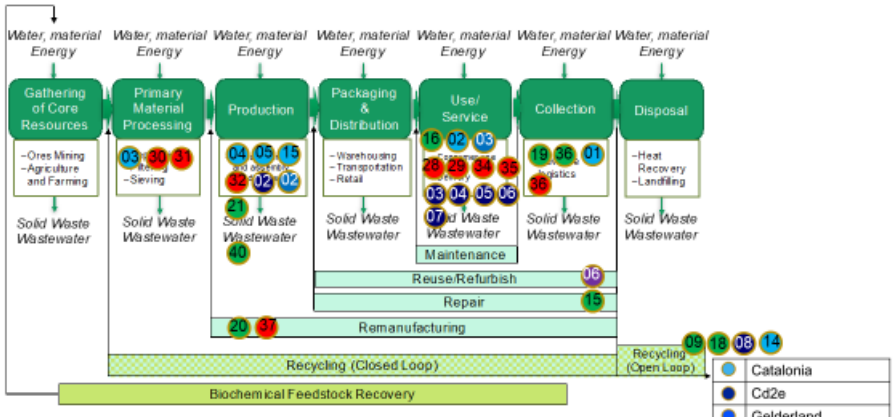
Good practices in the Textile sector

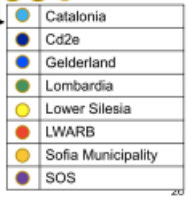


100% of the Good practices present a complete data set, useful to be mapped within the value chain

Outcomes of the analysis

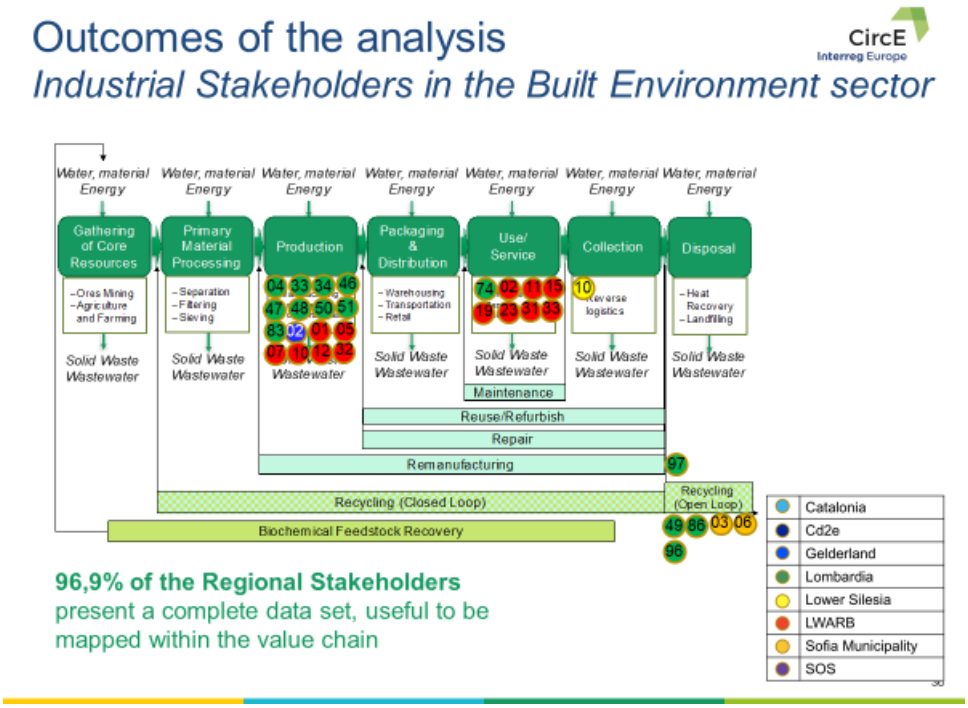
Opportunities in the Textile sector

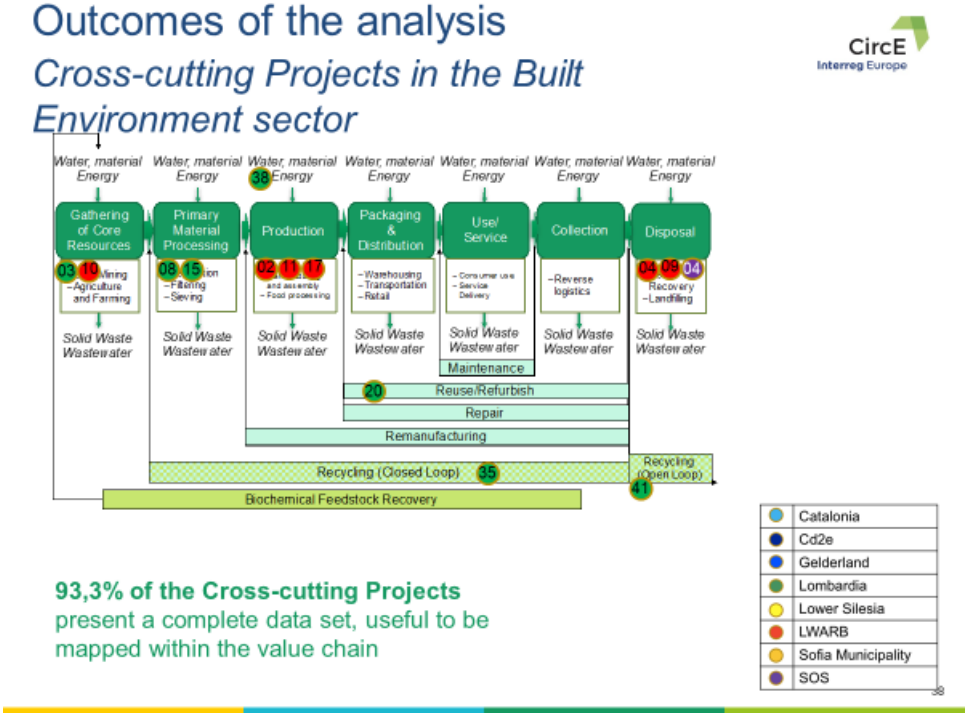




97,2% of the Opportunities present a complete data set, useful to be mapped within the value chain

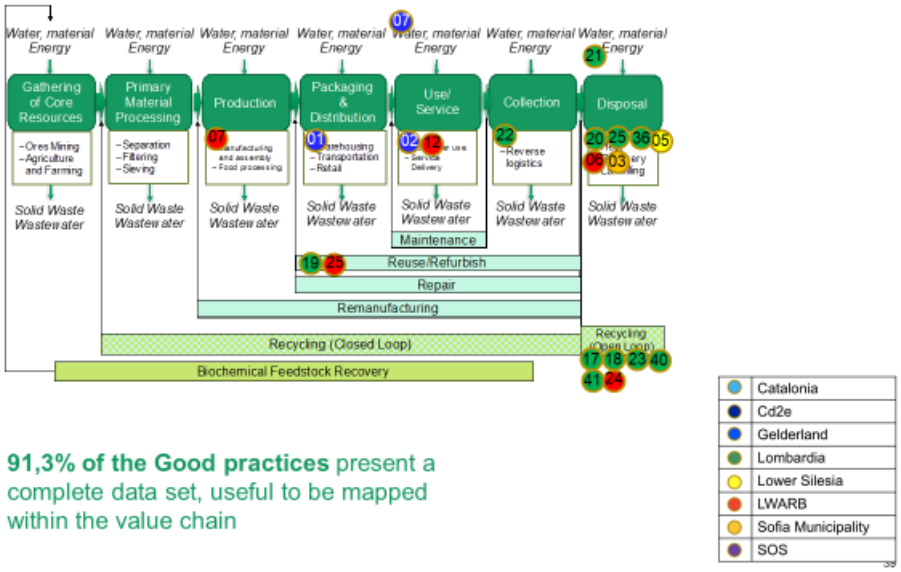
Built environment





Outcomes of the analysis

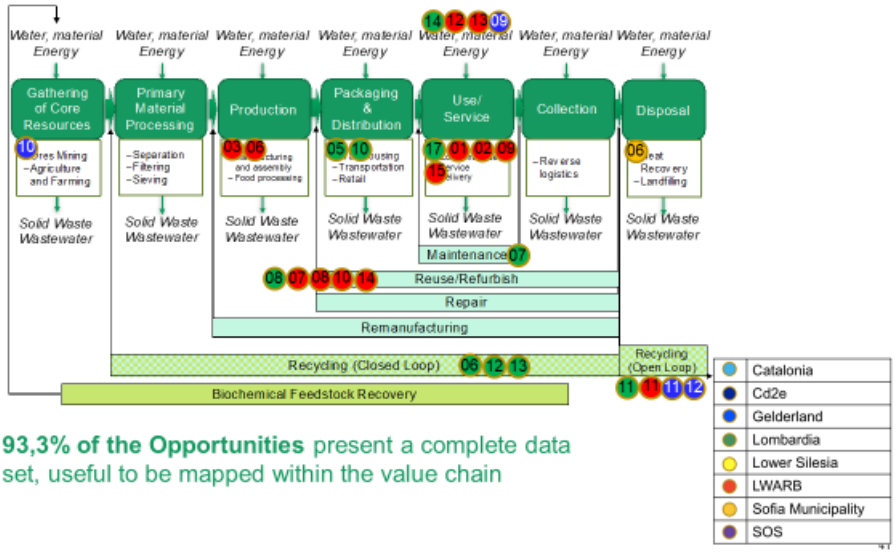
Good practices in the Built Environment sector



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

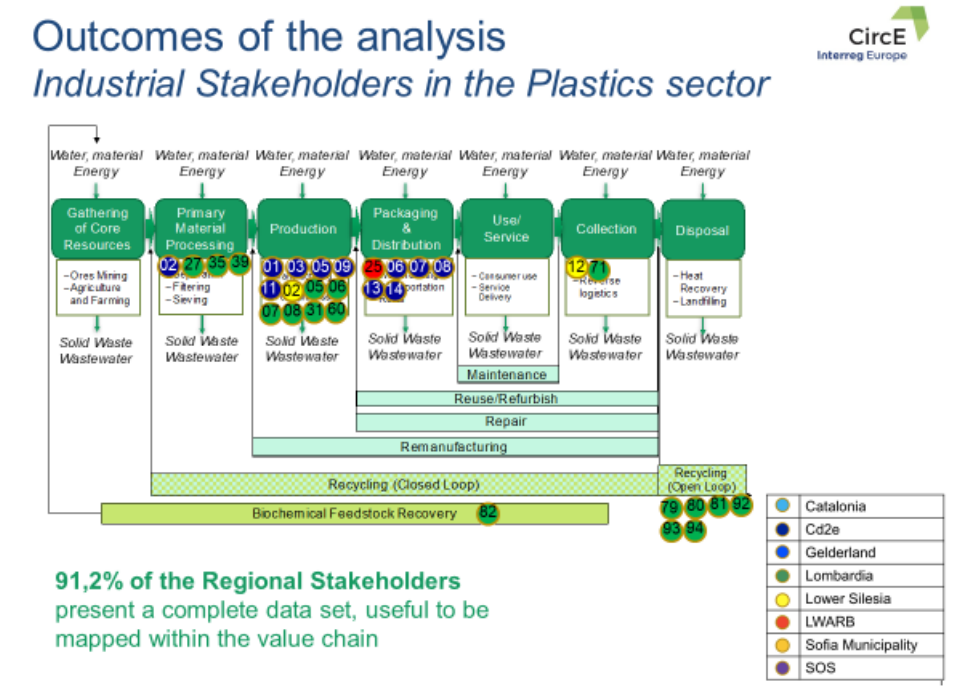
Outcomes of the analysis

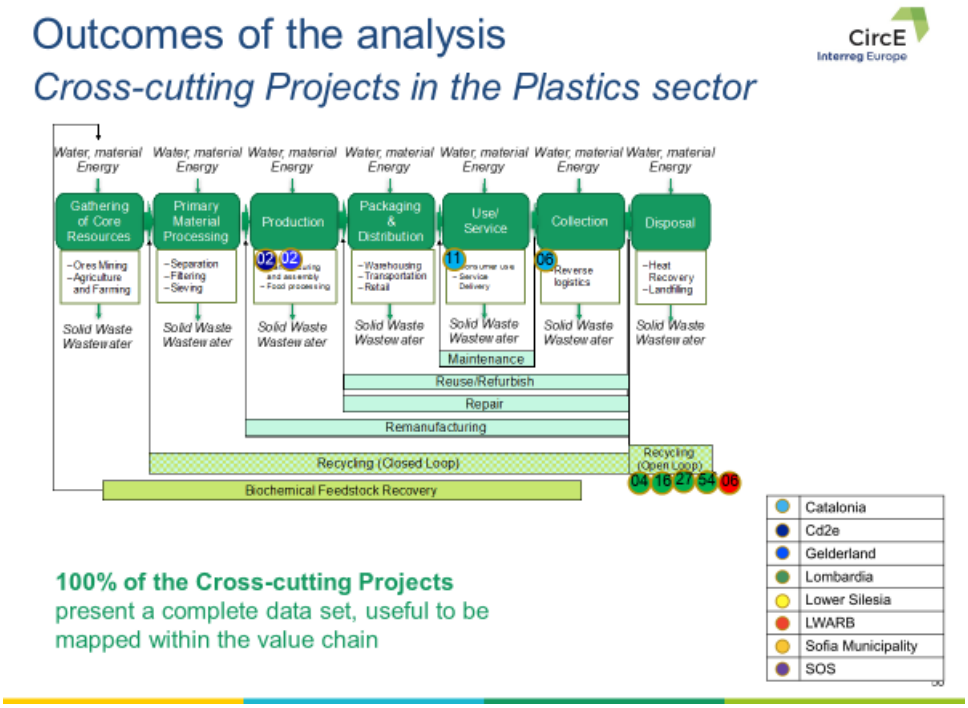
Opportunities in the Built Environment sector



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

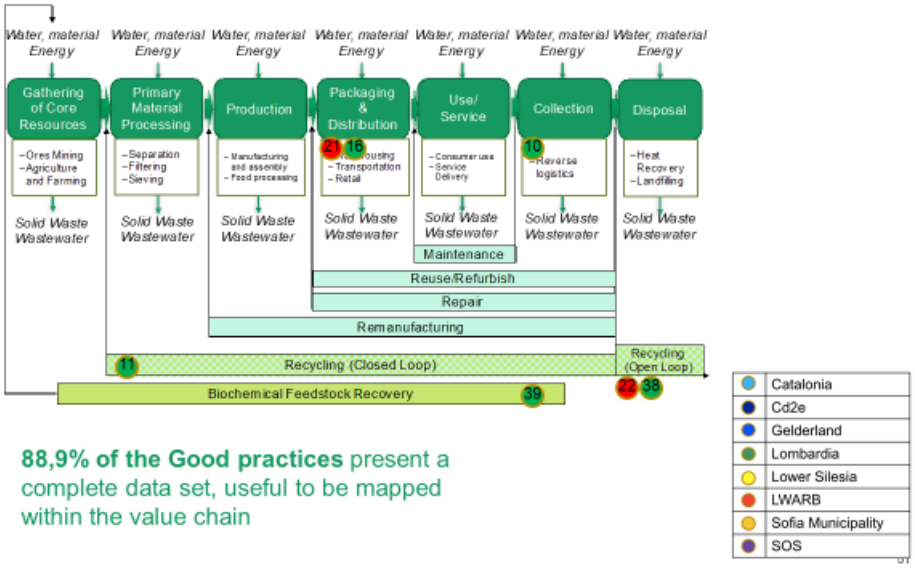
Plastics





Outcomes of the analysis

Good practices in the Plastics sector

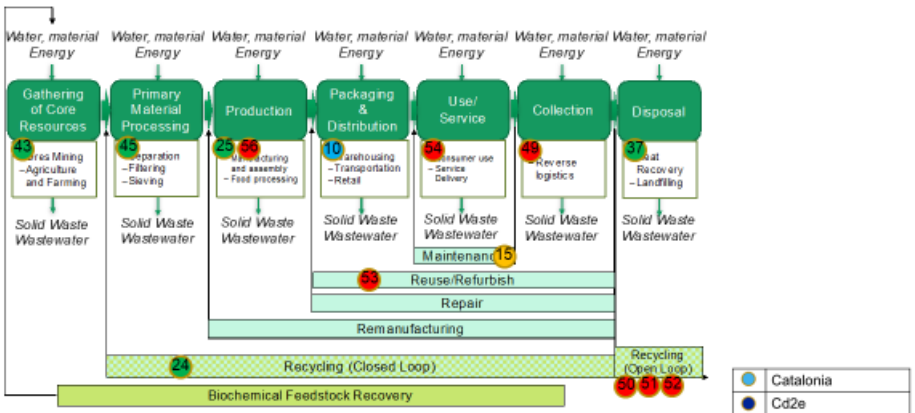


Catalonia
Cd2e
Gelderland
Lombardia
Lower Silesia
LWARB
Sofia Municipality
SOS

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

Outcomes of the analysis

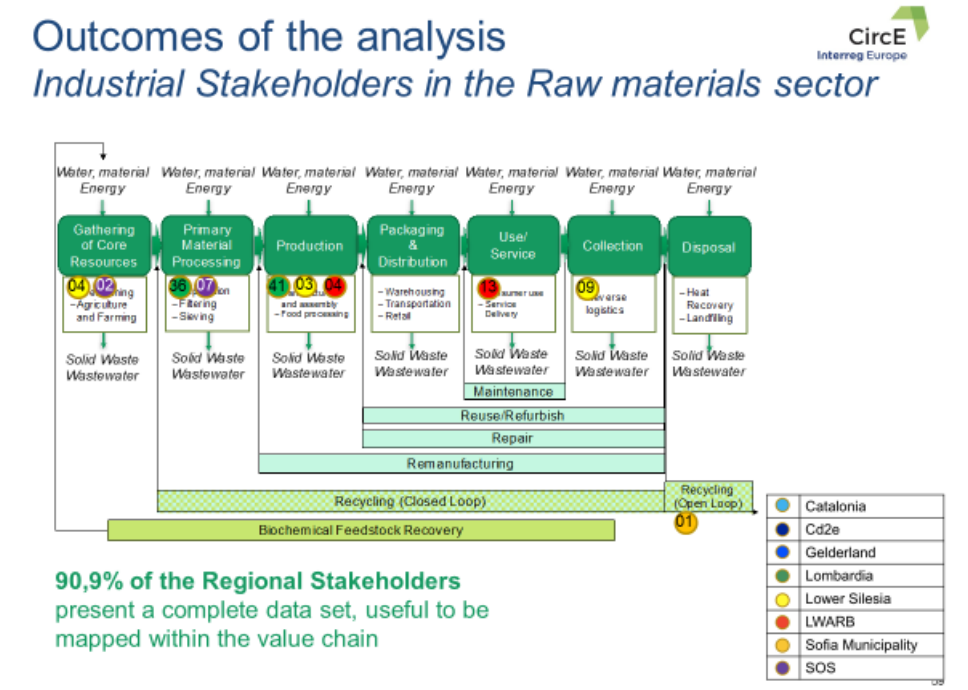
Opportunities in the Plastics sector

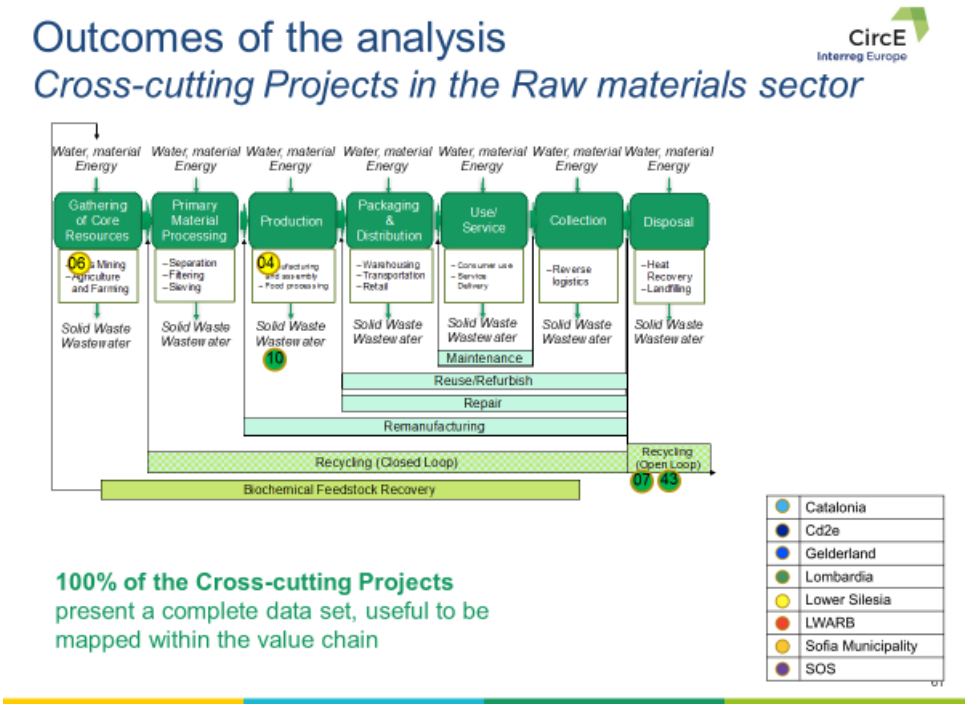


Catalonia
Cd2e
Gelderland
Lombardia
Lower Silesia
LWARB
Sofia Municipality
SOS

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

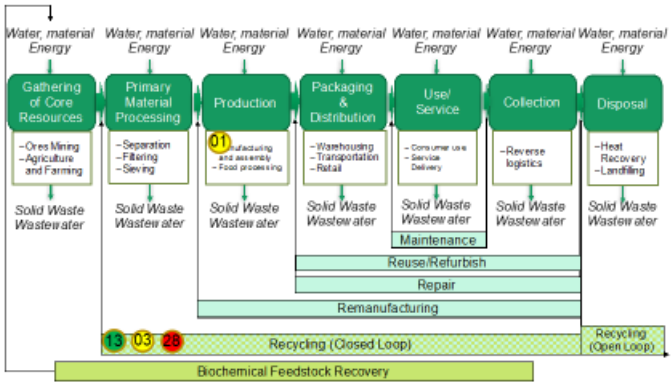
Raw materials





Outcomes of the analysis

Good practices in the Raw materials sector

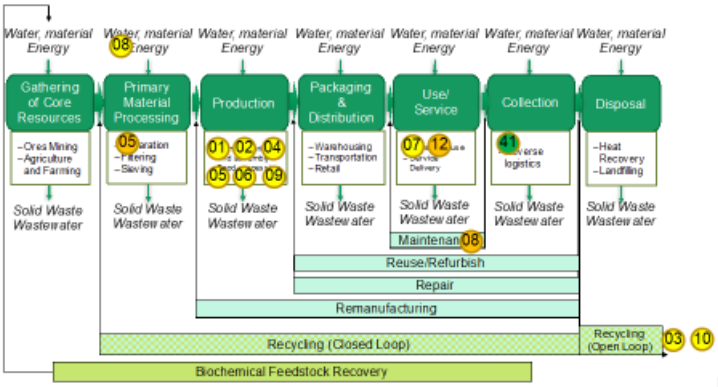


100% of the Good practices present a complete data set, useful to be mapped within the value chain

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

Outcomes of the analysis

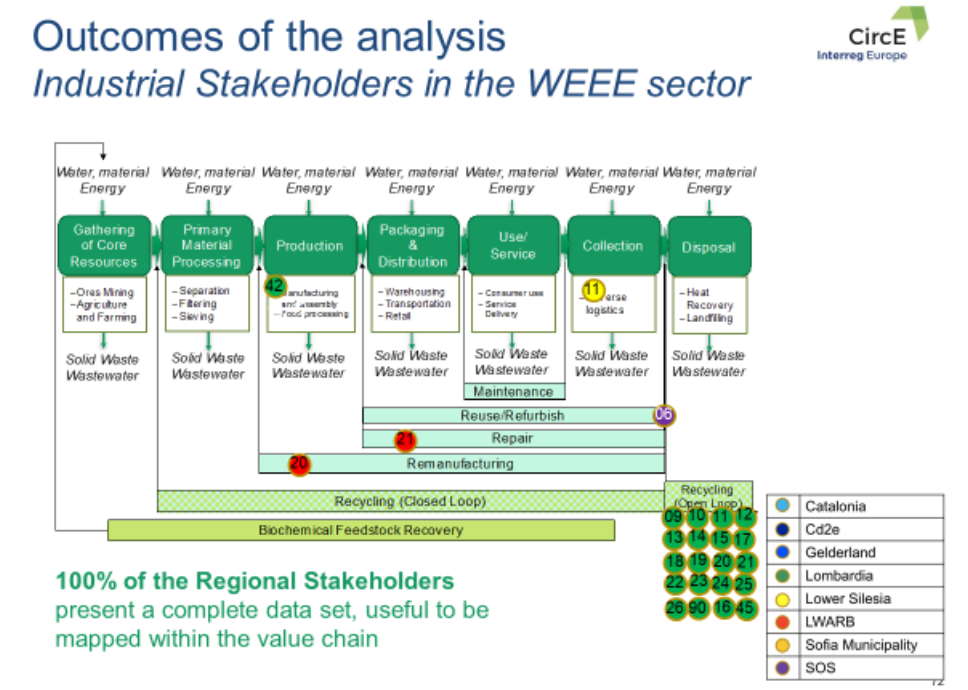
Opportunities in the Raw materials sector

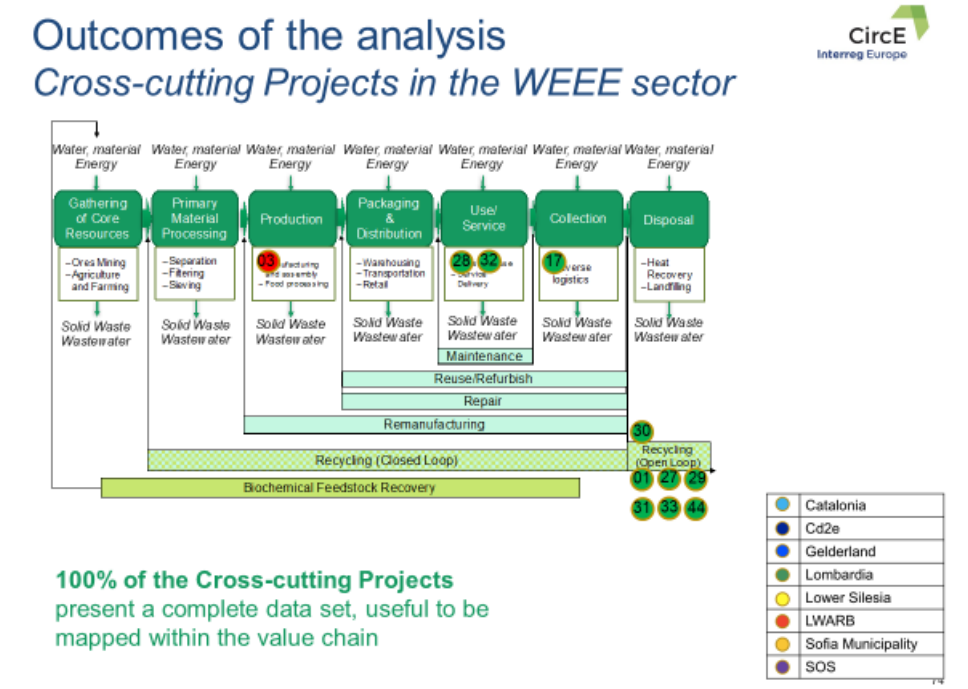


93,3% of the Opportunities present a complete data set, useful to be mapped within the value chain

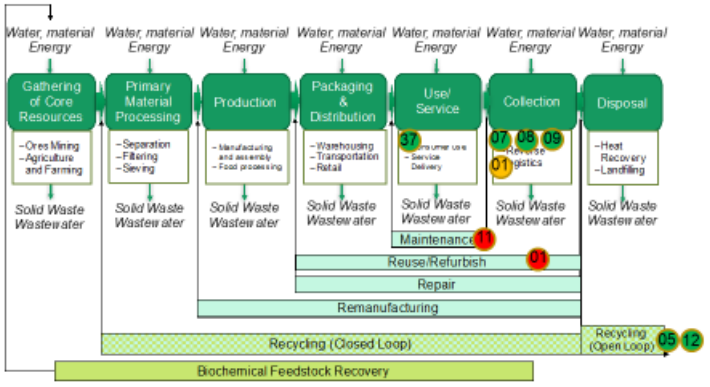
- Catalonia
- Cd2e
- Gelderland
- Lombardia
- Lower Silesia
- LWARB
- Sofia Municipality
- SOS

WEEE



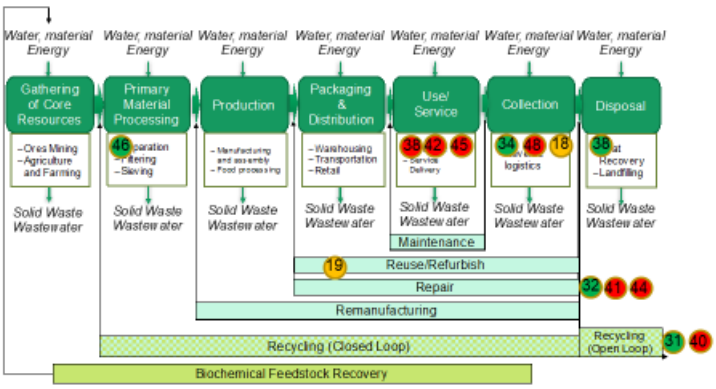


Outcomes of the analysis
Good practices in the WEEE sector



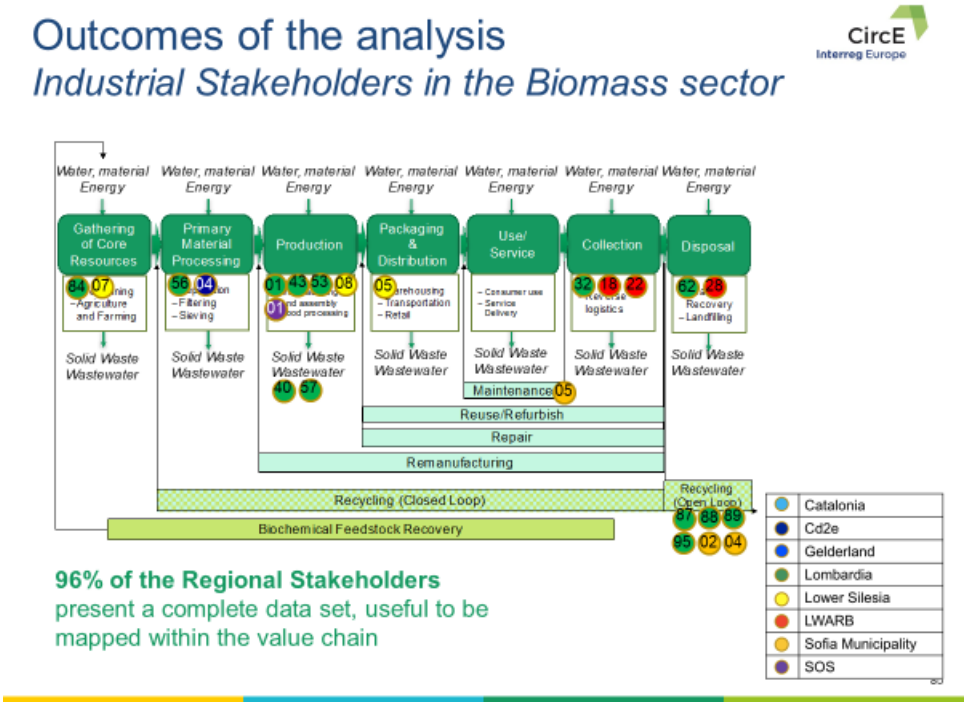
90% of the Good practices present a complete data set, useful to be mapped within the value chain

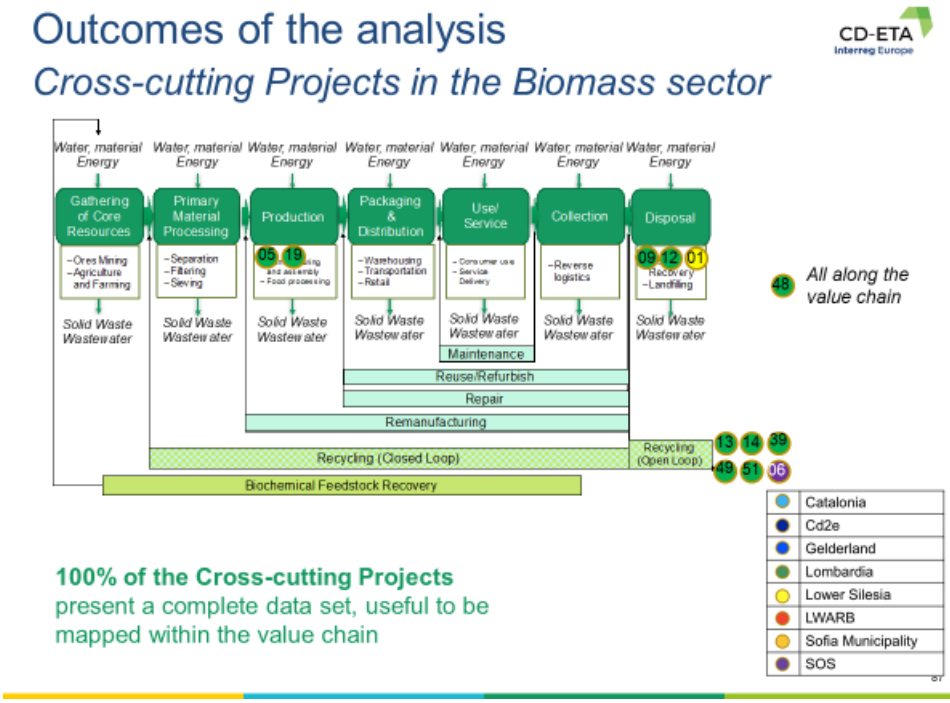
Outcomes of the analysis
Opportunities in the WEEE sector



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

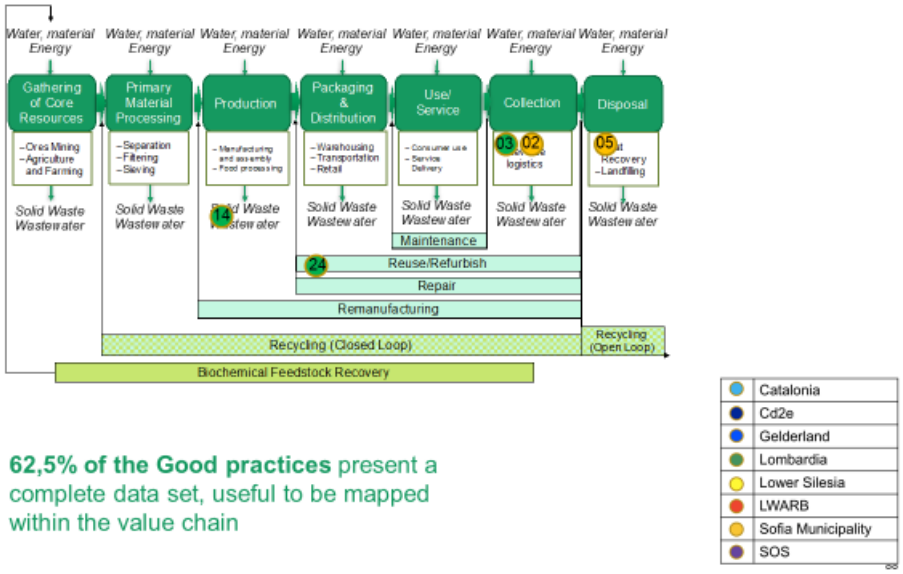
Biomass





Outcomes of the analysis

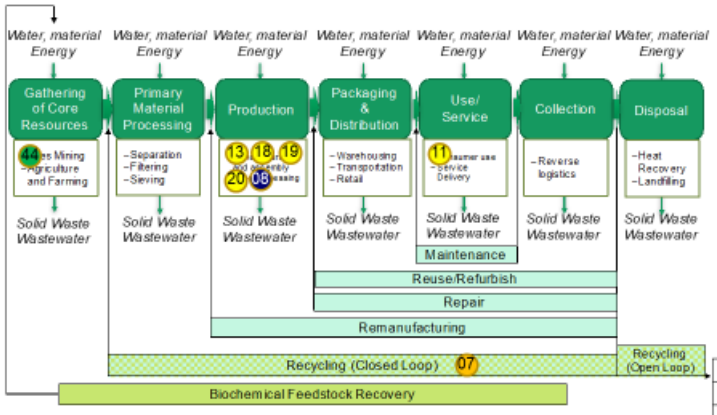
Good practices in the Biomass sector

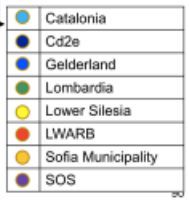


62,5% of the Good practices present a complete data set, useful to be mapped within the value chain

Outcomes of the analysis

Opportunities in the Biomass sector





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