Implementation and Monitoring of the Recovery and Resilience Plan for the Green Transition

Deliverable 7: Report on the Implementation of High Performing Recycling and Waste Schemes at Local Level

Inception Report

FINAL

Trinomics

Contract details

European Commission - DG for Structural Reform Support
REFORM/SC2021/109-Implementation and monitoring of the Recovery and Resilience Plan for the green transition, under framework contract SRSS/2018/01/FWC/002

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Implementation and monitoring of the Recovery and Resilience Plan for the green transition

Under Framework Contract: SRSS/2018/01/FWC/002
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El derecho al servicio del medio ambiente

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1 Introduction

1.1 Purpose and Structure of the Document

The purpose of this document is to provide a comprehensive review of the consultant team's understanding of the context, objective, scope, methodology for each of the six sub-tasks in Deliverable 7, and the respective timeline for the delivery of each of these tasks within the deliverable. The document also provides a review of the state of play in terms of waste management practices in Spain, as well as a list of high-performing waste management and recycling schemes in Spain, as well as in the European Union. Ultimately, this document serves as the theoretical base for the understanding of the context, as well as the approach for fulfilling each of the subtasks of Deliverable 7.

The structure of this document is composed of the various elements, outlined above. The document first provides background into the policy context related to the challenges and governance of the Spanish Recovery and Resilience Plan, as well as the financing schemes under the RRP mechanism, the development of a new monitoring and evaluation framework. This section also provides information on the organisational structure of waste management at the local level, and the related responsibilities of waste management at the national level, while also touching upon the implementation of circularity policies/initiatives in the context of the Spanish RRP. Then, the document outlines the organisational arrangements of the study by first detailing the objective and scope of the study by setting clear aims for the overall delivery of this deliverable, as well as the limits in which this study will operate. The same section will also provide precise methodologies for how our team intends on delivering each of the six sub-tasks of this deliverable, with a corresponding timeline for the delivery of each, respective sub-task. Finally, this document provides an appendix section, in which can be found the minutes from the first kick-off meeting between the project partners and representatives from DG REFORM.

1.2 Policy Context

1.2.1 The Spanish Recovery and Resilience Plan (RRP) and its challenges

Spain has an ambitious agenda with regards to improving their management framework for the efficient spending of the green components of the RRP. As a country on the path to recovery, reviving economic activity is a high priority, so developing a comprehensive framework for designing and efficiently managing the resources becomes the building block for all the planning activity.

1.2.2 Governance of the Spanish RRP

The strength of Public Investment Management (PIM) institutions is a key determinant of public investment efficiency and productivity. Countries with stronger PIM institutions have more predictable, credible, efficient, and productive investments. Despite the existence of comprehensive regulation, there are areas of improvement in Spain in this regard, such as cost-benefit project analysis, multi-year planning and follow-up, and mechanisms for improving the relationship between levels of Government. The Ministry for the Ecological Transition and Demographic Challenge (MITECO) is responsible for the implementation of activities related to the implementation and monitoring of the green components of the RRP. However, the assessment of PIM goes beyond the scope of the Ministry, and must involve the Ministry of Economy (MINECO) and the Ministry of Finance (MoF), to assess the coordination between spending plans, macro fiscal planning, budgeting, and reporting. Moreover, the experience with the use

of EU Structural Funds in the past can be a relevant input for a better understanding of the instruments previously used and coordinated through the Directorate General of European Funds (DGEF, which is part of the MoF). On the other hand, the existence of three levels of government is also a challenge considering the high degree of financial autonomy that Subnational Governments (SNG) have. Therefore, assessing the coordination mechanisms among administrations and finding arrangements is crucial to create synergies and the best value for money, avoiding duplications or overspending in case of contract fragmentation.

1.2.3 Addressing Waste Management Issues in this Deliverable

Delivering the RRP will partly depend on improving each municipality's waste management system by setting higher targets/thresholds in terms of its waste management performance. Given the heterogeneity and high fragmentation of Spanish municipalities, improving the recycling collection and treatment systems at the municipal level will require an understanding of the current state-of-play, notably the differences between the municipalities in terms of their level of waste management development. While this deliverable is part of a wider project, Deliverable 7 will be treated as an independent project that will require various phases in order to deliver the requirements of the request.

2 Organisational arrangements

2.1 Objective and Scope

2.1.1 Objective

The overall objective of this deliverable is to improve recycling collection and treatment systems at the municipal level, making a key contribution towards supporting Spain to comply with EU Waste Framework Directive recycling targets. This deliverable will also contribute to the development of knowledge and expertise at the municipal level through the dissemination of best practices.

2.1.2 Scope

Geographic scope

This Deliverable will address all 17 Autonomous Communities in Spain, as well as the Autonomous Cities of Ceuta and Melilla.

The investigation of good practices regarding waste management will cover Spain and all other Member States of the European Union.

Categories of waste in scope

This Deliverable will address the categories of waste under the responsibility of municipalities, as defined by the Spanish Waste Law, Art.12(5), which encompass:

- "Domestic waste" ('*residuos domésticos*'), i.e., all waste generated by households including construction, demolition and hazardous waste when generated by households, and analogous waste, as defined by Art.2(aq) of this Law;
- When provided for by the legislation of the Autonomous Community: "Non-hazardous commercial waste" ('*residuos comerciales no peligrosos*'), i.e., the waste generated by the activities of shops, offices, markets, bars, restaurants and other services, as defined by Art.2 of this Law.

Policy instruments in scope

In the development of policy recommendations in the Action Plan and Roadmap (Task 7.2), this Deliverable will focus on two main categories of delivery of waste management services to the population:

1. Via **public procurement** instruments, supporting the set-up, conclusion, operation, monitoring and termination by municipalities of **service contracts** with **external, private waste management companies**. The stages in the contract process to be considered will include: tendering, contract specifications, modelling of waste streams, evaluation of tenders, definition and monitoring of indicators, rewards and penalties, communication to citizens;
2. Via **direct operation** of the waste management services by the **public entity** in charge (municipality or grouping of municipalities, e.g., in *diputaciones provinciales*).

The investigation of the economic profitability of waste management services is out of the scope of this Deliverable. Consequently, no information or data will be sought regarding business modelling, investment, prices for sorted waste, for recovered materials or for secondary raw materials, or regarding any other commercially sensitive or confidential issue.

Categories of waste management operations in scope

This Deliverable will address all waste management operations that are under the responsibility of municipalities, as per the relevant Spanish laws and laws enacted by Autonomous Communities, and include at least:

- Waste collection;
- Sorting of waste;
- Preparation for re-use;
- Recycling;
- Composting or anaerobic digestion;
- Incineration, with or without energy recovery;
- Landfilling.

This Deliverable will also consider operations that are at the top of the Waste Hierarchy as defined by the European Waste Framework Directive[1], Art.4:Waste prevention (e.g., re-use, maintenance or repair);

- Preparation for re-use.

2.2 Methodology

2.2.1 Overall approach

While this deliverable is a part of a wider project that will aim to deliver the objectives of meeting the Green objectives of the Recovery and Resilience Plan (RRP) in Spain, our approach for this deliverable will be as though it were its own, separate project, with individual phases.

- First, the project's inception phase (Task 7.1 Inception Phase) will create the conditions for a solid start of the project. The consultant team will:

1 Directive 2008/98/EC on waste, accessible in a consolidated version here: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02008L0098-20180705

- Refine the organisational arrangements (including methodology) of this Deliverable, beyond what had been described in the restricted space available for this in the proposal for the overall project;
- Provide background information describing where the project starts from:
  - on the current state-of-play of waste management in Spain;
  - on the current high-performing schemes regarding waste recycling in Spain and in the other Member States of the EU;

- Then, our team will develop the Action Plan and Roadmap (Task 7.2 Action Plan and a Roadmap), whose main purpose will be to assess policy options and recommendations for high-performance recycling schemes at municipal level, based on the existing examples identified in Spain and in the other Member States of the EU;
- From the two previous phases, the project team will organise capacity-building activities (Task 7.3 Capacity-building Activities), for representatives of municipalities and Autonomous Communities, on the existing high-performing schemes and on the Action Plan and Roadmap defined previously;
- Complementary to the Action Plan and Roadmap, the Change Management Plan (Task 7.4 Change Management plan) will be developed to support its concrete implementation;
- Early in, and throughout, the project will engage in communication activities (Task 7.5 Communication Activities) with stakeholders in Autonomous Communities, municipalities and the general public, through workshops, and published materials, which will be disseminated through the channels of MITECO and other Spanish official bodies;
- Finally, in terms of the contribution to the implementation of the Spanish RRP (Task 7.6 Contribution to the implementation of the Spanish RRP), the consultant team's input will be more limited. This will involve the set-up and operation of indicators to monitor progress of waste management performance, in line with Spain's commitments towards the European Commission contained in the 'Operational Arrangements' of the Spanish RRP[2].

2.2.2 *Task 7.1 Inception Phase*

TEC Table 2-1 Summary of Task 7.1

Objective	• Refine the organisational arrangements (including methodology) of this Deliverable;
	• Provide background information describing where the project starts from:
	  ○ on the current state-of-play of waste management in Spain;
	  ○ on the current high-performing schemes regarding waste recycling in Spain and in the other Member States of the EU;

Team members	• **Task Leader** Laurent Zibell (*Trinomics*) • **Project Experts** Irati Artola (*Trinomics*) Laurent Frapaise (*Trinomics*) Maria Zubiaga (Metroeconomica) Francisco Greño (Metroeconomica)
Sub-Tasks	• 7.1.1 Kick-off Meeting • 7.1.2 Drafting of the Inception Report
Duration	• 2 months
Deliverables	• Minutes of the Kick-off Meeting • Inception report

2 Recovery & Resilience Facility. Operational arrangements between the European Commission and Spain – November 2021, downloadable at: https://ec.europa.eu/info/files/operational-arrangement-between-commission-and-spain_en

Meetings	• Kick-off meeting, • Bi-weekly interactions with the Policy Officer in charge at MITECO
Share of the budget	10%

Objective

The objective of this task is to create the conditions for a solid start of the project, from an organisational point of view, and regarding the data necessary to proceed.

Sub-task 7.1.1: Kick-off Meeting

The Kick-off Meeting specific to this Deliverable was held on 10 February 2022, between the consultant team (Trinomics and Metroeconomica), and representatives of MITECO and of DG REFORM. During this meeting, the consultant team exposed its understanding of each of the Tasks of this Deliverable, and obtained feedback from MITECO and DG REFORM, which was summarised in the minutes of this Kick-off Meeting (in the Appendix, § 4.1).

Sub-task 7.1.2: Drafting of the Inception Report

The consultants will summarise in a document:

1. The oganisational arrangements for the Deliverable;
2. The data needed as a base for the Deliverable regarding:
    a. The current state of play regarding waste management in Spain;
    b. High-performing recycling schemes in Spain and in other Member States of the EU.

In order to describe the state of play of waste management in Spain, the consultants will:

- Identify and establish a baseline of applicable laws and regulations in place across the different Autonomous Communities, such as the **Law 7/2022 on waste and contaminated soils for a circular economy**[3]; the National Waste Management Framework Plan (PEMAR 2016-2022), which defines the general waste management strategy of Spain, as well as the minimum objectives; and the regional regulations and waste management plans developed by the Autonomous Communities (AC); Collect and analyse official statistics and publicly available information on waste management related to recycling rates across the autonomous regions, provinces and municipalities. This will include consulting sources such as the National Institute of Statistics (INE), for data at the national level, as well as regional sources for data at the AC level. Examples of these sources at the AC level include the Basque Institute of Statistics (EUSTAT)[4] in the Basque Country, the Catalonian Institute of Statistics[5] and the Aragonese Institute of Statistics[6]; Identify and describe high-performing waste management schemes implemented in Spanish municipalities, focusing on the best-performing regions (at least six). Sources may include The Covenant of Mayors for Climate & Energy[7], and others at the

3 Law 7/2022 on waste and contaminated soils for a circular economy: https://www.boe.es/boe/dias/2022/04/09/pdfs/BOE-A-2022-5809.pdf

4 Waste statistics in the Basque Country: HYPERLINK "https://www.eustat.eus/estadisticas/tema_454/opt_0/tipo_1/ti_residuos/temas.html"https://www.eustat.eus/estadisticas/tema_454/opt_0/tipo_1/ti_residuos/temas.html

5 https://www.idescat.cat/indicadors/?id=anuals&n=10538&lang=es

6 Waste statistics in Aragon: https://www.aragon.es/-/estadisticas-de-residuos

7 Covenant of Mayors - Plans and Actions: https://www.covenantofmayors.eu/plans-and-actions/good-practices.html

national regional level as stated above. The high-performing recycling schemes will be identified and described by the consultants along the following methodology:

- Definition of the indicators stating a high performance in waste recycling, based on the Waste Framework Directive[8] and on the work performed by the European Environmental Agency (EEA);Identification of the best performing Member States along these indicators, based on Eurostat data[9];In these Member States, identification of the best performing regions or municipalities, based on the data provided by the national statistics agency of the Member State;

Description of the high-performing schemes, based on the publicly available information provided by these selected municipalities and regions, and on the examples provided by European or international associations of cities or regions involved in the green or circular transition[10] or by EU-funded research projects[11].

Outputs

This Sub-task will result in:

- The minutes of the Kick-off Meeting, which will be included as § 4.1 in the Appendix of the Inception Report;
- The Inception Report, which will contain the following sections:
  - Organisational arrangements:
    - Objective and Scope;
    - Methodology;
    - Project Team;
    - Work distribution;
    - Timeline;
    - Indicators of progress in the performance of the Deliverable;
  - Starting Point for the Deliverable:
    - State of play of waste management in Spain;
    - Long list of high-performing waste management and recycling schemes in Spain and in the European Union;
  - Appendices.

Risks to the execution of the task

As part of our systematic approach to Quality Assurance, we proactively and continuously identify risks to the execution of our work. For task 7.1, we foresee the following risks and propose the respective mitigation measures.

Table 2-1 Risks and mitigation measures for task 7.1

Risk	Severity	Probability	Mitigation
Lack of agreement between the client and the project partners on the scope and ability to undertake certain analyses	High	Low	Clarifying expectations, limitations and outstanding questions between both the client and project partners is a key step of the KoM, which will allow for ample time to raise all relevant concerns, and find a common approach on which all

8 Directive 2008/98/EC on waste
9 Municipal waste by waste management operations, online data code: ENV_WASMUN
https://ec.europa.eu/eurostat/databrowser/view/env_wasmun/default/table?lang=en
10 E.g., the EU network ACR+ of cities and regions for sustainable resource management (https://acrplus.org/en/about-acr/about-us), the Covenant of Mayors (https://www.covenantofmayors.eu/about/covenant-initiative/origins-and-development.html)
11 E.g. the EU-funded project Collector (https://www.collectors2020.eu/)

Risk	Severity	Probability	Mitigation
			parties agree.
Restrictions to travel caused by the Covid-19 pandemic.	Low	Medium	We propose to hold virtual meetings to host the KoM, and for stakeholder consultations to be undertaken by partners that are already based in Spain so as to mitigate challenges posed by pandemic-related travel restrictions.

2.2.3 *Task 7.2 Action Plan and a Roadmap*

Table 2-2 Summary of Task 7.2

Objective	• Define the Action Plan and Roadmap for Spanish municipalities to achieve the EU targets regarding waste recycling
Team members	• **Task Leader** Laurent Zibell (*Trinomics*) • **Project Experts** Irati Artola (**Trinomics**) Laurent Frapaise (*Trinomics*) Maria Zubiaga (Metroeconomica) Francisco Greño (Metroeconomica)
Sub-Tasks	• 7.2.1: Short list of high-performing recycling schemes • 7.2.2: Data collection on the selected high-performing recycling schemes • 7.2.3: Legal review of contractual documents • 7.2.4: Clustering of Spanish municipalities • 7.2.5: Draft contract specifications, adapted to clusters of municipalities • 7.2.6: Advice on the management and practical implementation of the Action Plan
Duration	• 10 months
Deliverables	• Action Plan • Roadmap
Meetings	• Discussion of draft Action Plan; • Discussion of draft Roadmap; • Bi-weekly interactions with the Policy Officer in charge at MITECO
Share of the budget	24%

Objective

In Task 7.2, the team will develop a comprehensive Action Plan and Roadmap. The Action Plan and Roadmap define objectives to be achieved in the future, contrary to the state-of-play defined in Task 7.1, which describes the situation as it currently stands.

The Action Plan will contain the assessment of relevant **policy options** and **recommendations** on how to improve the situation towards the implementation of high-performing recycling schemes that contribute to the objectives of the Spanish RRP at the municipal level regarding (1) recycling rate and (2) rate of separate collection of waste. These policy options will focus on public procurement instruments for waste management services (as described above in the scope of this Deliverable, § 2.1.2).

The Action Plan will define a "ladder" of performance levels for Spanish municipalities (the Waste Management Performance Ladder). Each rung in the 'ladder" will be defined by a multi-dimensional clustering of municipalities. The ambition of the Action Plan will be to bring each Spanish municipality at least one rung higher in the ladder, thereby setting its ambitions at the level needed to ensure a meaningful progress, while remaining realistic. The Action Plan will also include a tool to enable the municipalities to assess their current rung in the Waste Management Performance Ladder, and the instruments needed for them to move up one rung.

The Roadmap will define the concrete steps for the implementation of the Action Plan, including a timeline of actions and milestones. It will respond to the following questions:

- When? Indicative date for entry in force and duration for the roll-out of each action;
- Who is accountable and responsible for what? Responsibilities, contributors, and participants of the roll out of each action;
- How much? Estimated resources needed for the roll out of each action;
- How to deal with risks? Preliminary risk assessment and contingency plan.

Both the Action Plan and Roadmap will be based on best practices in Spain and the European Union. Other countries outside of this scope may be included if applicable/relevant.

Sub-Task 7.2.1: Short list of high-performing recycling schemes

This Sub-Task will refine the selection performed in Sub-Task 7.1.2 of high-performing schemes in Spain and in other Member States of the EU, based on the feedback received from MITECO and REFORM on the Inception Report, resulting in a final list of ten (10) high-performing schemes on which detailed data will be sought in Sub-Task 7.2.2.

Sub-Task 7.2.2: Data collection on the selected high-performing recycling schemes

The data collection will focus on the following:

- Describing in greater detail the **performance level** attained by the 10 high-performing schemes, identified in Sub-Task 7.2.1: Short list of high-performing recycling schemes, based on quantitative data on:
    - The **stages** in the waste management process: prevention of waste at source, collection, sorting, preparing for re-use, recycling or material recovery such as composting or fermentation into biogas (anaerobic digestion)), selling the recovered items / the secondary materials / the biogas, incineration, disposal;
    - The **waste flows** to which the processes apply: plant-based organic waste, animal-based organic waste, metal, glass, plastic, paper, ceramics, used oil, electric and electronic equipment, textiles, furniture, mattresses, batteries and accumulators, or waste that tends to be collected in civic amenity sites such as solvents, paints, etc.;
    - The **quantities** being processed at each stage and, of these, the quantities for which the waste management process stage was successful;
    - Publicly-available, dimensioning, **economic data** on gate fees, waste collection fees,
- Understanding **why** the selected waste management schemes perform well, by obtaining, according to whether the operation of waste management is sub-contracted to a private company or performed directly by the public authority, qualitative data on the key features of:

- the **public procurement** process for **private waste management services**:
  - the tendering;
  - the contract;
  - the evaluation of tenders;
  - the definition of indicators and their monitoring;
  - the rewards and penalties;
  - the identification and the resolution of conflicts;
  - the communication to citizens;
- the **direct operation** by the **public authority** in charge:
  - the operational and social arrangements in place in the public operator;
  - the definition of indicators and their monitoring;
  - the means by which the public authority controls the public operator in case of deviation from agreed-upon performance targets.

Financial and business-related data (sale-price of recovered material, turnover/profits of waste management companies) will **not** be collected, as this information is protected under corporate confidentiality rules, and is therefore very unlikely to be disclosed.

The quantitative data on waste flows will primarily be sought from the reporting requirements stemming from the EU Waste Framework Directive. Data on waste collection and gate fees will also be consulted in this phase by making use of publicly-available databases.

The detailed quantitative data, broken down per waste stream and stage in the waste management process, as well as the qualitative data on how the performance level is reached, will be performed via:

- desk research on reports or press articles, and on public tendering documents, related to these high-performing schemes;
- targeted interviews of representatives of the municipality or of the contracted waste management service company. The total number of interviews will not exceed fifteen (15).

The interviews will also be an opportunity to request relevant information on the contracts between the municipalities and the waste management companies.

The timely and effective performance of these interviews will be greatly benefited by an official introductory letter provided by the Commission, DG REFORM, and MITECO to the consultant team.

Sub-Task 7.2.3: Legal review of contractual documents

The consultant team will review the information received in Sub-Task 7.2.2: Data collection on the selected high-performing recycling schemes, on the tenders and contracts between the high-performing municipalities (or other local entities) and waste management companies. It must be noted that procedures will differ depending on whether the company providing waste management services is public or private. This review will allow to assess the compatibility of the provisions therein with Spanish law, and (when applicable) to the law of the Autonomous Communities. This will be relevant when considering respectively the transposition of legal provisions (1) from other EU Member States to Spain and (2) from one Spanish Autonomous Community to the other.

This review will primarily be performed by our legal experts IIDMA, and will result in contractual clauses adapted to the Spanish context, or to specific Autonomous Communities within Spain.

Sub-Task 7.2.4: Clustering of Spanish municipalities

The Spanish municipalities or Autonomous Communities (as per the data that is publicly available) will be clustered into groups that are homogeneous in terms of waste management performance, along multi-dimensional metrics including recycling rate and separate collection rate. The consultant team will use for that purpose the quantitative data on the performance of waste management of local or regional authorities in Spain, as obtained from the mandatory reporting under the EU Waste Framework Directive (i.e., recycling rates) and other data collected by the regions, local entities and waste management service providers. Other data (not required by the WFD) such as data on the disposal rate reported under Eurostat/OECD obligation, as well as data on the number of municipal waste treatment plants may also be considered.It should be highlighted that the consultants will work during this Sub-Task only on the secondary data that is already publicly available (e.g., in regional statistical bodies), and will not engage in any additional collection of primary data (e.g., directly with municipalities or local entities).

It is very likely that one of the resulting clusters will be constituted by those municipalities that have no or very limited experience yet in separate collection of waste.

The performance range of each group following the clustering will constitute one rung in the "ladder" of performance levels for waste management (the "Waste Management Performance Ladder"), which Spanish municipalities will be encouraged to climb with the support of the Action Plan and Roadmap. Following the preceding remark, it is expected that the first rung in this ladder will be constituted by those municipalities with no or very limited experience in the separate collection of waste.

This clustering will be multi-dimensional, in nature, to reflect the differences between the municipalities more accurately, as some municipalities may be more developed in certain aspects of their waste management systems than others. For each of these categories, a point scale will be developed. Each municipality will then be assigned a benchmark to achieve for each area of performance based on their starting point, so as to set its ambitions at the level needed to ensure a meaningful progress, all the while remaining realistic. Benchmarks will also be set for municipalities that are already high-performing, so as to reflect the fact that requirements will increase over time for all municipalities. The aim of this clustering is not to assign a 'rank' or 'grade' for each municipality, but to provide each municipality with a global overview of their waste management system development level, and to provide them with tools to reach the next stages of development both globally and in each category.

The number of groups, and hence the number of rungs in the performance ladder, will be set between four (4) and seven (7), in agreement with MITECO and REFORM, and in coherence with the classes of contract specifications defined in Sub-Task 7.2.5: Draft contract specifications, adapted to clusters of municipalities.

This Sub-Task will result in a tool for municipalities and Autonomous Communities to assess their current rung in the Waste Management Performance Ladder.

Sub-Task 7.2.5: Draft contract specifications, adapted to clusters of municipalities

The consultants will define, for each cluster of municipalities defined during Sub-Task 7.2.4: Clustering of Spanish municipalities, the specifications of the contract to be established between the municipality and the waste management company, in cases where the provider of the waste management service is a **private company**, in order to advance to the next rung in the "Waste Management Performance Ladder". A contract specification will be constituted by a set of:

1. **modelling tools** to assess physical waste streams;
2. **tendering requirements**, leveraging when appropriate the opportunities opened by the EU Green Public Procurement legislation regarding environmental and/or social aspects[12];**contractual clauses**, setting e.g., the nature of the services to be performed, the verification mechanism, the performance indicators and their monitoring processes, adapted to the legal context of Spain and, where relevant, of specific Autonomous Communities;
3. **quantitative performance requirements** set on the performance indicators.

The contractual clauses will bear upon the following, to be adapted to each rung in the Waste Management Performance Ladder:

- reduction of waste at source;
- waste management (including collection, transport and treatment of waste)

The consultants will start with defining the contract specifications adapted to the municipalities at the top of the Waste Management Performance Ladder, i.e., with the highest level of performance, and hence with the largest number of, and the most demanding, requirements and the most stringent quantitative performance requirements. These top-level contract specifications will be based upon the information collected from the high-performing municipalities investigated during Sub-Task 7.2.2: Data collection on the selected high-performing recycling schemes, and upon the requirements for waste management organisations set by the EMAS monitoring and reporting standard[13]. These top-level contract specifications constitute the benchmark based on which the contract specifications for the lower rungs in the Waste Management Performance Ladder will be designed, by reducing or weakening (1) the modelling tools, (2) the tendering requirements, (3) the contractual clauses and/or (4) the quantitative performance requirements (typically, by providing a range of allowable values).
The contract specification for each of the rungs in the Waste Management Performance Ladder will be accompanied by an implementation Roadmap, defining, for each element in the contract specification:

- *When?* Indicative dates for:
    - Implementation of the tendering requirements, the modelling tools and of the contractual clauses;
    - The achievement of staggered targets for the quantitative indicators;
- *Who* is accountable and responsible for what? Responsibilities, contributors, and participants of:
    - The implementation of the tendering requirements, of the modelling tools and of each of the contractual clauses;

12 Directive 2014/24/EU on public procurement, and specifically Art. 67 and 68. Accessible at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02014L0024-20220101
13 As defined in the Commission Decision (EU) 2020/519 on the sectoral reference document on best environmental management practices, sector environmental performance indicators and benchmarks of excellence for the waste management sector under Regulation (EC) No 1221/2009 on the voluntary participation by organisations in a Community eco-management and audit scheme (EMAS). Accessible at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.L_.2020.115.01.0001.01.ENG&toc=OJ%3AL%3A2020%3A115%3ATOC

    - The achievement of each of the categories of targets for the quantitative indicators;
- *Who should get involved?* Identification of those responsible for monitoring progress;
- *How much?* Estimated resources, specifically in terms of manpower and expertise, needed for these tasks;
- *How to deal with risks?* Preliminary risk assessment and contingency plan.

The consultants will test the resulting contract specifications in an interview with 1 or 2 municipalities for each of the rungs in the Waste Management Performance Ladder, in order to verify how realistic their implementation is within a medium-term time horizon (typically: 5 years). These interviews will also be the opportunity to investigate the concrete difficulties that the municipality expects in the implementation of such a contract specification. The consultants will request from MITECO the contact details of representatives of municipalities or local entities in each of the rungs in the Waste Management Performance Ladder, in order to speed up the interviewing process and make it more efficient.

The consultants will also define the main features of the **work specification** of a **public operator** performing waste management services. This work specification will contain the same elements as a contract specification as defined above, with the following modifications:

- The "Green Public Procurement" requirements in the tendering process are included in the body of the work specification;
- The work specification will contain in addition some recommendations on the **operational and social arrangements** to ensure the performance of the waste management scheme.

Sub-Task 7.2.6: Advice on the management and practical implementation of the Action Plan

Based on the interviews performed in Sub-Task 7.2.5: Draft contract specifications, adapted to clusters of municipalities, on their previous experience of the implementation of such waste management plans at municipal level (gained e.g., in the City of Gijón), the consultants will draft a short document identifying the main difficulties anticipated in the implementation of the Action Plan and of the Roadmap at municipal level, and on means to overcome them.

This document will be updated following the implementation of Task 7.3 Capacity-building Activities and of Task 7.4 Change Management plan.

Outputs

The output for this Task will be constituted of:

- A method for clustering Spanish municipalities into a limited number (4 to 7) of rungs in a Waste Management Performance Ladder;
- For each rung in the Waste Management Performance Ladder, a contract specification defining:
    - modelling tools;
    - tendering requirements;
    - contractual clauses;
    - allowable values for quantitative performance requirements;
- For each rung in the Waste Management Performance Ladder, an implementation Roadmap of this contract specification;

- A document advising on the the management and implementation of the Action Plan and Roadmap.

These documents will **not** include elements on contractual arrangements, business modelling, market assessments or other business-sensitive economic or financial data.

Risks to the execution of the task

Table 2-2 Risks and mitigation measures for task 7.2

Risk	Severity	Probability	Mitigation
Some high-performing municipalities identified refuse interviews or to transmit information on the key features of their contractual	High	Low	The methodology foresees to interview a large number of high-performing municipalities across Spain and the European Union, so that the refusal by a limited number of municipalities should not impair the achievement of the data collection
The contractual provisions in some high-performing municipalities cannot be transposed directly into a Spanish context	Low	Medium	The consultants' good knowledge of the Spanish legal context, and that of the Autonomous Communities, will enable them to adapt the potentially problematic contractual provisions to the target legal context.
Some Spanish municipalities to be interviewed in the test of contract specifications do not provide adequate feedback	Medium	Medium	The number of municipalites in each rung of the Waste Management Performance Ladder is large, so that insufficient feedback by some municipalities should not impair the achievement of the data collection

2.2.4 Task 7.3 Capacity-building Activities

TEC Table 2-3 Summary of Task 7.3

Objective	• Carry-out Capacity-building Activities for dissemination of knowledge and expertise on the identified key aspects that are needed to achieve high performing recycling schemes and a web-based guide
Team members	• **Task Leader** Maria Zubiaga (Metroeconomica) • **Project Experts** Irati Artola (*Trinomics*) Laurent Frapaise (*Trinomics*) Laurent Zibell (*Trinomics*) Francisco Greño (Metroeconomica)
Sub-Tasks	• **7.3.1: Implement tailor-made training schemes** • **7.3.2: Develop a web-based guide**
Duration	• **9 months**
Deliverables	• Training gap analysis and training plan • Trainings designed and implemented (including training reports and recorded sessions)

	• Web-based guide
Meetings	• Preparatory meeting with MITECO to cover the organizational aspects of the trainings • Coordination meetings before each training
Share of the budget	31%

Objective

The capacity-buildings activities to be carried out under this task consist of (1) implementing tailor-made training schemes and (2) developing a web-based guide with the aim to increase the knowledge and expertise of municipal level authorities on the matter.

Sub-task 7.3.1: Implement tailor-made training schemes

As requested by the RfS, a total of **16 tailored one-morning (3-4 hours) training sessions on waste management best-practices will be implemented** across the different Spanish regions and autonomous cities.

Although it was initially suggested to have a training session for each autonomous region, a more efficient segmentation of attendees is proposed, as can be seen in table 2-4. The proposed segmentation will take into account population size, population density, experience in separate waste collection and area of activity of attendees. Training sessions will be tailored to each of these groups. It is expected that this segmentation will increase the homogeneity in each session beyond what would be reachable if the criteria were purely geographic. This is likely to increase the relevance of each session for its participants.

Given that the proposed segmentation for the training sessions results in 16 groups, an additional session may be conducted, as needed, in order to fulfill the 17 sessions that were initially requested and put forward in the proposal.

Table 2- Proposed segmentation of attendees for the training sessions

Size of waste collection area (municipality or	Population density of municipality	Experience in separate collection of waste in municipality	Area of activity of attendee
Large (> 20,000 inh.)	≥150 inh. / km^2	Some experience	Management
			Technical
		No experience	Management
			Technical
	<150 inh. / km^2	Some experience	Management
			Technical
		No experience	Management
			Technical
Small (< 19,999 inh.)	≥150 inh. / km^2	Some experience	All (2 sessions)
		No experience	All (2 sessions)

	<150 inh. / km^2	Some experience	All (2 sessions)
		No experience	All (2 sessions)

All training sessions will be conducted online, as agreed during the KoM, in order to reach the maximum number of participants possible. The training sessions will be organised online (via Zoom, WebEx, MS Teams, or similar). Trinomics and Metroeconomica are very experienced in organising and implementing successful events using different platforms, for a number of participants ranging from 10 to over 300. These sessions will be recorded and disseminated afterwards to all relevant municipal stakeholders in each region. The trainings will be held in Spanish.

As part of the design of the training schemes, we will identify gaps (i.e., specific challenges faced by municipalities) and training needs (i.e., skills). For this, we will do a **'skills gap analysis'** to help us determine what gaps exist currently and what skills are needed to achieve high recycling performance (e.g., communication with citizens, design of fractional collection systems, evaluation of tenders, management of door-to-door collection). For example, door-to-door collection can be a very impactful approach in municipalities with a low population density. As such, the analysis would consist of: (1) level of analysis (individual vs team), (2) identifying important skills, considering policy and market developments, (3) matching skills to skill level requirements, (4) assess current skills through select interviews/surveys, and (5) gap assessment.

Our overall strategy for the training sessions is divided into the following three steps:

Step 1. Prepare training plan, identify and recruit participants (with MITECO's assistance – see below for details). A preparatory meeting (coordination) with MITECO will take place to discuss all details on the organisation of the workshops and practical arrangements. To do so, we will: (i) Prepare a draft training plan covering the discussion topics and processes to be used so that participants will be allowed to provide their views and opinions; (ii) Submit a proposed list of participants (within a week after the approval by MITECO of the list of potential participants, an invitation will be sent through MITECO's communication channels, such as the Coordination Committee on Waste or the National Association of Local Entities. The invitation will include the plan and all practical arrangements). Workshops will be participatory. The training plan will also set out the draft agenda for the day including the objective of the session, the timing and the processes that will be used to enable the overall training objectives to be met.

The Table below provides a draft workshop plan. This will be refined and developed based on the findings of Tasks 7.1 and 7.2 3 and taking account of comments from REFORM and MITECO. Workshop plans will be tailored to each group of attendees, as shown in table 2-4.

Table 2-5: **Illustrative workshop plan (to be developed)**

Start time	Finish Time	Session	Process
10.00am	10.30am	Arrival	Register attendees
10.30am	10.45am	Introduce the study	One to all

		and its aims; Summarise the objectives of the workshop; Explain the objectives of the project	(presentation) Opportunity for questions
10.45	11.45	Presentation of identified key areas for improvement	Presentation
11.45	12.15	Showcase best practice #1 (in one of the key areas of improvement)	Presentation
12.15	12.45	Showcase best practice #2 (in one of the key areas for improvement)	Presentation
12.45	13.15	Round table and discussions	Interactive guided discussion
13.45	14.00	Conclusions and next steps	Wrapping up and presentation of conclusions

Step 2. Prepare and produce training materials. This step involves development of discussion papers/ presentations. The paper will summarise the draft findings of best practices and key areas of performance and examples of how these can be put into practice. Best practices will be selected from the agreed short-list so as to showcase those that are more relevant in each of the trainings. The papers will also include the proposed discussion questions for the training to allow participants to consider these points in advance, as well as a methodology for the interactive aspects of the trainings. The draft paper will be sent to DG REFORM and MITECO before the training and revised by the study team in light of any comments received. A final version will be prepared at least one week before the training.

Step 3. Deliver training and prepare training report. The training will be chaired and facilitated by the contractor, drawing on our expertise and experience from previous similar events. Within one week of the training session, we will prepare a training report. This will cover the discussions on the day by session and summarise key points, issues and findings. It will also set out how we will use the information collected through the discussions to inform the final outputs of the study. We propose to circulate the training report to all stakeholders who expressed an interest in attending the training, even if they were not finally able to attend. Additionally, the trainings sessions will be recorded so that they can be disseminated among all municipalities, thus maximising their impact.

As agreed during the kickoff meeting, MITECO will assist in the recruitment of the municipalities. This will include conducting awareness raising for the project in order to facilitate contact between the consultants and the municipalities. For this purpose, it will use its official communication channels in order to provide a list and establish initial contact with the relevant municipal government officials,

and may conduct an initial informative event. The list provided may be complemented by other relevant stakeholders involved in recycling schemes at local level. In addition, it will be recommended to the beneficiary to upload the training sessions onto a dedicated page of their website so that these may remain easily accessible for relevant and interested stakeholders.

7.3.2: Develop a web-based guide

In order for progress to be made in the area of waste management at the municipal level, it is imperative for those responsible for waste management at the municipal scale to have access to materials and information which can support them in identifying high-performing schemes as well as their overall effects. These will need to be accessible to a range of stakeholders and it will be imperative that the guidance to be developed in this task is designed in a way that meets their varying needs and enables them to argue for the improvement of collection and recycling rates.

A web-based guide will be developed. The aim of the web-based guide is to disseminate the knowledge and expertise collected at the local level to other municipalities and regions in Spain. The guide will provide stakeholders with the information and materials required to mover one rung further in the "ladder" of performance levels for waste management (see Task 7.2).

The information contained in the guide will be transparent and will include: examples of best practices/ high-performing schemes identified during the project and the results of the analysis, *key lessons learnt*, and links to available information. The final aim is to facilitate further progress in improving waste collection and recycling rates across municipalities in Spain. In order for the tool to be useful and extensively used by stakeholders, we envisage this guide as an interactive Excel document with separate tabs enabling easy searching and collating of information for each category (i.e., "Key Lessons" and "Best Practices"). Below we provide a snapshot of how the Excel document could be structured (example for 'key lessons'). The structure below will be further tailored throughout the duration of DLV 7, in consultation with MITECO and regional stakeholders.

Table 2-6 Presentation of 'key lessons' template (example structure)

Key lesson	Explanation	Municipality	Region	Evidence	Link to source / more info
Key lesson	*Description of the key lesson*	*Name of municipality*	*Name of region*	*e.g., report, stakeholder consultation, website*	

The web-based guide will be developed by our communications and design experts at Atico, with inputs provided by the consortium's partners.

Outputs

The output for this task will be constituted of:

- A training gap analysis is conducted and training plan is developed
- Trainings designed and implemented:
  - Training materials produced
  - Recorded training sessions

- Training reports

- Web-based guide: an interactive web-based guide is developed containing examples of best practices/ high-performing schemes identified during the project and the results of the analysis conducted.

Risks to the execution of the task

Table 2-7 Risks and mitigation measures for task 7.3

Risk	Severity	Probability	Mitigation
Technical issues or conflicting schedules prevent the participants from attending the trainings	Low	Medium	Recordings and reports of the training sessions are provided and hosted by the beneficiary so that interested parties can see them at their convenience.
Identified attendees for the trainings do not provide adequate feedback or do not participate in the trainings	Medium	Medium	A large number of municipalities and relevant players is invited to participate so as to minimize this risk. The platform used for the trainings will also allow for a large number of participants (up to 300) in the event of a large turnout.

2.2.5 Task 7.4 Change Management plan

TEC Table 2-3 Summary of Task 7.4

Objective	• **Provide a methodology for authorities in Autonomous Communities and municipalities to implement the changes foreseen in the Action Plan and Roadmap, while maximising agreement and minimsing conflicts, and the delays ensuing from these conflicts**
Team members	• **Task Leader** Laurent Zibell (*Trinomics*) • **Project Experts** Irati Artola (*Trinomics*) Laurent Frapaise (*Trinomics*) Maria Zubiaga (Metroeconomica) Francisco Greño (Metroeconomica)
Sub-Tasks	• 7.4.1: Information gathering on the most prevalent sources of conflict in the journey towards higher recycling performance • 7.4.2: Drafting of the Change Management Plan • 7.4.3: Feedback on and finalisation of the Change Management Plan
Duration	• 4 months
Deliverables	• **Change Management Plan = Document providing a methodology for authorities in Autonomous Communities and municipalities to implement smoothly the changes foreseen in the Action Plan and Roadmap**
Meetings	• Feedback workshop with stakeholders on the draft Change Management Plan • Bi-weekly interactions with the Policy Officer in charge at MITECO
Share of the budget	13%

Objective

The purpose of Task 7.4 is to provide authorities in Autonomous Communities and municipalities with a methodology to implement the changes foreseen in the Action Plan and Roadmap, while maximising the

agreement among stakeholders, and minimsing the (open or suppressed) conflicts between them. It will thereby minimise the implementation delays ensuing from these conflicts. This methodology will be described in a document, the Change Management Plan.

The Change Management plan (CMP) should be seen as **complementary to the Action Plan and Roadmap**, as a document guiding what needs to be implemented according to the action plan, in other words, *what is needed for the actions in the action plan to happen on the ground?*

As per the ToR, the CMP addresses the **human, social and political disagreements** with the changes implied by the Action Plan & Roadmap, and the means to overcome these disagreements. The concrete technical issues for implementation, such as the best technical arrangement to perform a given waste processing function (e.g., the most effective and lowest-cost method to collect hazardous waste by households,) should be defined in the Action Plan & Roadmap of Task 7.2.

The CMP will **not** be included in the training sessions or in the web-based guide of best practices of Task 7.3.

As the variety of political situations, and of social relations in organisations, and hence of potential sources of conflict or of agreement is considerable, the Change Management Plan will be generic. It will provide a general method, to be adapted to the local context by each Autonomous Community and municipality.

Sub-task 7.4.1: Information gathering on the most prevalent sources of conflict in the journey towards higher recycling performance

In this Sub-Task, the consultants will perform a total of 5 to 10 interviews with Spanish municipalities and Autonomous Communities that have recently engaged in or completed a plan to enhance their performance in separate waste collection or in recycling. The interviews will seek information on the following:

1. What were the main issues at the origin of disagreement among stakeholders during the implementation of the plan?
2. What stakeholders were involved? What were their respective positions on the issue?
3. How has the conflict been overcome, or the agreement reached?

Based on the outcome of these interviews, and on the information received on the high-performance schemes in the EU during Task 7.2 Action Plan and a Roadmap, the consultants will define:

1. The list of the most relevant stakeholders to be considered in the Change Management Plan;
2. The features deserving the most attention, when implementing a plan to increase a municipality's performance regarding separate collection of waste or recycling, as they are more likely to generate conflict;
3. The methods used by the high-performing municipalities in the EU to achieve the change in their waste management and recycling operations.

Sub-Task 7.4.2: Drafting of the Change Management Plan

In this Sub-Task, the consultants will draft the Change Management Plan, which will be submitted to the feedback of practitioners in Sub-Task 7.4.3: Feedback on and finalisation of the Change Management Plan.

The Change Management Plan is designed to be generic, and to adapt to a broad range of institutional arrangements. It does not focus *ex ante* on one specific category of institutions where the difficulties in implementation would be anticipated to be greatest, but provides on the opposite sufficient flexibility to adapt to the local context – while keeping a rigorous structure.

The main stages in the Change Management Plan would be the following:

- Identification of relevant stakeholders. The categories of stakeholders identified at this stage are:
    - Residents in the municipality;
    - Organised civil society in the municipality (e.g., environmental NGOs, but also any interested organisation);
    - Authorities of the Autonomous Community to which the municipality belongs (elected officials or representatives of the regional administration);
    - Authorities in the local entity (be it municipality, diputación provincial, mancomunidad, etc): elected officials;
    - Personnel in the administration of the local entity:
        - Management;
        - Technicians, engineers;
        - Operators;
    - Management of the waste management company;
    - Personnel of the waste management company:
        - Technicians, engineers;
        - Operators;
- For each category of stakeholders, selection of one or several legitimate representatives. In several cases, these legitimate representatives already are defined by existing regulation (e.g., for an association – its elected management, for employees – their official representatives as defined by Labour Law);
- Communication of the goals of the Action Plan and Roadmap, of their justification in terms of public policy. and of the envisaged tools to reach these goals;
- Discussion among the legitimate representatives of the stakeholders on the means to achieve these goals in the local context of the municipality:
    - This discussion would benefit from the implementation of proven moderation tools, designed for the balanced expression of all points of views;
    - Identification of the points of **agreement** and of the points of **conflict** among stakeholders;
- Direct discussion among the stakeholders involved in the points of conflict identified, with the aim of reaching a negotiated agreement. This discussion can benefit from existing frameworks for structured dialogue (e.g., local participatory democracy fora, social dialogue between management and employees of organisations or companies);
- Synthesis converging towards a local implementation plan based upon:
    - The areas of agreement identified during the general discussion;
    - The negotiated agreements among the stakeholders in conflict;
- Final meeting of all legitimate representatives of stakeholders to validate this synthesis and seal their pledge for *bona fide* implementation.

Sub-Task 7.4.3: Feedback on and finalisation of the Change Management Plan

In this Sub-Task, the consultants will present the draft Change Management Plan to a set of representatives of the categories of stakeholders identified, in a half-day feedback workshop, to be held preferably on-line, in Spanish. The number of participants in this workshop would be in the range of 50.

The consultants will send the draft Change Management Plan, translated into Spanish, to the participants in the feedback workshop, 2 weeks in advance. During this feedback workshop:

- The consultants will present the overall rationale for the draft Change Management Plan and its main features;
- The participants will provide, for each key feature of the draft Change Management Plan, their feedback and their suggestions for improvement.

The outcomes of the feedback workshop will be summarised into a short document, and the conclusions thereof included in a revised and final Change Management Plan.

Outputs

This Sub-task will result in a final Change Management Plan, i.e., a document providing a methodology for authorities in Autonomous Communities and municipalities to implement smoothly the changes foreseen in the Action Plan and Roadmap, by (1) leveraging the points of agreement among stakeholders, (2) identifying the points of conflict and (3) reaching negotiated agreements among the parties involved in these points of conflict. The document will exist in a master form in English, and in a translated form in Spanish. The translation into Spanish will be performed by a machine, with a subsequent proof-reading by a native Spanish speaker.

Risks to the execution of the task

Table 2-3 Risks and mitigation measures for task 7.4

Risk	Severity	Probability	Mitigation
Reluctance of municipalities to reveal the implementation difficulties they were confronted with in the improvement of their waste management	Medium	Low	The consultants will ensure full confidentiality in the gathering of information on the implementation difficulties of municipalities The number of municipalities in Spain is large enough to allow for interviewing additional municipalities if some refuse to answer
The proposed Change Management Plan is considered by officials or by management representatives as being too open to discussion and resistance	Low	Medium	The usage of the Change Management Plan remains optional for municipalities and waste management companies. They are free to use more confrontational methods if they are better used to them - at their own risk. Information on successful change management from other EU Member States will contribute to justify the relevance of the dialogue-based approach

Risk	Severity	Probability	Mitigation
			proposed.

2.2.6 *Task 7.5 Communication Activities*

TEC Table 2-5 Summary of Task 7.5

Objective	• Awareness-raising and stakeholder engagement
Team members	• Task Leader Maria Zubiaga (Metroeconomica) • Project Experts Irati Artola (Trinomics) Laurent Frapaise (Trinomics) Laurent Zibell (Trinomics) Francisco Greño (Metroeconomica)
Sub-Tasks	-
Duration	• 13 months • Until the end of the project
Deliverables	• Presentation on quarterly reports and results for public sessions, for steering committees' sessions, etc., and for the interim and final workshop • Report on communication with stakeholders and user groups
Meetings	• Discussion of drafts of communication materials, as needed; • Bi-weekly interactions with the Policy Officer in charge at MITECO
Share of the budget	8%

Objective

Communication activities are expected to initiate 8 months into the project and are to be carried out with the aim of awareness-raising and stakeholder engagement. This task is transversal to the other tasks in DLV7 as it builds up from the materials generated in those tasks. It must also be aligned with DLV6 – Communication strategy and materials for the implementation of the green components of the RRP. Awareness raising will include supporting MITECO in the organization of an initial event to raise awareness on the project and geared towards municipalities and other relevant stakeholders in the waste management sector.

Communication activities and products generated during this task will include at least the following:

- ✓ Presentations on quarterly reports and results for public sessions (on RRP progress);
- ✓ Presentation for SC sessions and others, as needed, following the relevant applicable reporting and presentation requirements;
- ✓ Presentations for the interim and final workshops of the project (see DLV 10).
- ✓ Reporting templates will be developed for the purpose of reporting as part of the European Semester process (to be aligned with the National Reform Programme requirements);
- ✓ A report on the communication with stakeholders and user groups including a dedicated section on change management implementation.

The schedule of communication activities will be in line with DLV 6 and will be adjusted as needed along with project implementation and new communication needs that may arise.

Outputs

The output for this task will be:

- Presentations on quarterly reports and results for public sessions (on RRP progress), for SC sessions and the like; as well as for the interim and final workshops;
- A report on the communication with stakeholders and user groups including a dedicated section on change management implementation.

Risks to the execution of the task

Table 2-9 Risks and mitigation measures for task 7.4

Risk	Severity	Probability	Mitigation
Communication materials do not include all the information needed by the beneficiary	Low	Medium	A preliminary draft will be provided with adequate anticipation so that the beneficiary can provide feedback on the contents and format of the materials.

2.2.7 Task 7.6 Contribution to the implementation of the Spanish RRP

TEC Table 2-4 Summary of Task 7.6

Objective	• **Provide the information system of the Spanish Recovery & Resilience Plan with the data relevant for waste management**
Team members	• **Task Leader** Laurent Zibell (*Trinomics*) • **Project Experts** Irati Artola (*Trinomics*) Laurent Frapaise (*Trinomics*) Maria Zubiaga (Metroeconomica) Francisco Greño (Metroeconomica)
Sub-Tasks	• 7.6.1: Set-up of the reporting system • 7.6.2: Implementation of the reporting
Duration	• 2 months (set-up) • Until the end of the project (implementation)
Deliverables	• Manual to report data on waste management to the information system of the Spanish Recovery & Resilience Plan
Meetings	• Bi-weekly interactions with the Policy Officer in charge at MITECO
Share of the budget	8%

Objective

The purpose of Task 7.6 is to feed the information system of the Spanish Recovery & Resilience Plan with the data on the indicators relevant for the Waste Management sector. These indicators were defined in the Council Implementing Decision for the Spanish Recovery & Resilience Plan as:

- Number of projects on Waste and Circular Economy supported;
- % of separately collected municipal waste.

Sub-task 7.6.1: Set-up of the reporting system

During this Sub-Task, the consultants will define the collection and reporting processes and interfaces for these indicators, and will summarise these processes and interfaces in a short procedural document.

These collection and reporting processes, and the Information Technology (IT) systems of the Spanish Recovery & Resilience Plan (RRP) where the values for the indicators would be fed, will be defined in coherence with the Deliverable 2 "Monitoring and reporting mechanism for the reforms and investments of the green components of the RRP" of the present project. To that end, a dedicated meeting will be organised between the consultant team in charge of the present Deliverable 7 on "High-performing waste recycling schemes" and of Deliverable 2, in order to align the processes.

Sub-Task 7.6.2: Implementation of the reporting

Once the processes and interfaces have been set up in Sub-task 7.6.1: Set-up of the reporting system, the consultants will provide the values taken by the indicators to the relevant IT system of the Spanish RRP, at the specified intervals in time, until the end of the Deliverable.

Outputs

This Sub-task will result in:

- A procedural manual summarising the technical means to collect the value for the relevant indicators, and to provide them to the IT system of the Spanish RRP;
- The set of values taken by the indicators over the duration of the project after the set-up phase.

Risks to the execution of the task

Table 2-4 Risks and mitigation measures for task 7.6

Risk	Severity	Probability	Mitigation
The data on the indicators relevant for the Waste Management part of the Spanish RRP are not available	**High**	Low	The provision of the values for these indicators is a national priority for the Spanish authorities. The consultants will report to MITECO in case the data is not made available, for the government to act accordingly
The format of the data provided on the indicators relevant for Waste Management is not compatible with that of the IT system of the Spanish RRP	Low	Medium	If the amount of data to be transmitted to the IT system of the Spanish RRP remains small and rare, then the consultants will perform the format changes manually. In case the volumes or frequency of data uploads rise beyond what is manageable by hand, then the resources of Deliverable 2 will be drawn upon to set up a bespoke interface.

2.3 Project Team

Table 2-5 Our proposed project team

Core Team				
Name	**Organisation**	**Role**	**Key competencies**	**Experience**
Jessica Yearwood	Trinomics	Project Manager	×	
Laurent Zibell	Trinomics	Task Leader	EU Circular Economy policy Innovation management EU social dialogues	28 years
Rob Williams	Trinomics	Senior Expert	EU waste and circular economy policy, legislation and data Evaluation and impact assessments Waste and recycling technology	27 years
Irati Artola	Trinomics	Senior Expert	Waste policy, data collection/ analysis, policy/ project/ programme evaluation, stakeholder consultation	7 years
Laurent Frapaise	Trinomics	Junior Expert	GIS, Remote Sensing, Data Collection/Analysis	1 year
Local Experts				
Name	**Organisation**	**Role**	**Key competencies**	**Experience**
Maria Zubiaga	Metroeconomica	Senior Expert	Project management. Stakeholder engagement.	10 years
Ibon Galarraga	Metroeconomica	Senior Expert	Economic and resource economics. Statistics and Econometrics.	18 years
Francisco Greño	Metroeconomica	Senior Expert	Economic analysis and environmental policy. Expertise in a wide range of qualitative and quantitative research methods, including cost-benefit analysis.	18 years
Legal Experts				
Name	**Organisation**	**Role**	**Key competencies**	**Experience**
Ana Barreira	IDMA			
Web Design				
Name	**Organisation**	**Role**	**Key competencies**	**Experience**
Daniel Rivera	Atico	Senior Expert	Graphic Design and UI/UX/Website Design	23 years

2.4 Work distribution

We have distributed the work across the tasks, team members and partners by utilising the following guidelines:

- **Using partner's key capabilities:** We have distributed the tasks across the partners in a way that utilises each party's skills and knowledge (local and international) optimally; our local partners in Spain will allow our team to understand the state-of-play at the local level, while

our international experts can provide a more global context to successful waste management schemes.

- **Ensure alignment across tasks:** In our experience it is extremely important to ensure good knowledge sharing across tasks for a project this size. To assure this alignment takes place, Trinomics will have at least a minimum involvement in all tasks to coordinate the work.
- **Sufficient analytical time:** Managing a considerable data collection task in a limited timeframe is certainly a challenge that projects similar to this one face. In anticipating this challenge, our planning ensures that key analytical tasks are sufficiently staffed with junior and senior expert time.

The following tables provide more detail as to how our team envisions the allocation of tasks per team member, per organization and per task. Through this organisation, we believe to have ensured an efficient task distribution in a way that will not compromise the complexity and depth of our analysis.

Figure 2-1 Distribution of project days per team member, per task

Organisation	Trinomics					Metroeconomica			Atico	IIDMA		
Role	PM	TL	SE	QA	JE	SE	SE	SE	SE	SE		
Name	Jessica Yearwood	Laurent Zibell	Irati Artola	Rob Williams	Laurent Frapaise	Francisco Greño	Ibon Galarraga	Maria Zubiaga	Daniel Rivera	Ana Barreira	**Total**	**Share**
7.1 Inception phase	3	5	3	2	4	3	2	2			**24**	**10%**
7.2 Action Plan and a Roadmap		11	11	1	20	4	3	3		6	**59**	**24%**
7.3 Capacity-building activities		2	4	1	3	25	15	10	10	4	**74**	**29%**
7.4 Change Management Plan		8	7	1	4	4	6	2			**32**	**13%**
7.5 Communication activities		3	7	1	2	2	2	2			**19**	**8%**
7.6 Contribution to the implementation of the Spanish RRP	1	6	5	1	4			3			**20**	**8%**
7.7 Reporting	1	4	4	3	5	2	2	2			**23**	**9%**
Total days	**5**	**39**	**41**	**10**	**42**	**40**	**30**	**24**	**10**	**10**	**251**	**100%**

Figure 2-2 Effort split per staff category (days)

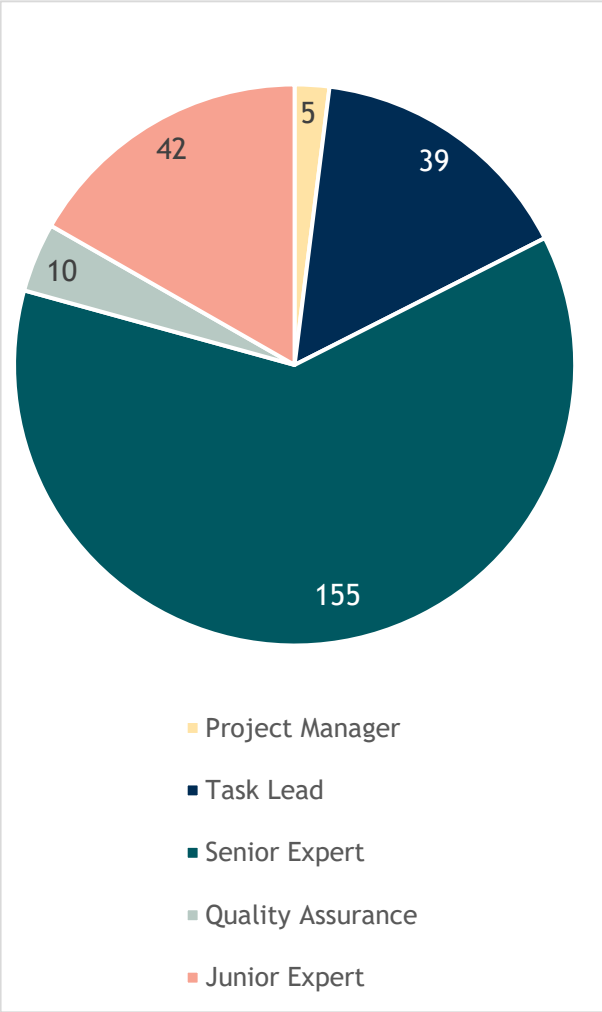


Figure 2-3 Effort split per task (days)

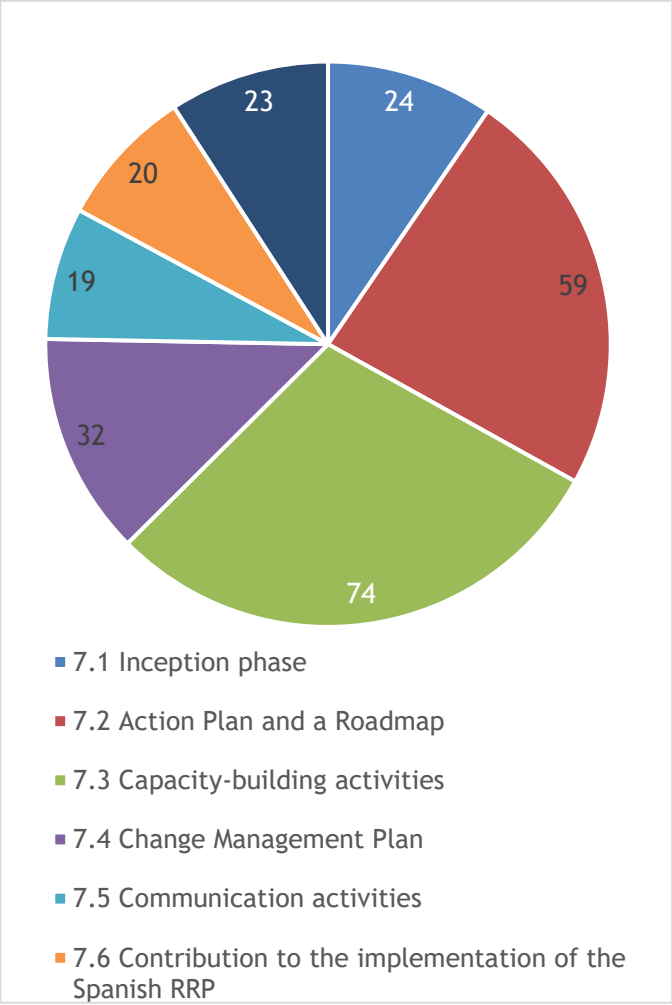
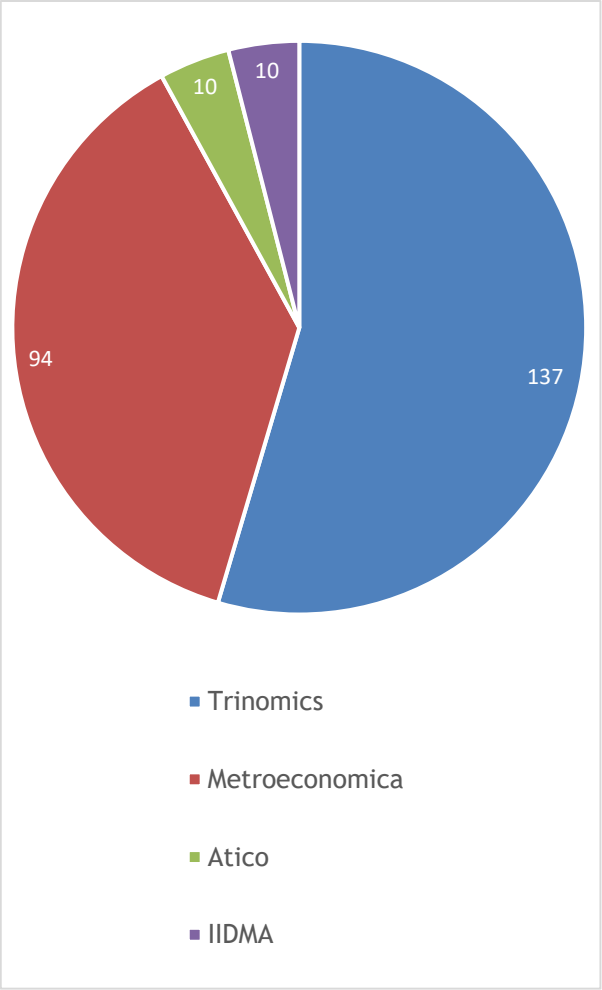


Figure 2-4 Effort split per organization (days)



2.5 Timeline

2.5.1 *Project planning*

Several tasks within this deliverable are to be implemented in parallel. Task 7.6 on DLV7's contribution to the RRP will be initiated early on and will remain active throughout the entire project. Also, Task 7.5 on communications will support a large part of the project duration. Task 7.7 on reporting shows the reporting moments previous to each bespoke DLV7 Steering Committee meeting (SC).

Year	2022										2023								
Task / Month	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9
7.1 Inception phase																			
7.2 Action Plan and Roadmap																			
7.3 Capacity-building activities																			
7.4 Change Management Plan																			
7.5 Communication activities																			
7.6 Contribution to the implementation of the Spanish RRP																			
7.7 Reporting			SC1			SC2			SC3			SC4			SC5			SC6	

SC: Steering Committee meeting

2.5.2 *Meetings*

The table below provides a snapshot of the meetings concerning DLV7 envisaged in this project.

Table 2-6 Meetings

Project Meeting	When	Activities	Status
Kick-off meeting (KoM)	Within two weeks after signature	• Discuss background • Clarify the expected outputs • Exchange information • Discuss methodology and work plan	Done
Bi-weekly progress calls (PC)	Every 2 weeks	• Discuss progress and next steps • Discuss any issues that may arise	Ongoing
Quarterly dedicated Steering Committee meetings (SC)	Every 3 months	• Discuss progress and next steps • Present findings / results	Ongoing

**Counting from the date the contract was signed.*

2.5.3 *Deliverables*

Table 2-7 Deliverables

Deliverable	When*	Containing

Deliverable	When*	Containing
Dedicated DLV7 Inception Report	31 March 2022	• More elaborated and refined approach and methodology to DLV7 including risks and mitigation measures • More elaborated work distribution between partners
Report on the implementation of high performing recycling and waste schemes at local level	August 2023	• Report including high-performing recycling schemes including an action plan and a change management plan

** Counting from the date the contract was signed.*

2.6 Indicators of progress in the performance of the Deliverable

The progress in the performance of the Deliverable will be assessed by the achievement of the milestones defined in Table 2-8 below.

Table 2-8 Milestones to assess progress in the performance of the Deliverable 7

Sub-task to which the milestone is related	Milestone	Date of delivery
7.1 Inception	Minutes of the Kick-off Meeting	28-Feb-2022
	Inception report	31-Mar-2022
7.2 Action Plan and Roadmap	Short list of high-performing recycling schemes	30-Apr-2022
	Waste Performance Ladder	15-May-2022
	Clustering tool for municipalities	15-May-2022
	Action Plan = Draft contract specifications (private operation), draft work specifications (public operation)	31-Oct-2022
	Implementation Roadmap	30-Nov-2022
	Advice document on implementation	31-Dec-2022
7.3 Capacity-building Activities	Training gap analysis and training plan	31-Dec-2022
	Training material	31-Mar-2023
	Training reports and recorded sessions	31-Jul-2023
7.4 Change Management plan	Draft Change Management Plan	31-Jan-2023
	Final Change Management Plan	28-Feb-2023
7.5 Communication Activities	Presentation for interim workshop	30-Nov-2022
	Presentation for final workshop	31-Jul-2023

7.6 Contribution to the implementation of the Spanish RRP	Manual to report data on waste management to the information system of the Spanish Recovery & Resilience Plan	31-May-2022

3 Starting Point for the Deliverable

3.1 State of play of waste management in Spain

This research focuses on the collection stage of municipal waste, including both household and small business waste, for two major reasons. First, because collection and transport of waste falls under the responsibility of municipalities. Second, because collection is a root cause of several other problems. This means that changing practices (including the distribution of costs) and regulations around the collection of municipal waste can incentivise agents all along the waste management chain. While focusing on collection, it cannot be forgotten that waste management chain is an integrated process.

3.1.1 Policy context

The EU Waste Framework Directive

The overall objectives of EU and European countries' policies related to waste are to reduce waste generation and improve waste management. The EU's circular economy action plan provides a framework of measures towards achieving these objectives, while the Waste Framework Directive and other waste directives introduce a large range of provisions aiming to move waste up the waste hierarchy. The waste hierarchy is the overarching principle of EU waste policies in which waste prevention has the highest priority, followed by preparing for reuse, recycling and other recovery and finally disposal as the least desirable option (EEA, 2019)[14]. In line with the waste hierarchy, EU waste legislation includes more than 30 binding targets for the management of waste for the period 2015-2035. Table 3-9 presents legally binding policy objectives and targets relevant to this project. The Waste Framework Directive sets out specific targets regarding how municipal waste is prepared for reuse or recycled. By 2020, 50% of municipal waste should be prepared for reuse and recycled. This share is required to be 55% by 2025, 60% by 2030 and 65% by 2035.

Table 3-9 Overview of relevant policy objectives and targets

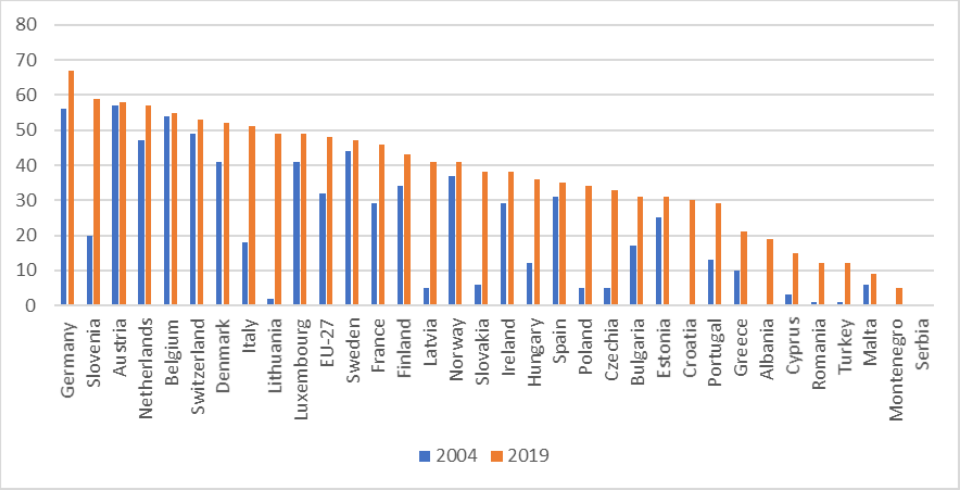
50% of municipal waste is prepared for reuse or recycled	2020	Waste Framework Directive
55% of municipal waste is prepared for reuse or recycled	2025	
60% of municipal waste is prepared for reuse or recycled	2030	
65% of municipal waste is prepared for reuse or recycled	2035	

Municipal waste management in the EU-27 is improving. In 2019, 48% of total waste was recycled (32% in 2004). Nearly all countries have increased their shares of municipal waste recycled since 2004, but differences among countries are high (see Figure 3-5). In 2019, just eight countries (Germany, Slovenia,

14 EEA (2019) The European environment —state and outlook 2020. Knowledge for transition to a sustainable Europe

Austria, the Netherlands, Belgium, Switzerland, Denmark and Italy) achieved recycling rates of 50% or higher.

Figure 3-5 Municipal waste recycling rates in Europe by country (%)



Source: European Environment Agency

The Spanish Law on Waste and Contaminated Soils for a Circular Economy

The Law 7/2022, of 8th of April, on Waste and Contaminated Soils for a Circular Economy (LRSC) sets the legal framework for waste management and waste prevention at the national scale in Spain. This law repeals and replaces the previous Law 22/2011, of 28th July, on Waste and Contaminated Land (a transposition of the European Directive 2008/98/CE on waste, also known as “Waste Framework Directive”). The new LRSC incorporates into the Spanish legal system the provisions of Directives 2018/851 of 30 May 2018, amending Directive 2008/98/EC on waste, and 2019/904, of 5 June 2019 on the reduction of the impact of certain plastic products on the environment, as well as the measures derived from the experience acquired during the application of Law 22/2011 in recent years.

The new LRSC incorporates a very extensive and detailed regulation of "extended producer responsibility" (EPR), in coherence with European legislation. The new LRSC establishes the framework, principles and requirements to be met by the specific EPR regimes for each waste stream to be regulated, and will have a direct impact on several sectors, including some sectors that have so far remained outside the scope of EPR. The most common practice for almost all regulated waste streams has been the use of integrated management systems (IMS). These systems are managed by non-profit entities that can adopt different legal forms such as associations, limited companies, etc. The companies that decide to fulfil their obligations through them must collaborate in financing the operation of the system.

In the waste management area, a mandatory separate collection for paper, metals, plastics and glass is already in place. The new LRSC establishes a timetable for the following new waste streams: biowaste, by 2024 (before 30/06/2022 for municipalities of more than 5,000 inhabitants), and textiles, bulky waste (furniture), hazardous household waste, and used cooking oils, by 2025. Community targets for preparing for re-use and recycling are incorporated for municipal waste, differentiating a percentage of preparing for re-use; and obligations for waste production and management are revised as well as specific obligations for some waste streams such as bio-waste, used oils and construction and demolition waste.

In terms of environmental taxation, a new tax on single use/ non-reusable plastic packaging is introduced. A tax on the deposit of waste in landfills, incineration and co-incineration of waste is also introduced. The latter already exists in some Autonomous Communities.

In 2019, Spain published its general guidelines for the new Spanish industrial strategy, which set out 10 lines of action, one of which is dedicated to sustainability. The **Spanish Circular Economy Strategy**[15] sets a series of targets for 2030, including a 30% reduction in national material consumption relative to the GDP. It also includes a target on food waste (-15% compared to 2010), and a reduction of GHG emissions from the waste sector to below 10 Mtonnes of CO2eq, amongst others. The most important solution currently being developed in this field is the promotion of the circular economy, the aim of which is to maintain existing products, components, and materials to their highest levels of use, minimise waste, and reintroduce used materials back into the economy.

3.1.2 Responsibilities for waste collection and treatment: Interplay between municipalities and Autonomous Communities

Spain has a complex distribution of competences across administrative levels where the national government, the autonomous communities and the local entities (diputaciones provinciales, municipalities, towns, etc.) are differentiated. When considering waste management, the new LRSC outlines tasks and responsibilities across the national government, the Autonomous Communities (ACs)[16], and local entities [17].

National Level

The Ministry for Ecological Transition and the Demographic Challenge (MITECO) is responsible for implementing, amending and enforcing the Law at the national level. It is also responsible for developing a Prevention Program and National Waste Management Plan (PEMAR 2016-2022). MITECO is also responsible for authorizing and monitoring foreign trade of waste and for adhering to reporting requirements on the progress of waste management policies.
The current National Framework Waste Management Plan (PEMAR, 2016-2022)[18] was approved on November 6th, 2015. It is subsequent to the National Integrated Waste Management Plan (PNIR, 2008-2015). The PEMAR explicitly acknowledges the targets of the Landfill Directive: by 2020, it limits the landfill of waste to 35% of total waste generated (restricted to rejects from treatment and incineration plants). The national waste prevention programme (PEPR, 2014-2020) complements the above-mentioned plan in prevention issues

15 https://www.miteco.gob.es/es/calidad-y-evaluacion-ambiental/temas/economia-circular/espanacircular_2030_executivesummary_en_tcm30-510578.pdf

16 There are seventeen autonomous communities in Spain, fifteen of which are located within the Iberian Peninsula, and two of which are archipelagos (Balearic Islands and Canary Islands) and two additional autonomous cities. The Balearic Islands are located in the northwestern Mediterranean Sea and the Canary Islands are located off the northwest coast of Morocco and the Western Sahara. Ceuta and Melilla are referred to as autonomous cities.

17 There is a total of 8,124 municipalities in Spain, including the autonomous cities of Ceuta and Melilla. Burgos is the province with the most municipalities (371) and Las Palmas the one with the least (34)

18 The National Waste Management Plan titled “Plan Nacional Integral de Residuos (2008-2015)” (PNIR) has been replaced by the subsequent National Waste Management Framework titled “Plan Estatal Marco deGestión de Residuos” (PEMAR), which was approved on November 6th, 2015.

Autonomous Communities (ACs) level

It is at the ACs level where most of the responsibility for planning and implementation lies. ACs are responsible for:

- The development of regional waste management and prevention plans, both general and sectorial (i.e., municipal waste). These plans must set specific regional targets, in line with, or exceeding, those set by MITECO. Moreover, they outline which financial resources are available and how the budget will be allocated. Most ACs have waste management programs in force complying with the requirements of Directive 851/2018 (except for Aragón. Castilla La Mancha, Galicia, Melilla y Murcia, which are in the process of revising these to adapt them to the requirements of Directive 851/2018). Within some of the ACs there are also agencies and specific Departments focusing specifically on waste management (e.g., Catalan Waste Agency)[19]. All ACs are obliged under the LRSC to adopt waste prevention programs or consider waste prevention as part of the waste management plan[20]. In recent years, it is also becoming common for the ACs to develop circular economy plans (e.g., The Basque Country Circular Economy Strategy 2030[21]), in line with the Spanish Circular Economy Strategy;
- Surveillance, authorization, inspection and the application of sanctions on waste management;
- Monitoring, recording and reporting data on waste management to MITECO;
- Developing specific legislation on waste. Apart from the various Acts implementing the regional plans, 13 ACs have also developed and implemented regional legislation on waste. This includes, for example, the Foral Law 14/2018 of 18 June on waste and its taxation in Navarra or the Law 6/2021 of 17 February on waste and contaminated soils in Galicia.

Local level

The responsibilities of the local entities, described in detail in article 12.5 of the new LRSC, are basically the same as those previously existing under Law 22/2011. **Municipalities are responsible for the collection and transport of municipal waste**. In many cases they perform this by grouping themselves into associations of municipalities (Mancomunidades, Consorcios, etc.). Additionally, according to the LRSC, local entities with a population over 5,000 inhabitants) have to approve their own waste management plans, which must be in conformity with those approved at the regional and national levels.

They may also choose to voluntarily develop their own circular economy and waste prevention programs and, for municipalities of less than 5,000 inhabitants, their own waste management plans for waste under its responsibility and to manage non-hazardous commercial waste and domestic waste generated in industries as established by their respective municipal ordinances.

In general, separate collection schemes in municipalities have been increasing in terms of the number of fractions that are separately collected and in terms of the volume of waste collected.

19 https://residus.gencat.cat/es/inici/

20 https://www.miteco.gob.es/es/calidad-y-evaluacion-ambiental/temas/economia-circular/200714eeec_resumenejecutivo_en_tcm30-510578.pdf

21 https://www.ihobe.eus/publications/circular-economy-strategy-of-the-basque-country-2030

Waste Coordination Commission

At the intersection of these three administrative levels sits the Waste Coordination Commission (*Comisión de Coordinación en materia de residuos*), which is attached to MITECO and is formed by representatives from the three main administrative levels mentioned above, in order to promote cooperation and collaboration between them. Its functions cover:

- Reporting and elaborating recommendations for collaboration;
- Analysing the application of regulation and their consequences;
- Ensuring knowledge on waste management is up to date and ensuring it is easily disseminated ;
- Analysing the justifications provided in cases where the waste hierarchy is not followed;
- Exchanging information and developing recommendations on authorizations regarding the collective systems of extended producer responsibility.

3.1.3 Waste collection performance

Collection in Spain is carried out by municipalities. The collection model is characterized by the number and type of fractions to be separated and collected. Six municipal waste separation models exist (see Table 3-10). The most common models are Type 5 (4 fractions), Type 4 (4 fractions plus pruning), and Type 1 (5 factions). The 5 fractions model is especially common in municipalities of Catalonia including Barcelona, where there are containers for light packaging, glass, paper and cardboard, organic waste, and other waste. All citizens have recycling collection containers located less than 100 meters from their home. This model is also common in municipalities of the Basque Country. The wet/dry model (Type 2) fundamentally separates the organic and inorganic fraction (includes packaging waste). Type 6 is a residual model in Spain, which does not integrate the separation of light packaging waste. Finally, Type 3 (Multiproduct) exists only in some areas and collects paper-cardboard waste together with light packaging waste.

These main collection models are complemented by specific collections of bulky waste, batteries, textiles, oils or others. In addition, an increasing number of municipalities have different types of civic amenity sites (fixed, mobile, neighbourhood, etc.).

Table 3-10 Municipal waste collection models implemented in Spain

Type 1: 5 fractions	Type 2: Wet-dry	Type 3: Multiproduct	Type 4: 4 fractions + pruning	Type 5: 4 fractions	Type 6: 3 fractions
Glass	Glass	Glass	Glass	Glass	Glass
Paper-cardboard	Paper-cardboard	Paper-cardboard + Light packaging	Paper-cardboard	Paper-cardboard	Paper-cardboard
Light packaging	Rest + Light packaging		Light packaging	Light packaging	-
Rest		Rest	Rest (includes OF)	Rest (includes OF)	Rest (includes OF + light packaging)
OF	OF	OF	Garden waste	-	-

OF: Organic Fraction; Rest: undifferentiated fraction not considered as separate collection
Source: MITECO

Most of the waste is collected by the private sector, while a smaller proportion is collected by the municipalities or local entities own in-house public companies. There is also joint interaction between public and private sector companies, and between private companies. Disposal is mostly carried out by the Private sector, with some exceptions of publicly owned landfills (e.g., such as in Asturias with COGERSA, in Galicia with SOGAMA and Cantabria with MARE).

The main private companies involved in both collection and disposal are FCC (Fomento de Construction y Contratas SA), URBASER[22], PreZero (formerly Ferrovial Servicios Medioambiente-CESPA), and Valoriza Servicios Medioambientales[23]. FCC collects over 50 percent of waste on behalf of Spanish municipalities. The company has contracts with major cities and towns in Spain such as: Madrid, Barcelona, Valencia, Bilbao, Zaragoza, Salamanca, Vigo, Malaga, Castellon de la Plana, Avila, Tarragona, Oviedo, Albacete, Vitoria, Segovia, Alicante, Benidorm, and Elche. Some smaller contractors providing waste collection services for Spanish municipalities include, for example, Sociedad Agricultores de la Vega de Valencia (SAV) collect municipal waste in one of three zones of the city of Valencia, Grupo Empresarial SADISA, or Raga Group.

Some of the municipalities in Spain that provide the waste collection service totally by in-house public companies include Cordoba (provided by SADECO), Seville (provided by LIPASAM), Alcala de Guadaira and Dos Hermanas (provided by Ecoalcores) and Huelva (provided by GIAHSA), in Andalusia. The waste collection service is also provided by public companies in a number of municipalities in the Balearic Islands, Asturias and Cantabria.

The main Producer Responsibility Organizations (PROs) in charge of the financing and organization of the management of the three main fractions of separately collected streams are ECOEMBES (light packaging, and paper & cardboard) and ECOVIDRIO (glass). Other fractions such as organic waste are usually managed by the municipalities themselves.

National and AC level

In 2019, 22,784,752 tonnes of waste were generated in Spain and the selective collection reached 22.0% of municipal solid waste generated (compared to 22,707,007 tonnes and 17.7% selective collection in 2018). As can be seen in Table 3-11, the three main fractions separately collected are paper & cardboard (25.6%), glass (18%), and mixed packaging (16.5%). The residual fraction and the bulky waste accounted for the remaining 74.8% (17,034,229) and 3.2% (730,551), respectively.

In terms of the Autonomous Communities,

22 A property of Platinum Equity (China)
23 A subsidiary of SACYR (Spain)

Table 3-11 shows that the regions that recycle more waste are the Basque Country (41.7%)[24], Navarra (39.8%), Catalonia (38.5%), and Madrid (26.7%) – all well above the 22% national average. The regions that recycle less waste are Extremadura (11.8%), Murcia (12.0%), Castilla-La Mancha (12.4%), and Andalusia (12.8%).

24 The Basque Country is also the region that generates less waste per inhabitant (392.3 kg), followed by Madrid (399.8 kg) and La Rioja (422.2 kg)

Table 3-11 Municipal waste collected classified by type of waste and autonomous communities (2019)

Autonomous Community	Population (2019)	Mixed collection		Separate collection					All separate collection	All (Mixed + separate)	Separate collection rate (%)	Waste generated per inhabitant (kg/person/year)
		Mixed domestic waste	Mixed bulky domestic waste (household goods)	Glass	Paper & cardboard	Mixed packaging	Biowaste	Other				
Andalucía	8,414,240	3,571,331	186,042	109,126	121,130	103,371	99,242	120,407	553,276	4,310,649	12.8%	510.2
Aragón	1,319,291	464,876	26,284	20,549	28,507	21,904	7,495	81,847	160,302	651,462	24.6%	491.9
Asturias, Principado de	1,022,800	371,569	15,158	17,413	42,471	14,354	25,198	21,417	120,853	507,580	23.8%	497.6
Balears, Illes	1,149,460	638,631	31,178	42,970	49,047	38,403	57,761	25,818	213,999	883,808	24.2%	737.7
Canarias	2,153,389	1,029,102	42,665	44,349	48,375	27,975	31,446	58,574	210,719	1,282,486	16.4%	577.7
Cantabria	581,078	246,898	30,062	12,426	5,710	6,830	2,211	33,120	60,297	337,257	17.9%	579.6
Castilla y León	2,399,548	899,205	26,465	50,879	48,289	28,824	4,877	29,949	162,818	1,088,488	15.0%	453.0
Castilla - La Mancha	2,032,863	816,939	8,269	25,095	30,088	24,938	2,985	33,761	116,867	942,075	12.4%	462.1
Cataluña	7,675,217	2,201,896	135,031	203,329	405,667	184,923	500,742	165,612	1,460,273	3,797,200	38.5%	499.0
Comunitat Valenciana	5,003,769	2,040,908	66,030	89,291	78,781	61,855	85,170	75,242	390,339	2,497,277	15.6%	499.5
Extremadura	1,067,710	405,019	26,407	9,487	31,622	13,876	248	2,719	57,952	489,378	11.8%	460.4
Galicia	2,699,499	971,791	16,269	48,384	41,067	28,630	46,095	23,038	187,214	1,175,274	15.9%	435.5
Madrid, Comunidad de	6,663,394	1,903,917	49,665	114,543	139,642	173,780	228,635	54,045	710,645	2,664,227	26.7%	398.5
Murcia, Región de	1,493,898	658,403	13,436	26,768	23,740	20,702	5,237	14,782	91,229	763,068	12.0%	510.4
Navarra, Comunidad Fora	654,214	156,524	20,662	17,396	26,266	21,360	36,856	15,375	117,253	294,439	39.8%	451.2
País Vasco	2,207,776	479,547	25,525	63,400	153,648	50,012	33,865	60,010	360,935	866,007	41.7%	396.9
Rioja, La	316,798	106,913	2,431	9,153	8,417	5,892	557	401	24,420	133,764	18.3%	425.4
Ceuta	84,777											
Melilla	86,487											
National total	47,026,208	17,034,229	730,551	904,986	1,282,467	827,965	1,168,659	830,944	5,015,021	22,784,752	22.0%	483,7

Source: based on National Statistics Institute (INE)

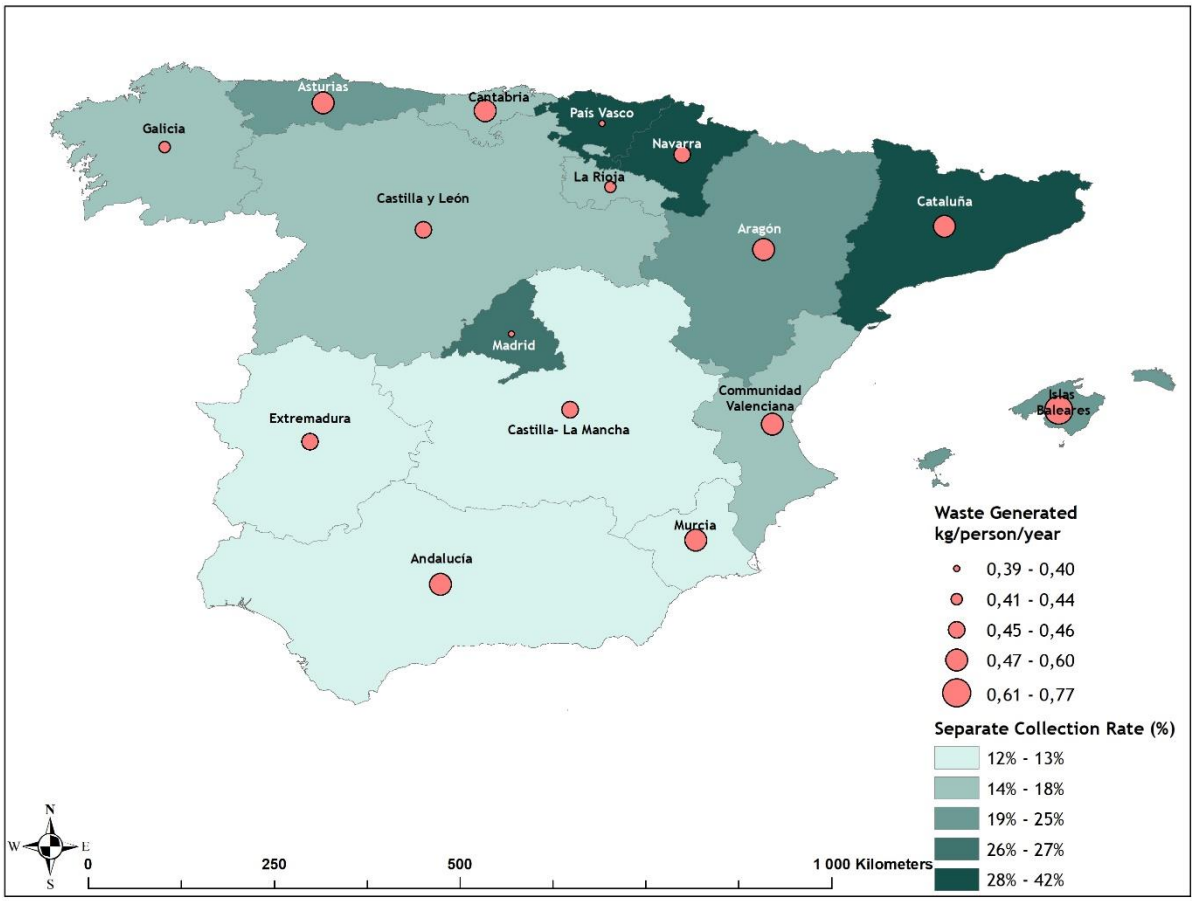
Note: The data corresponding to the autonomous cities of 'Ceuta and Melilla' are not published for reasons of statistical confidentiality, but are included in the "National total".

The map in Figure 3-6

Figure 3-6 provides the same information presented in

Table 3-11 in a geographical format; the figure also provides the total waste generated per person per year, in kg. The figure reveals that the northern autonomous regions of Spain tend to have higher separate collection rates than those in the south. Municipalities with higher separate collection rates generally produce less waste per person, per year, with some exceptions.

Figure 3-6 Map of Separate Collection Rates and Waste Generated per Inhabitant (kg/year)



As can be seen in Table 3-11, the largest separately collected fraction is “Paper and Cardboard”, which accounts for over 25% of all separately collected waste, nationally. This category is most prominent in Extremadura (54.6%), País Vasco (42.6%) and Asturias (35.1%) and least prominent in Cantabria (9.5%) and Aragón (17.8%). .

The second largest separately collected fraction is “Biowaste”, which accounts for 23.3% of all separately collected waste. This fraction is particularly relevant in Cataluña (34.4%), Madrid (32.2%) and Navarra (31.4%).

The remaining separately collected waste is made up of “Glass” (18%), “Mixed packaging” (16.5%), and “Other” (16.6%). “Glass” represents the largest fraction of separately collected waste in five ACs: Castilla y León (31.2%), Comunitat Valenciana (22.9%), Galicia (25.8%), Región de Murcia (29.3%) and La Rioja(37.5%), while “Biowaste” represents the largest fraction in Illes Balears (27%), Cataluña (34.3%), Madrid (32.2%) and Navarra (31.4%) The “Other” category is largest in Aragón and Cantabria, where it represents 51.1% and 54.9% respectively.

Looking at the 4 best and 4 worst performing Autonomous communities in Spain, similar distributional trends of the separately collected fractions can be identified (see table 3-12).While the separate collection rates across the AC's vary considerably, from Extremadura with 11.8% to the Basque Country with 41.7%, the distribution between fractions collected suffers less variance. By and large, "paper & cardboard" and "biowaste" represent the majority of recycled waste with almost half of all separately collected waste, with "glass" and "mixed packaging" contributing the 35% and "other" 16.6%.

Table 3-12: Weight of separately collected fractions

Autonomous Community	Separate collection				
	Glass	Paper & cardboard	Mixed packaging	Biowaste	Other
Andalucía	19.7%	21.9%	18.7%	17.9%	21.8%
Aragón	12.8%	17.8%	13.7%	4.7%	51.1%
Asturias, Principado	14.4%	35.1%	11.9%	20.9%	17.7%
Balears, Illes	20.1%	22.9%	17.9%	27.0%	12.1%
Canarias	21.0%	23.0%	13.3%	14.9%	27.8%
Cantabria	20.6%	9.5%	11.3%	3.7%	54.9%
Castilla y León	31.2%	29.7%	17.7%	3.0%	18.4%
Castilla - La Mancha	21.5%	25.7%	21.3%	2.6%	28.9%
Cataluña	13.9%	27.8%	12.7%	34.3%	11.3%
Comunitat Valencian	22.9%	20.2%	15.8%	21.8%	19.3%
Extremadura	16.4%	54.6%	23.9%	0.4%	4.7%
Galicia	25.8%	21.9%	15.3%	24.6%	12.3%
Madrid, Comunidad	16.1%	19.7%	24.5%	32.2%	7.6%
Murcia, Región de	29.3%	26.0%	22.7%	5.7%	16.2%
Navarra, Comunidad	14.8%	22.4%	18.2%	31.4%	13.1%
País Vasco	17.6%	42.6%	13.9%	9.4%	16.6%
Rioja, La	37.5%	34.5%	24.1%	2.3%	1.6%
Ceuta					
Melilla					
National total	18.0%	25.6%	16.5%	23.3%	16.6%

Collection: Municipal level - Clustering per performance level

Waste collection data at the municipal level is either not publicly available or is not easy to find and collect as it is not aggregated in a single database and/or in a common format. Therefore, clustering all Spanish municipalities per collection performance level has not been possible at this stage. For this reason, a sample of municipalities from three ACs with low/ medium/ high performance level has been analysed instead.

In order to do that, we have first categorized the ACs in 3 different groups based on their separate waste collection rates and the average separate collection rate of Spain (i.e., 22%). We have then compiled and analysed in detail the waste collection data of the municipalities of one AC (or province within the AC) per group. Both the autonomous community selected withing each group and the granularity of the analysis depend on data availability.

Table 3-12 Clustering of ACs per performance level

Group 1: Low performance level (< 22%)		Group 2: Medium performance level [22% - 30%)		Group 3: High performance level (> 30%)	
Extremadura	11.8%	Asturias	23.8%	Cataluña	38.5%
Murcia	12.0%	Balears, Illes	24.2%	Navarra	39.8%
Castilla - La Mancha	12.4%	Aragón	24.6%	Basque Country	41.7%
Andalucía	12.8%	Madrid	26.7%		
Castilla y León	15.0%				
Comunitat Valenciana	15.6%				
Galicia	15.9%				
Canarias	16.4%				
Cantabria	17.9%				
Rioja	18.3%				

Source: authors

For the low performance group, we have focused on **Extremadura**. Data for the province of Badajoz (one of the two provinces that make up Extremadura) and for the 15 largest towns in the AC has been collected. The 15 largest towns generated 206,138 Tn of total waste in 2019, while the province of Badajoz generated 281,999 Tn of total waste in the same year.

The separate collection rate across the municipalities for which data is available is very low, averaging 11.8% (see Table 3-13). -

This is true across the board and does not have any correlation to municipality size. Only 3 out of 178 municipalities in the province of Badajoz have a rate over the national average: Acedera, 47.8%; El Carrascalejo, 23.4%; and Villar de Rena, 24%. While these municipalities have under 1,400 inhabitants, many other towns and municipalities of a comparable size do not have comparable separate collection rates. The majority of all collected separated waste is paper & cardboard, making up 39% of the total. This is followed by light packaging which makes up 36% and then glass which represents a quarter of all the separated waste collected.

As Table 3-13) shows, none of the largest municipalities in the AC have a separate collection rate over 15%. The distribution of collection rates by fraction in the 15 largest municipalities is almost identical to the provincial distribution, with 39% corresponding to paper & cardboard, 37% to light packaging and 24% to glass.

Both these sets of groupings coincide with the national level data presented above, which indicates that in Spain “paper and cardboard” is one of the fractions with the highest separate collection rate. This distribution is similar to the one identified for Spain as a whole, with a higher proportion of separate collection of paper & cardboard than light packaging and glass.

Table 3-13 Municipal waste collected classified by type of waste and municipalities in the province of Badajoz, in Extremadura (2019)

Municipalities	Population	Separate collection (tonnes)				Mixed collection	All (mixed + separate)	Separate collection rate (%)
		Light packaging	Inappropriate light packaging (%)	Paper & cardboard	Glass			
Acedera *	132	10,794	40,7	15,076	4,938	64,49	135,998	47.8%
Aceuchal	5,449	63,114	40,9	70,34	36,501	2.451,18	2662,035	6.9%
Ahillones	871	9,052	42,7	10,04	7,015	353,24	422,047	7.4%
Alange	1,848	26,452	41,5	35,517	19,866	682,50	805,835	12.0%
Albuera, La	2,028	23,45	40,9	26,134	9,66	1.187,89	1288,034	5.0%
Alburquerque	5,343	72,229	40,7	100,883	60,682	1.775,62	2050,114	13.2%
Alconchel	1,680	14,02	45,9	27,824	11,069	663,44	762,253	8.0%
Alconera	744	7,586	31,8	11,92	11,459	257,44	320,205	12.0%
Aljucen	264	3,447	41,5	3,804	1,757	86,97	137,478	10.4%
Almendral	1,232	14,073	45,7	21,848	6,237	502,59	590,448	8.4%
Almendralejo	33,474	482,42	34,4	646,213	306,858	12.256,84	13726,731	11.7%
Arroyo de San Servan	4,107	58,053	41,5	64,067	35,138	1.464,67	1663,428	10.7%
Atalaya	301	3,045	31,8	4,784	3,35	103,33	146,309	10.8%
Azuaga	7,853	82,002	31,8	54,738	52,514	3.317,34	3538,394	5.7%
Badajoz	150,702	1661,9	48,3	2451,22	1530,19	53.652,30	59343,91	10.5%
Barcarrota	3,510	37,203	31,8	24,834	15,13	1.373,89	1482,857	5.6%
Baterno	283	3,963	40,7	5,535	2,684	122,35	175,232	10.0%
Benquerencia de la Serena	829	9,961	41,3	14,531	9,676	291,75	367,218	11.7%
Berlanga	2,343	24,351	42,7	27,009	13,738	933,53	1041,328	7.0%
Bienvenida	2,087	22,372	42,8	34,747	14,889	868,76	983,568	8.3%
Bodonal de la Sierra	1,049	11,06	42,8	17,178	13,788	429,48	514,306	9.8%
Burguillos del Cerro	3,057	32,059	31,8	21,4	47,805	1.087,94	1221,004	9.3%
Cabeza del Buey	4,864	58,379	41,3	85,164	50,555	1.751,70	1987,098	11.1%
Cabeza la Vaca	1,309	13,993	42,8	21,733	28,729	543,38	650,635	11.9%
Calamonte	6,162	84,416	40,7	117,905	51,903	2.152,14	2447,064	11.8%
Calera de Leon	960	10,187	42,8	15,822	16,36	395,60	480,769	10.7%
Calzadilla de los Barros	755	3,952	31,8	12,557	4	313,95	366,259	6.5%
Campanario	4,896	67,184	40,7	93,836	28,707	1.661,93	1892,357	11.4%
Campillo de Llerena	1,360	14,268	31,8	22,419	5,011	570,33	643,828	7.3%
Capilla	182	2,203	41,3	3,214	1,368	66,10	114,185	10.3%
Carmonita	540	7,453	40,7	4,309	1,564	197,71	251,736	6.7%
Carrascalejo, El	83	0,943	41,5	1,04	3,57	23,78	70,833	23.4%
Casas de Don Pedro	1,439	12,847	39,9	28,017	12,528	619,26	712,552	8.6%
Casas de Reina	196	2,037	42,7	2,259	2,58	75,55	125,126	9.1%
Castilblanco	951	13,147	40,7	18,363	7,242	381,94	461,392	10.1%

Castuera	5,880	70,128	41,3	102,303	22,521	2.104,66	2340,912	9.3%
Cheles	1,176	12,574	31,8	19,757	7,128	464,36	535,619	8.5%
Codosera, La	2,075	28,662	40,7	40,032	14,964	704,59	828,948	11.9%
Cordobilla de Lacara	909	12,39	40,7	7,164	10,702	328,69	399,646	9.2%
Coronada, La	2162	29,514	40,7	41,222	6,867	904,33	1022,633	8.6%
Corte de Peleas	1222	14,05	45,7	21,813	4,4	501,78	587,743	8.0%
Cristina	552	7,669	40,7	10,712	1,049	208,64	268,77	9.3%
Don Alvaro	788	10,806	41,5	11,925	3,516	272,63	340,377	9.6%
Don Benito	37,151	489,84	42,5	242,42	273,431	12.258,68	13306,871	8.2%
Entrerrios	760	Included in Villanueva de la Serena				317,88	317,88	
Entrin Bajo	551	6,576	40,9	7,329	4,209	333,13	392,144	5.4%
Esparragalejo	1462	19,735	40,7	11,411	5,231	551,30	628,377	6.6%
Esparragosa de la Serena	1019	12,211	41,3	17,814	6,248	357,67	435,243	10.1%
Esparragosa de Lares	925	8,126	39,9	17,721	1,064	391,68	458,491	6.9%
Feria	1144	13,291	40,9	14,813	5,337	420,02	494,361	8.0%
Fregenal de la Sierra	4847	51,107	31,8	34,115	37,966	2.230,64	2385,628	5.5%
Fuenlabrada de los Montes	1845	25,416	40,7	14,695	10,807	738,35	829,968	6.9%
Fuente de Cantos	4721	50,295	42,8	78,116	54,644	1.953,08	2178,935	9.4%
Fuente del Arco	688	7,15	42,7	7,931	8,899	275,71	342,39	8.7%
Fuente del Maestre	6,743	150,829	44,8	110,609	74,053	2.677,88	3058,171	12.5%
Fuentes de Leon	2,302	24,296	42,8	37,735	30,347	943,47	1078,648	9.8%
Garbayuela	508	7,061	40,7	9,862	1,322	217,97	276,915	8.4%
Gargaligas	527	Included in Don Benito				218,83	218,83	
Garlitos	587	5,189	39,9	11,316	3,455	212,88	272,74	9.4%
Garrovilla, La	2,346	32,476	40,7	18,778	6,276	907,24	1005,47	6.3%
Granja de Torrehermosa	2,014	20,932	42,7	23,216	6,999	951,72	1045,567	5.4%
Guadajira	514	Included in Lobon				208,44	208,44	
Guadalperales, Los	675	Included in Acedera				328,35	328,35	
Guadiana del Caudillo	2,485	25,8	42,8	21,6	8,625	1.040,44	1139,265	5.4%
Guareña	6,964	94,764	40,7	132,357	52,445	2.442,93	2763,196	11.4%
Haba, La	1,243	16,867	40,7	23,558	12,299	516,82	610,244	10.2%
Helechosa de los Montes	647	8,833	40,7	12,336	3	256,59	321,459	9.4%
Hernan Cortes	957	Included in Don Benito				399,94	399,94	
Herrera del Duque	3,482	47,138	40,7	27,256	10,649	1.369,42	1495,163	6.2%
Higuera de la Serena	948	11,145	41	16,259	7,791	326,44	402,635	10.8%
Higuera de Llerena	347	3,606	42,7	4	1,152	135,68	187,138	6.5%
Higuera de Vargas	1,955	20,264	31,8	13,527	8,143	648,98	722,714	6.5%
Higuera la Real	2,253	23,527	31,8	36,968	23,747	1.217,25	1333,292	6.9%
Hinojosa del Valle	483	5,082	31,8	7,985	2,05	198,43	245,347	7.6%
Hornachos	3,595	37,816	31,8	59,419	16,791	1.417,47	1563,296	8.0%
Jerez de los Caballeros	9,303	97,341	31,8	64,977	83,444	3.289,93	3567,492	7.5%

Lapa, La	281	2,951	31,8	4,637	3	100,15	142,538	10.6%
Llera	836	8,689	42,7	9,637	9,887	340,19	411,103	8.3%
Llerena	5,804	59,836	31,8	39,942	55,117	2.428,75	2615,445	6.4%
Lobón	2,746	39,92	41,1	15,18	17,024	921,86	1035,084	7.8%
Magacela	530	7,115	40,7	9,937	0,884	218,00	276,636	8.2%
Maguilla	974	10,08	31,8	15,839	5,205	383,70	446,624	8.1%
Malcocinado	365	3,887	31,8	6,107	3,225	157,75	202,769	8.4%
Malpartida de la Serena	556	6,739	41,3	9,831	4,372	197,39	259,632	10.6%
Manchita	765	10,32	40,7	14,414	1,726	280,76	347,92	9.4%
Medellin	2263	30,785	40,7	17,8	24,229	1.091,34	1204,854	6.7%
Medina de las Torres	1184	12,543	31,8	19,709	13,557	425,65	503,259	10.8%
Mengabril	475	6,384	40,7	8,917	2,094	226,32	284,415	7.7%
Merida	59,335	731,04	38,8	503,829	527,558	19.473,06	21274,287	9.1%
Mirandilla	1267	18,291	41,5	20,186	4,954	461,48	546,411	9.4%
Monesterio	4226	44,723	42,8	69,461	52,674	1.736,71	1946,368	9.6%
Montemolfn	1343	20,42	42,8	22,321	19,541	558,08	663,162	11.2%
Monterrubio de la Serena	2372	28,603	41,3	41,727	14,926	837,79	964,346	10.2%
Montijo	15,457	381,02	44,3	18	105,674	5.917,06	6466,054	8.5%
Morera, La	715	8,31	40,9	9,261	3,852	262,61	324,933	8.2%
Nava de Santiago, La	932	12,836	40,7	17,928	15,159	340,53	427,153	13.5%
Navalvillar de Pela	4,424	94,34	67,4	23,7	42,01	1.581,06	1808,51	10.1%
Nogales	652	7,697	40,9	8,578	0,565	243,25	300,99	6.9%
Oliva de la Frontera	5,137	53,986	31,8	36,037	28,852	2.093,62	2244,295	5.7%
Oliva de Merida	1,729	24,398	41,5	26,925	2,735	615,54	711,098	8.8%
Olivenza	11,963	92,34	36,4	92,76	84,843	4.496,22	4802,563	6.0%
Orellana de la Sierra	228	3,179	40,7	4,44	0,565	115,69	164,574	7.1%
Orellana la Vieja	2,693	36,913	40,7	51,556	21,265	1.343,45	1493,884	8.2%
Palazuelo	495	Included in Villar de Rena				204,32	204,32	
Palomas	678	7,129	31,8	11,201	6	267,21	323,34	9.1%
Parra, La	1,346	15,718	40,9	17,517	5,212	496,72	576,067	7.7%
Pefialsordo	918	11,24	41,3	16,397	9,234	337,26	415,431	10.9%
Peraleda del Zaucejo	513	5,321	31,8	8,36	6,12	212,68	264,281	9.3%
Puebla de Alcocer	1,184	16,069	40,7	9,291	5,908	552,05	624,018	5.7%
Puebla de la Calzada	5,845	79,479	40,7	111,009	41,032	2.233,90	2506,12	10.4%
Puebla de la Reina	741	7,742	31,8	12,165	3,64	290,19	345,537	8.1%
Puebla de Obando	1,836	25,267	40,7	35,29	13,02	670,29	784,567	11.0%
Puebla de Sancho Perez	2,709	28,38	31,8	18,944	31,643	963,10	1073,867	8.2%
Puebla del Maestre	685	7,119	42,7	7,896	8,376	276,10	342,191	8.5%
Puebla del Prior	490	5,196	31,8	8,164	1,76	202,89	249,81	7.5%
Pueblonuevo del Guadiana	2,021	27,499	40,7	38,407	12,167	774,37	893,143	10.1%
Quintana de la Serena	4,597	55,074	41,3	80,343	28,341	1.652,88	1857,938	9.9%

Reina	153	1,59	42,7	1,764	2,718	62,89	111,662	9.7%
Rena	616	8,413	40,7	11,751	0,994	257,79	319,648	8.2%
Retamal de Llerena	443	4,604	31,8	7,234	4	184,02	231,658	8.6%
Ribera del Fresno	3,348	34,886	31,8	54,815	29,804	1.362,22	1513,525	8.8%
Risco	140	1,907	40,7	2,664	2,224	50,11	97,605	13.6%
Roca de la Sierra, La	1,464	19,924	40,7	27,828	14,264	528,56	631,276	11.7%
Ruecas	652	Included in Don Benito				276,56	276,56	
Salvaleón	1,755	0	40,9	25,18	3,522	573,98	643,582	5.0%
Salvatierra de los Barros	1,645	19,231	40,9	21,433	5,444	607,76	694,768	7.6%
San Pedro de Merida	843	11,777	41,5	12,997	4,353	297,12	367,747	9.8%
San Vicente de Alcantara	5,408	55,9	43,2	72,972	75,294	1.855,09	2102,456	11.0%
Sancti-Spfritus	167	1,516	39,9	3,306	1,233	73,07	119,025	8.3%
Santa Amalia	4,021	37,388	42,6	31,735	22,085	1.622,10	1755,908	5.6%
Santa Marta	4,122	48,263	40,9	53,789	39,58	1.291,74	1474,272	11.0%
Santos de Maimona, Los	8,091	84,444	31,8	132,685	73,814	2.625,84	2948,583	11.1%
Segura de Leon	1,889	20,196	42,8	31,367	17,652	784,25	896,265	8.8%
Siruela	1,903	16,563	39,9	36,121	15,41	798,40	906,394	8.5%
Solana de los Barros	2,623	35,777	40,7	20,686	10,645	1.118,60	1226,408	6.0%
Talarrubias	3,412	34,34	47,6	26,747	16,43	1.428,09	1553,207	5.4%
Talavera la Real	5,314	72,716	40,7	101,563	43,322	2.130,34	2388,641	10.2%
Taliga	665	7,077	31,8	11,12	1,75	261,35	313,097	7.6%
Tamurejo	214	2,908	40,7	2,062	0,932	89,78	136,382	6.6%
Torre de Miguel Sesmero	1,250	14,357	45,7	22,289	4,294	512,72	599,36	8.0%
Torrefresneda	378	Included in Guarefia				158,25	158,25	
Torremayor	957	13,161	40,7	7,61	7,809	367,66	436,94	7.8%
Torremejfa	2,250	No separate collection		17,706	7,389	940,20	965,295	
Torviscal, El	540	Included in Don Benito				225,88	225,88	
Trasierra	622	6,465	42,7	7,17	4,126	250,39	310,851	7.1%
Trujillanos	1,387	19,712	41,5	21,754	8,229	497,33	588,525	10.0%
Usagre	1,763	18,466	31,8	29,016	4,229	749,55	833,061	6.9%
Valdecaballeros	1,077	14,527	40,7	20,29	14,11	422,03	511,657	11.6%
Valdehornillos	629	Included in Don Benito				259,86	259,86	
Valdelacalzada	2,711	36,98	40,7	51,651	16,885	1.041,39	1187,606	10.1%
Valdetorres	1,173	15,947	40,7	22,274	4,083	433,83	516,834	9.8%
Valdivia	1,733	Included in Villanueva de la Serena				726,53	726,53	
Valencia de las Torres	564	5,862	42,7	6,501	0,995	228,64	284,698	5.8%
Valencia del Mombuey	744	7,596	31,8	11,936	10,127	277,92	339,379	10.7%
Valencia del Ventoso	1,973	20,867	31,8	13,929	26,241	708,13	800,967	8.6%
Valle de la Serena	1,191	14,497	41,3	21,148	7,366	435,08	519,391	9.9%
Valle de Matamoros	367	3,814	31,8	5,993	3,917	144,05	189,574	9.5%
Valle de Santa Ana	1,139	11,971	31,8	18,81	6,647	369,42	438,648	10.1%

Valverde de Burguillos	273	2,92	31,8	4,588	3,387	99,10	141,795	11.0%
Valverde de Leganes	4,159	56,24	51,6	84,72	35,566	1.692,58	1920,706	10.4%
Valverde de Llerena	585	6,266	31,8	9,846	4,578	254,35	306,84	8.1%
Valverde de Merida	1,055	14,914	41,5	16,459	2,989	376,28	452,142	9.1%
Villafranca de los Barros	12,835	134,325	31,8	211,062	65,559	4.911,68	5354,426	8.4%
Villagarda de la Torre	907	9,427	42,7	10,455	1,735	361,15	425,467	6.0%
Villagonzalo	1,234	17,489	41,5	19,301	10,915	441,25	530,455	10.8%
Villalba de los Barros	1,477	17,382	40,9	19,372	7,024	465,22	549,898	9.4%
Villanueva de la Serena	25,667	283,34	40,8	86,76	121,696	8.647,78	9180,376	5.7%
Villanueva del Fresno	3,397	35,343	31,8	55,533	27,498	1.293,04	1443,214	9.2%
Villar de Rena	1,379	18,707	40,7	26,128	5,084	208,05	298,669	24.0%
Villar del Rey	2,117	26,49	44,7	40,958	24,212	720,89	857,25	12.7%
Villarta de los Montes	437	6,006	40,7	8,388	0,31	174,47	229,874	8.4%
Vivares	720	Included in Don Benito				302,13	302,13	
Zafra	16,797	174,334	31,8	273,927	230,608	7.852,44	8563,109	8.6%
Zahfnos	2,803	29,149	31,8	19,458	1,22	1.130,44	1212,067	4.4%
Zalamea de la Serena	3,555	42,709	41,3	62,305	15,217	1.250,97	1412,501	9.6%
Zarza, La	3,472	49,358	41,5	54,471	42,012	1.245,29	1432,631	11.7%
Zarza-Capilla	311	3,672	41,3	5,356	6,074	110,17	166,572	13.7%
Zurbaran	875	Included in Villanueva de la Serena				365,96	365,96	

Source: Junta de Extremadura[25]

25 http://extremambiente.juntaex.es/index.php?option=com_content&view=article&id=539&Itemid=578

Table 3-14 Municipal waste collected classified by type of waste in the 15 largest town sin Extremadura (2019)

Municipio	Population	Separate collection				Mixed collection	All (separate + mixed)	Separate collection rate (%)
		Light packaging	Inappropriate light packaging (%)	Paper & cardboard	Glass			
Almendralejo	33,855	527.5	36.6	648.1	329.7	12,170.5	13,675.8	11.0%
Badajoz	150,984	1,836.9	49.8	2,525.8	1,579.6	53,150.8	59,093.2	10.1%
Cáceres	96,255	1,566.5	24.7	2,050.7	845.6	29,932.0	34,394.8	13.0%
Coria	12,366	172.5	37.0	115.6	149.7	3,937.2	4,375.0	10.0%
Don Benito	37,284	560.6	44.2	268.0	293.7	12,463.0	13,585.3	8.3%
Mérida	59,548	817.3	41.1	432.3	539.2	19,064.3	20,853.1	8.6%
Miajadas	9,527	183.9	43.8	121.9	118.1	3,183.5	3,607.4	11.8%
Montijo	15,504	254.3	43.4	249.6	105.9	5,851.7	6,461.4	9.4%
Navalmoral dela Mata	17,163	389.6	49.8	190.0	135.3	6,633.4	7,348.2	9.7%
Olivenza	11,912	121.7	42.4	125.4	79.0	4,390.3	4,716.4	6.9%
Plasencia	39,860	656.6	35.9	649.2	355.8	11,502.2	13,163.9	12.6%
Trujillo	8,912	114.9	39.9	141.9	141.0	3,193.2	3,591.1	11.1%
Villafranca de los Barros	12,673	157.3	41.0	220.2	76.5	4,929.6	5,383.6	8.4%
Villanueva de la Serena	25,752	322.1	43.5	142.5	122.4	8,354.0	8,941.0	6.6%
Zafra	16,810	205.9	41.0	288.2	212.1	6,241.9	6,948.0	10.2%

Source: Junta de Extremadura

For the medium performance level group (i.e., group 2) we have focused on Asturias, as we were able to find municipal level information that can be reported. In 2019, Asturias generated a total of 476,916 tonnes of waste, with selective collection making up 23.8% of municipal solid waste generated. Of the total separated waste collected, 14.4% corresponded to glass, 35.1% to paper & cardboard, and 11.9% to light packaging, with the remaining waste being separated into the others category[26] Table 3-15 also shows significant differences among the municipalities in the AC regarding separate waste collection: from 6.1% in Allende (population = 1,648) to 19.6% in Muros de Nalón (with a rather similar population:1,846).

While separate collection in Asturias is above the national average, the same cannot be said of its recycling rate. Table 3-15 shows that the average recycling rate for the AC's municipalities is 12.6%, and the average separate collection rate is 15%, well below the 22% national average. That being said, here again, there is significant variance in the recycling rates between municipalities: from 4% in Illano (population = 352) to 25.7% in Sobrescobio (population = 818).
An important note to make is that population size is not necessarily linked to separate collection and recycling rates. While the two largest cities in the AC (Gijón and Oviedo) present high separate collection and recycling percentages, small towns such as Sobrescobio or Santa Eulalia are also present among the highest separate collection and recycling rates. Moreover, medium sized towns are scattered across the board.

26 These percentages are calculated based on official data from the National Statistics Institute (Table 3-11 above) and may not be the same as those in Table 3-15 given by the Centro de Tratamiento de Residuos de Asturias

Table 3-15 Municipal waste collected classified by type of waste and municipalities in Asturias (2019)

			Separate collection (tonnes)							
Municipalities	**Population (2019)**	**Mixed waste**	**Glass**	**Paper & cardboard**	**Light packaging**	**Other**	**All (mixed + separate)**	**Separate collection rate (%)**	**Recycled waste (tonnes)**	**Recycling rate (%)**
SOBRESCOBIO	818	226.6	33.0	16.8	16.0	21.8	314.3	27.9%	80.8	25.7%
CARREÑO	10,444	4,515.3	214.0	238.7	170.4	1,220.2	6,358.6	29.0%	1,631.7	25.7%
GIJÓN/EMULSA	271,843	88,586.9	5,484.0	8,797.4	4,936.0	16,410.9	124,215.3	28.7%	31,481.1	25.3%
OVIEDO	220,020	62,484.8	3,869.7	6,154.4	3,564.6	11,027.7	87,101.3	28.3%	21,275.9	24.4%
COAÑA	3,336	1,164.3	41.7	60.3	28.7	360.7	1,655.6	29.7%	400.9	24.2%
LANGREO	39,984	12,751.6	516.7	904.9	531.2	2,470.5	17,175.0	25.8%	3,793.3	22.1%
S.MARTIN REY AURELIO	16,283	4,745.2	232.5	301.0	220.0	662.7	6,161.3	23.0%	1,233.7	20.0%
CASTROPOL	3,470	1,552.3	65.1	51.5	29.1	370.3	2,068.3	24.9%	413.7	20.0%
LLANERA	13,676	5,148.0	259.5	349.0	201.8	662.4	6,620.7	22.2%	1,321.4	20.0%
AVILES	78,715	27,774.7	1,073.8	1,933.2	942.3	4,107.2	35,831.1	22.5%	7,125.3	19.9%
TAPIA DE CASARIEGO	3,795	1,874.4	93.2	87.4	54.8	396.3	2,506.1	25.2%	492.7	19.7%
MIERES	38,428	12,188.2	665.3	748.3	336.3	1,665.3	15,603.5	21.9%	2,935.5	18.8%
NOREÑA	5,167	2,211.8	98.1	121.1	94.8	268.4	2,794.2	20.8%	509.2	18.2%
SANTA EULALIA DE OSCOS	453	205.8	23.5	5.2	3.3	24.4	262.2	21.5%	46.0	17.5%
CASTRILLON	22,464	9,526.8	374.2	458.0	255.3	1,391.2	12,005.6	20.6%	2,091.0	17.4%
NAVIA	8,409	3,725.4	192.5	241.3	130.0	396.2	4,685.4	20.5%	812.2	17.3%
GRADO	9,839	3,501.7	97.3	130.7	66.5	621.3	4,417.5	20.7%	757.9	17.2%
MUROS DE NALON	1,846	993.6	41.0	48.5	30.7	122.8	1,236.6	19.6%	205.5	16.6%
VEGADEO	3,866	1,629.0	86.9	72.3	41.8	191.2	2,021.2	19.4%	328.0	16.2%
PEÑAMELLERA BAJA	1,246	409.5	29.1	12.9	9.3	42.7	503.5	18.7%	80.9	16.1%
LAVIANA	13,087	3,853.6	148.5	175.3	146.1	414.7	4,738.1	18.7%	735.8	15.5%
SIERO	51,662	23,339.6	701.6	1,238.2	653.5	2,214.2	28,147.2	17.1%	4,336.5	15.4%
EL FRANCO	3,830	1,506.4	50.2	56.2	30.9	229.9	1,873.6	19.6%	284.3	15.2%
SALAS	5,084	1,941.5	47.2	54.0	29.8	260.0	2,332.5	16.8%	326.6	14.0%
PILOÑA	7,101	2,689.5	107.0	101.3	65.2	217.6	3,180.6	15.4%	437.2	13.7%
PESOZ	146	57.1	2.0	1.8	1.2	10.3	72.4	21.1%	9.9	13.7%

CASO	1,553	483.6	27.6	16.7	13.4	31.0	572.2	15.5%	78.2	13.7%
RIBADEDEVA	1,758	945.1	38.3	41.4	26.8	62.0	1,113.7	15.1%	150.2	13.5%
CORVERA DE ASTURIAS	15,721	5,596.8	157.1	273.2	147.7	464.9	6,639.7	15.7%	886.4	13.4%
SARIEGO	1,254	714.6	18.5	24.2	14.4	63.3	835.0	14.4%	108.9	13.0%
ALLER	10,808	3,534.5	125.6	101.9	65.1	311.2	4,138.3	14.6%	529.6	12.8%
PEÑAMELLERA ALTA	531	220.5	13.4	4.7	4.0	15.4	258.0	14.5%	32.7	12.7%
CUDILLERO	5,078	2,822.0	111.9	93.5	56.5	255.8	3,339.7	15.5%	421.2	12.6%
PROAZA	737	247.2	10.7	8.9	4.2	13.2	284.2	13.0%	35.4	12.5%
TARAMUNDI	646	280.3	11.8	10.3	5.3	31.5	339.2	17.4%	41.9	12.3%
SANTO ADRIANO	288	131.4	6.2	6.8	4.4	2.6	151.4	13.2%	18.3	12.1%
VILLAVICIOSA	14,430	6,883.5	296.1	272.0	207.2	282.6	7,941.3	13.3%	947.5	11.9%
SOTO DEL BARCO	3,887	1,959.5	60.4	59.1	37.4	153.0	2,269.5	13.7%	270.1	11.9%
PARRES	5,353	2,465.8	100.4	131.0	75.1	92.2	2,864.5	13.9%	329.9	11.5%
SOMIEDO	1,125	392.7	20.3	7.8	5.7	19.8	446.4	12.0%	51.3	11.5%
RIOSA	1,933	497.7	24.5	24.1	14.4	14.8	575.5	13.5%	65.9	11.4%
CARAVIA	477	393.9	14.3	14.3	10.1	19.0	451.5	12.8%	51.2	11.3%
VALDES	11,734	6,011.9	210.5	230.3	121.4	413.1	6,987.2	14.0%	789.5	11.3%
VILLANUEVA DE OSCOS	298	142.7	3.0	3.7	2.6	13.0	164.9	13.5%	17.6	10.7%
YERNES Y TAMEZA	140	32.9	2.9	0.2	0.2	1.7	37.9	13.0%	4.0	10.7%
BIMENES	1,700	621.2	11.8	15.7	11.6	86.5	746.7	16.8%	79.1	10.6%
RIBADESELLA	5,730	3,880.9	114.9	122.5	85.6	206.4	4,410.3	12.0%	462.9	10.5%
LLANES	13,639	9,689.0	231.1	212.0	131.5	716.1	10,979.7	11.8%	1,149.2	10.5%
CABRANES	1,035	394.6	22.2	13.5	10.2	3.9	444.3	11.2%	46.2	10.4%
MORCIN	2,631	970.2	24.6	35.9	20.3	53.2	1,104.2	12.1%	111.6	10.1%
GOZON	10,427	5,534.9	223.9	184.2	123.1	224.0	6,290.1	12.0%	632.2	10.0%
TEVERGA	1,628	548.4	32.7	15.1	8.1	12.2	616.5	11.0%	61.0	9.9%
SAN TIRSO DE ABRES	433	164.2	8.3	6.6	3.3	0.9	183.3	10.5%	17.9	9.8%
COLUNGA	3,332	2,198.0	72.0	54.5	36.1	99.6	2,460.1	10.7%	240.0	9.8%
CABRALES	2,002	985.6	38.0	26.9	16.1	48.3	1,114.8	11.6%	107.2	9.6%
GRANDAS DE SALIME	853	280.3	9.3	13.4	6.1	5.0	314.0	10.7%	29.6	9.4%
ILLAS	1,022	369.7	15.3	9.4	17.6	1.3	413.2	10.5%	38.0	9.2%
LAS REGUERAS	1,865	797.5	34.7	20.2	13.9	24.5	890.8	10.5%	81.6	9.2%

SAN MARTIN DE OSCOS	393	142.5	2.3	1.9	1.4	13.2	161.3	11.6%	14.5	9.0%
RIBERA DE ARRIBA	1,857	947.7	37.8	34.4	22.1	0.0	1,041.9	9.0%	87.0	8.3%
BOAL	1,571	556.1	14.6	13.9	8.4	34.8	627.7	11.4%	51.8	8.3%
PONGA	598	204.3	9.5	4.2	4.0	2.5	224.5	9.0%	18.2	8.1%
VILLAYON	1,248	385.6	7.4	8.0	5.4	24.7	431.1	10.5%	34.6	8.0%
QUIROS	1,194	424.7	14.2	10.1	6.4	14.1	469.4	9.5%	37.2	7.9%
ONIS	740	517.2	15.2	12.1	5.5	26.5	576.5	10.3%	45.5	7.9%
PRAVIA	8,282	3,811.7	85.9	113.0	60.0	164.7	4,235.3	10.0%	320.5	7.6%
NAVA	5,334	2,300.1	77.4	70.3	44.5	13.7	2,506.0	8.2%	188.1	7.5%
CANGAS DE ONIS	6,278	3,934.5	103.5	115.5	64.6	94.9	4,312.9	8.8%	312.2	7.2%
LENA	11,086	4,814.1	113.0	126.5	72.8	138.4	5,264.9	8.6%	369.3	7.0%
TINEO	9,543	4,253.0	58.9	111.0	47.7	151.4	4,621.9	8.0%	317.8	6.9%
BELMONTE DE MIRANDA	1,522	822.4	14.2	11.1	5.6	61.3	914.6	10.1%	62.7	6.9%
CANDAMO	1,985	778.0	18.4	16.8	12.1	19.3	844.6	7.9%	54.4	6.4%
CANGAS DEL NARCEA	12,579	4,890.2	56.5	85.9	43.6	212.4	5,288.6	7.5%	334.3	6.3%
AMIEVA	675	223.8	6.1	2.5	2.1	4.1	238.6	6.2%	12.5	5.3%
IBIAS	1,301	448.6	3.5	4.6	2.4	28.7	487.7	8.0%	24.8	5.1%
DEGAÑA	949	440.5	6.4	4.7	3.3	13.2	468.1	5.9%	20.5	4.4%
ALLANDE	1,697	740.3	7.7	7.4	4.0	29.1	788.6	6.1%	33.8	4.3%
ILLANO	352	143.1	1.6	1.1	0.6	5.7	152.1	5.9%	6.1	4.0%

Source: Centro de Tratamiento de Residuos de Asturias[27]

27 https://www.cogersa.es/metaspace/portal/14498/50283

For **group 3** we have focused on waste collection data in the province of **Gipuzkoa**, in the Basque Country. As Table 3-16 below shows, Gipuzkoa is the Basque province with the highest separate collection rate (also one of the Spanish provinces with the highest performance level). With separate collection rates exceeding 55% and a recycling rate of 52% (Eustat. Indicadores de la Agenda 2030 para el Desarrollo Sostenible)[28], the province is in line with the European Union's 2025 targets. .

Table 3-16 Collection by province in the Basque Country, 2018

Provinces	Population (2021)	Waste collection (2018)			Separate collection rate (%)
		Mixed collection	Separate collection	All	
Álava	195,309	82,792	46,266	129,058	35.8%
Bizkaia	829,837	304,590	187,767	492,357	38.1%
Gipuzkoa	539,385	130,891	168,993	299,884	56.4%
Basque Country	2,193,199	518,273	403,026	921,299	43.7%

Source: EUSTAT. Basque Statistics Body

The province of Gipuzkoa has 88 municipalities and 670,718 inhabitants (2019), of whom 187,415 (28%) live in the capital, San Sebastián. Other important towns are Irun (62,400 inhabitants), Errenteria (39,470 inhabitants), Eibar (27,552 inhabitants), Zarautz (23,232 inhabitants), Arrasate-Mondragon (22,001 inhabitants), and Hernani (20,354 inhabitants). Most municipalities implemented a Type 1 (5 fractions) collection model, where there are containers for light packaging (yellow), glass (green), paper and cardboard (blue), bio-waste (brown), and other waste (grey or rectangular-green). This Type one model is complemented by specific collections of oils, WEEE, textiles and batteries.

In 2019, most municipalities for which data has been reported achieved separate collection rates of 50% or higher (see Table 3-17). The only exceptions were Eibar, Mendaro (1,999 inhabitants), San Sebastian, and Lasarte-Oria (18,380 inhabitants). Separate collection rates in these municipalities ranged from 41.9% in San Sebastian to 49.1% in Mendaro.

Once extensively implemented across municipalities in the province, door-to door waste collection has been recently abandoned in most municipalities. While door-to-door collection seems to be a common and easy way to connect a household to their waste generation, in high-density contexts alternative models may generally be more effective, such as communal containers, for waste collection (Diana Saleh, et al. 2019)[29].

28 https://es.eustat.eus/elementos/ele0018700/proporcion-de-residuos-municipales-reciclados-en-relacion-al-total-de-residuos-municipales-generados-y-tratados-por-territorio-historico-indicadores-de-la-agenda-2030-ca-de-euskadi/tbl0018700_c.html

29 Diana Saleh, Marie Salova Biel Bulbena, Thomas Loderus and Maria Calaf Forn (2019) User identification for municipal waste collection in high-density contexts

Table 3-17 Municipal waste collected classified by type of waste and municipalities of the province of Gipuzkoa, in the Basque Country (2019)

Gipuzkoa	Population	Mixed collection	Separate collection (2019)					All (mixed + separate)	Separate collection rate (%)
			Glass	Paper & cardboard	Light packaging	Bio-waste	Other		
Debabarrena	**72,857**	**14,751,275**	**2,302,095**	**3,718,688**	**1,547,130**	**4,928,350**	**2,950,097**	**30,197,635**	**51.2%**
Deba	5,459	1,188,811	279,119	302,184	162,483	515,242	196,944	2,644,783	55.1%
Eibar	27,522	4,711,572	800,497	1,379,139	544,196	1,978,642	1,029,800	10,443,847	54.9%
Elgoibar	11,613	2,650,195	410,779	577,526	226,635	700,531	605,729	5,171,395	48.8%
Mendaro	1,999	575,970	46,976	166,267	49,771	113,167	179,229	1,131,380	49.1%
Mutriku	5,333	936,629	237,476	249,155	166,677	445,687	176,584	2,212,208	57.7%
Soraluze/Placencia de las Armas	3,883	719,924	105,108	112,670	65,866	258,400	64,737	1,326,705	45.7%
Mallabia	1,158	672,750	48,428	338,284	31,874	107,286	179,209	1,377,831	51.2%
Ermua	15,890	3,295,424	373,712	593,463	299,628	809,395	517,865	5,889,487	44.0%
Debagoiena	**62,707**	**5,364,547**	**2,430,511**	**3,531,771**	**2,469,470**	**7,142,237**	**3,117,952**	**24,056,488**	**77.7%**
Antzuola	2,126	138,905	79,435	88,429	71,710	229,093	86,732	694,304	80.0%
Aretxabaleta	7,128	565,295	229,696	317,059	276,395	751,678	304,002	2,444,126	76.9%
Arrasate/Mondragón	22,001	2,105,789	838,042	1,241,260	883,412	2,596,442	1,076,379	8,741,325	75.9%
Bergara	14,637	1,094,046	598,140	976,616	593,800	1,717,720	703,907	5,684,228	80.8%
Elgeta	1,136	110,497	38,809	87,095	47,970	92,526	44,975	421,871	73.8%
Eskoriatza	4,065	365,747	135,445	199,371	178,502	453,493	179,794	1,512,352	75.8%
Leintz-Gatzaga	234	16,709	14,958	6,706	8,916	6,583	7,975	61,847	73.0%
Oñati	11,380	967,560	495,986	615,235	408,765	1,294,702	714,187	4,496,435	78.5%
San Marcos	**317,065**	**71,154,367**	**11,841,996**	**19,724,261**	**9,880,602**	**17,835,788**	**13,275,271**	**143,712,285**	**50.5%**
Astigarraga	6,532	821,527	267,284	654,774	289,180	723,069	617,010	3,372,844	75.6%
Donostia-San Sebastián	187,415	52,821,555	7,612,594	11,903,333	5,417,630	6,505,913	6,590,992	90,852,017	41.9%
Errenteria	39,471	5,565,652	1,071,005	1,804,635	1,126,400	3,173,998	1,610,048	14,351,738	61.2%
Hernani	20,354	1,572,576	703,049	1,280,545	685,980	2,086,019	628,203	6,956,372	77.4%
Lasarte-Oria	18,380	3,825,926	530,696	966,930	471,440	769,663	637,744	7,202,399	46.9%
Lezo	6,122	904,485	250,404	461,039	235,310	718,282	462,200	3,031,720	70.2%
Oiartzun	10,293	1,702,567	414,216	1,002,075	427,530	1,357,808	1,455,766	6,359,962	73.2%
Pasaia	16,156	2,672,888	539,271	745,934	705,052	967,321	450,199	6,080,665	56.0%
Urnieta	6,168	853,411	233,427	492,656	236,000	600,675	487,188	2,903,357	70.6%
Usurbil	6,174	413,780	220,050	412,340	286,080	933,040	335,921	2,601,211	84.1%
Sasieta	**69,906**								
Arama	200								
Altzaga	183								

Ataun	1,693								
Beasain	13,880								
Ezkio	454								
Gabiria	488								
Gaintza	128								
Idiazabal	2,312								
Itsaso	157								
Itsasondo	658								
Lazkao	5,742								
Legazpi	8,371								
Legorreta	1,417								
Mutiloa	249								
Olaberria	953								
Ordizia	10,394								
Ormaiztegi	1,276								
Segura	1,467								
Urretxu	6,756								
Zaldibia	1,613								
Zegama	1,528								
Zerain	259								
Zumarraga	9,728								
Tolosaldea	**62,242**	**5,314,161**	**1,961,576**	**2,445,522**	**2,177,118**	**4,831,820**	**365,242**	**17,095,439**	**68.9%**
Abaltzisketa	333								
Aduna	469								
Albiztur	304								
Alegia	1,722	95,413	62,631	76,893	57,084	173,600	9,419	475,040	79.9%
Alkiza	367								
Altzo	435								
Amezketa	921								
Andoain	14,637	1,540,550	444,618	586,236	514,746	1,111,122	89,725	4,286,997	64.1%
Anoeta	2,090	146,776	62,987	96,553	78,356	151,888	13,088	549,648	73.3%
Asteasu	1,551								
Baliarrain	138								
Belauntza	241								
Berastegi	1,076								
Berrobi	603								
Elduain	250								
Gaztelu	152								
Hernialde	303								
Ibarra	4,199	286,195	125,929	183,076	184,474	361,815	32,468	1,173,957	75.6%
Ikaztegieta	498	28,636	14,795	23,439	27,096	43,005	3,791	140,762	79.7%

Irura	1,852	218,743	46,983	66,004	66,681	165,564	11,430	575,405	62.0%
Larraul	251								
Leaburu	372								
Lizartza	603								
Orendain	218								
Orexa	121								
Tolosa	19,667	2,299,528	824,119	1,049,837	862,260	2,074,155	143,079	7,252,978	68.3%
Villabona	5,867	411,776	261,091	251,914	268,719	532,589	46,864	1,772,953	76.8%
Zizurkil	3,002	286,544	118,423	111,570	117,702	218,082	15,378	867,699	67.0%
Txingudi	**79,229**	**20,292,092**	**2,654,224**	**5,495,654**	**1,691,580**	**6,944,058**	**6,238,227**	**43,315,835**	**53.2%**
Irun	62,401	16,233,674	2,123,379	4,396,523	1,353,264	5,555,246	4,990,582	34,652,668	53.2%
Hondarribia	16,828	4,058,418	530,845	1,099,131	338,316	1,388,812	1,247,646	8,663,167	53.2%
Urola Erdia	**32,300**	**3,884,592**	**1,248,764**	**1,970,429**	**1,190,793**	**3,062,550**	**488,985**	**11,846,113**	**67.2%**
Aizarnazabal	772	80,842	29,305	47,742	30,914	1,280	22,328	212,410	61.9%
Azkoitia	11,633	1,593,553	414,999	652,514	392,663	1,055,060	192,841	4,301,630	63.0%
Azpeitia	14,936	1,642,323	585,036	934,171	564,238	1,643,520	189,966	5,559,254	70.5%
Beizama	143	10,396	6,517	3,743	5,033	0	1,578	27,266	61.9%
Bidania-Goiatz	520	51,280	24,364	38,986	19,391	5,960	6,695	146,676	65.0%
Errezil	585	41,802	25,566	7,268	15,959	3,240	2,775	96,610	56.7%
Zestoa	3,711	464,397	162,977	286,006	162,595	353,490	72,802	1,502,266	69.1%
Urola Kosta	**44,318**	**7,125,180**	**2,199,422**	**2,932,188**	**2,008,241**	**4,996,276**	**2,611,444**	**21,872,751**	**67.4%**
Aia	2,054	639,810	85,477	178,725	85,427	260,095	125,184	1,374,718	53.5%
Getaria	2,821	394,314	243,298	218,335	159,412	418,386	167,250	1,600,995	75.4%
Orio	6,022	1,035,154	266,072	411,496	334,989	717,314	345,887	3,110,912	66.7%
Zarautz	23,323	3,644,986	1,160,711	1,591,223	1,063,721	2,603,758	1,372,464	11,436,863	68.1%
Zumaia	10,098	1,410,916	443,864	532,410	364,693	996,722	600,658	4,349,262	67.6%

Note: data for municipalities with empty cells could not be found

Source: Diputación de Gipuzkoa. Observatorio de Residuos[30]

30 https://www.gipuzkoa.eus/es/web/ingurumena/residuos-urbanos/observatorio/datos-gestion

3.1.4 Waste treatment performance

Once collected, the destination of the waste streams depends on the Autonomous Community. They may end up in composting, anaerobic digestion or mechanical-biological treatment facilities, in energy recovery, in landfills, in public composting facilities (in some municipalities only), etc. The most common treatments according to the fraction collected are shown in Table 3-18 below.

Table 3-18 Treatment systems by type of fraction

FRACTION	TREATMENT
Organic Fraction	– Composting facility – Anaerobic digestion installation
Rest	– Selection and classification plant – Mechanical-biological treatment – Incinerator (energy recovery or disposal) – Landfill with energy recovery of the captured biogas – Landfill without energy recovery of the captured biogas
Light Packaging	– Selection and classification plant for subsequent recycling
Glass	– Glass separation and preparation plant
Paper and paperboard	– Paper and cardboard separation and preparation plan
Bulky	– Selection and treatment of voluminous plant
WEEE	– WEEE treatment facility
Textiles	– Textile separation and preparation plant
Dangerous	– Hazardous treatment facility

Treatment: national level

The effectiveness of waste collection subsequently affects the effectiveness of treatment. Although the four main fractions separately collected are paper & cardboard, organic, glass, and mixed packaging, selective collection is not carried out in a generalised way in the country.

Although Spain has increased its municipal waste recycling rates in the last years, the country's recycling rate in 2019 was 38% (i.e., 10% points below the EU average of 48%) while 51% of waste was dumped in landfills and the remaining 11% was incinerated (see Table 3-19). These percentages do not comply with the current hierarchy of priorities established by the European Union through the EU Waste Framework Directive. Moreover, the country is at high risk of not meeting the 2020 recycling rate set in the Waste Framework Directive (i.e., to recycle 50% of specific materials in household and similar wastes by 2020).

Table 3-19 Final treatment of municipal waste by type of treatment (%)

Final treatment	2015	2016	2017	2018	2019
Recycled	29.79	33.86	36.11	34.79	37.96
Landfilled	57.76	54.12	51.16	53.61	51.05
Incinerated	12.45	12.02	12.73	11.60	10.99

Source: National Statistics Institute (INE)[31]

Table 3-20 Municipal waste treated by type of treatment (2019)

Final treatment	Mixed waste	Separate waste				All waste
		Glass	Paper & cardboard	Light packaging	Other	
Generated/ collected	17,034,229	889,076	1,287,418	827,965	2,223,001	22,261,689
Recycled	742,119 (4.4%)	889,076 (100%)	1,287,418 (100%)	526,606 (63.6%)	933,605 (10.0%)	4,378,824 (19.7%)
Composted	3,349,719 (19.7%)	0	0	0	722,578 (21.3%)	4,072,297 (18.3%)
Landfilled	10,677,702 (62.7%)	0	0	249,984 (30.2%)	437,277 (17.7%)	11,364,963 (51.1%)
Incinerated	2,264,689 (13.3%)	0	0	51,375 (6.2%)	129,540 (3.8%)	2,445,604 (11.0%)

Note: total generated does not include construction and demolition waste
Source: MITECO[32]

Treatment: ACs and installation level

Table 3-21 shows the type of treatment by Autonomous Community in 2019. It must be noted that the quantities of waste landfilled and incinerated include recycling and composting rejects. The amount of landfilled waste only includes municipal waste (i.e., it does not consider non-hazardous industrial waste which may also be landfilled).

Table 3-21 Municipal waste treated by type of treatment by AC (2019)

Autonomous Community	Materials recycling rate	Composting + MBT rate	Total Recycling rate	Landfill rate	Incineration rate
C.A. Andalucía	14.7%	20.3%	35.0%	65.0%	0.0%
C.A. Aragón	16.8%	14.3%	31.1%	68.9%	0.0%
Asturias	17.3%	3.5%	20.9%	79.1%	0.0%
C.A. Islas Baleares	17.2%	5.7%	22.9%	21.0%	56.1%
C.A. Canarias	17.4%	15.4%	32.7%	67.3%	0.0%
C.A. Cantabria	16.3%	18.7%	35.0%	24.3%	40.7%
C.A.Castilla-La Mancha	14.5%	26.9%	41.4%	58.6%	0.0%
C.A.Castilla y León	17.6%	18.5%	36.1%	63.9%	0.0%
C.A. Cataluña	29.6%	24.1%	53.7%	29.7%	16.5%
C.A. Extremadura	16.6%	31.0%	47.6%	52.4%	0.0%
C.A. Galicia	15.9%	5.5%	21.4%	30.5%	48.2%
C.A. La Rioja	23.4%	44.4%	67.8%	32.2%	0.0%

31 https://www.ine.es/jaxi/Tabla.htm?path=/t26/e068/p04/serie/l0/&file=01002a.px&L=0

32 MEMORIA ANUAL DE GENERACIÓN Y GESTIÓN DE RESIDUOS RESIDUOS DE COMPETENCIA MUNICIPAL. 2019

C. de Madrid	17.7%	7.3%	25.0%	60.8%	14.1%
Murcia	15.5%	16.9%	32.4%	67.6%	0.0%
C. Foral de Navarra	25.9%	21.6%	47.5%	52.5%	0.0%
C.A. País Vasco	39.5%	3.7%	43.2%	29.6%	27.2%
C. Valenciana	17.7%	32.0%	49.7%	50.1%	0.3%
Ceuta	11.4%	18.2%	29.7%	70.3%	0.0%
Melilla	12.0%	0.0%	12.0%	0.0%	88.0%
TOTAL	**19.7%**	**18.3%**	**38.0%**	**51.1%**	**11.0%**

Source: MITECO

Just two ACs (Catalonia and La Rioja) achieved recycling rates higher than 50%. In addition, four ACs (Castilla-La Mancha, Navarra, Basque Country and Valencia) achieved recycling rates higher than the national average of 38%. It must be taken into account that these figures include the recycling of mixed waste in MBT facilities - according to the Commission's reporting rules[33], from 2027 this should not be counted as recycling. Ceuta's waste is treated in facilities of Andalusia.

In 2019, 11.4 Mt of municipal waste were sent to 114 active landfills: 20 in Andalusia, 8 in Aragon, 1 in Asturias, 4 in the Balearic Islands, 8 in the Canary Islands, 1 in Cantabria, 6 in Castilla-La Mancha, 10 in Castilla Leon, 23 in Catalonia (plus 5 inactive), 8 in the Community of Valencia (plus 3 inactive), 7 in Extremadura, 2 in Galicia, 1 in La Rioja (plus 1 inactive), 4 in the Community of Madrid (plus 2 inactive), 4 in the Region of Murcia, 4 in Navarra, and 3 in the Basque Country (plus 6 inactive). The ACs and Autonomous Cities that take more waste to landfill are Asturias (79.1%), Ceuta (70.3%), Aragon (68.9%), and Murcia (67.6%). The regions that dispose less waste in landfills are Melilla (0%), Balearic Islands (21%), Cantabria (24,3%), and the Basque Country (29,6%).

In 2019, 2.4 Mt of municipal waste was incinerated in the 10 existing incineration facilities for municipal waste. Just 6 ACs (Balearic Islands, 56.1%; Galicia, 48.2%; Cantabria, 40.7%; Basque Country, 27.2%; Catalonia, 16.5%; and Madrid, 14.1%) and the Autonomous City of Melilla (88%) incinerated a share of their waste. The incineration plants are located in the following ACs and municipalities: 1 in Cantabria (Meruelo), 4 in Catalonia (Sant Adrià del Besòs, Mataró, Salt i Sarriá de Ter, and Tarragona), 1 in Galicia (Cerceda), 1 in the Balearic Islands (Palma de Mallorca), 1 in Madrid (Madrid), 1 in Melilla and 1 in the Basque Country (Bilbao).

3.1.5 Waste management in the Spanish Recovery and Resilience Plan (RRP)

The Spanish Recovery and Resilience Plan (RRP) will support climate objectives aiming for a green transition through large-scale energy-efficiency renovations, renewable energy investments in the industrial sector, a hydrogen roadmap, house renovations, water and **waste management** and sustainable transport (including zero and low emission vehicles). It will also reform and digitalise the

[33] Commission Implementing Decision (EU) 2019/1004 of 7 June 2019 laying down rules for the calculation, verification and reporting of data on waste in accordance with Directive 2008/98/EC of the European Parliament and of the Council and repealing Commission Implementing Decision C(2012) 2384

public administration, improve the functioning of the labour market and upgrade education and training across the country[34].

The Commission's assessment finds that green transition plans make up 40% of Spain's total allocation, including measures to mitigate adverse effects of climate change, while 28% was dedicated to digital transition. The remainder was allocated to economic and social resilience. The assessment also finds that none of the measures included in the plan do any significant harm to the environment. Taking this into account, the European Commission will disburse €69.5 billion in grants[35] for Spain.

In the waste sector, the Spanish RRP lays the foundations for moving beyond the linear economy and promoting a new model of production and consumption, based on value retention and waste minimisation. In this model, waste that cannot be avoided should be used as much as possible. This is made explicit in Component 12 (Industrial Policy Spain 2030) of the RRP, where the main challenges facing the industry are tackled (e.g., data-driven digital transformation, reinforcement of industry and services in the Spanish economy, improving efficiency in the management of water, waste, energy and energy efficiency). Within this component, EUR 3.8 billion is allocated for the New Industrial Policy Spain 2030 and the Circular Economy Action Plan for the first three years (2021-2023) of the RRP. Out of this 3.8 billion, 400 M€ is allocated to Component 12. I-1 (Sectoral data spaces - contribution to digitization projects of strategic productive sectors), 2,531.5 M€ is allocated to Component 12. I-2 (Programme to boost the industrial competitiveness and sustainability - *Programa de Impulso de la Competitividad y Sostenibilidad Industrial*), and 850 M€ is allocated to Component 12. I-3 (Support plan for the implementation of waste legislation and to the promotion of the Circular Econonmy - *Plan de apoyo a la implementación de la normativa de residuos y al fomento de la economía circular*).

Component 12 of the RRP also proposes two major reforms with no associated investment nor state aid involved. First, to reform the 1992 Industry Law by December 31st, 2023. This reform aims at improving the coordination mechanisms between the different levels of government involved in the implementation of the industrial policy in the country. It also aims at improving the industrial quality and safety through a strengthened market surveillance system. Second, to promote national and EU-level circular economy ambitions. This reform shall include the approval of a Spanish Strategy for the Circular Economy in June 2020 (align with the EU Circular Economy Action Plan). The reform will also include a package of acts on the circular economy to regulate the shipment and disposal of waste, the management of end-of-life vehicles and tyres, as well as regulatory measures on packaging and packing waste. To this end, several Royal Decrees (553/2020 of 2 June 2020, 646/2020, of 7 July 2020, 731/2020, of 4 August 2020, 27/2021, of 19 January, and 265/2021, of 13 April) were recently approved. As part of this package, the new Law on Waste and Contaminated Soils for a circular economy entered into force in April 2022. The latter includes the implementation of the EU Waste Framework Directive and the Single-use Plastics Directive, as well as an adaptation of Spanish regulations in light of the experience of the last ten years. This waste policy incorporates the new EU objectives related to separate collection (including of bio-waste), as well as objectives that go beyond

34 European Commission (2021). Laying the foundations for recovery: Spain. (https://ec.europa.eu/info/system/files/spain-recovery-resilience-factsheet_en.pdf)

35 European Commission (2021). NextGenerationEU: European Commission endorses Spain's e69.5 billion recovery and resilience plan. (https://ec.europa.eu/commission/presscorner/detail/en/ip_21_2987)

the EU law. It also introduces a tax on waste (on landfilling, incinerating and co-incinerating, and single-use plastic containers).

Within Component 12 of the RRP, the Plan to support the implementation of waste legislation and the promotion of the circular economy will be implemented (investment I-3). The measures included in this Plan, as well as the estimated necessary investments, are based on the study of the Commission European titled "Study on investment needs in the waste sector and on the financing of municipal waste management in Member States" for the horizon 2021-2035. The amount of the necessary investment in Spain is estimated at 2,459 M€ (Measure 1: 1,165 M€; Measure 2: 397 M€; Measure 3: 793 M€; Measure 4: 100 M€; Measure 5: €4 million), of which 850 M€ (includes the additional investment planned for private companies, as well as additional actions in the field of digitization of environmental management) will be invested between 2021 and 2023: 500 M€ in 2021 to allow an early implementation of projects, 300 M€ in 2022 and 50 M€ in 2023.

Table 3-22 shows the economic distribution among the 6 measures of the Plan to support the implementation of waste legislation and the promotion of the Circular Economy. The investments included and their distribution are indicative and may be more flexible to enable and achieve better usage and overall results. Regarding the foreseen investments in waste collection and treatment, 96% of them are earmarked for measures directly contributing to increasing reuse and recycling rates. In line with the investment distribution presented by the European Commission in the “Study on investment needs in the waste sector and on the financing of municipal waste management in Member States”, a small portion of the investments may be set aside for the treatment of the residual fraction (collection, sorting and classification facilities, and improved mechanical-biological treatment facilities). However, these investments cannot increase the capacity or extend the useful life of these facilities.

Table 3-22 Investment of the plan to support the implementation of waste legislation and the promotion of the circular economy (2021-2023)

Measure	Amount
1. Implementation of new separate collections, especially for bio-waste, and improvement of the existing ones	280 M€
2. Construction of specific facilities for the treatment of separately collected bio-waste	96.2 M€
3. Construction of new preparation for reuse and recycling facilities for other separately collected waste	191 M€
4. Investments in collection facilities (e.g., civic amenity sites), classification and sorting facilities (packaging, paper, etc.) and improvements to existing mechanical-biological treatment plants	24 M€
5. Development of digitalisation tools for environmental management	100.5 M€
6. Promotion of the circular economy at the company level	158.3 M€
Measures 1 - 6	**850 M€**

Source: RRP. Component 12. Industrial Policy Spain 2030 (2021)

The measures in Table 3-22 are described below.

Implementation of new separate collections, especially for bio-waste, and improvement of the existing ones

The implementation of separate collection of municipal bio-waste will be mandatory under EU law from 2024 (Directive 2008/98/EC, Waste Framework Directive). It is also essential to meet the EU's preparation for reuse and recycling targets, as outlined in the national Waste Framework Plan, and must be accompanied by the improvement of existing separate collections (paper/ cardboard, glass, and light packaging). Projects that could be financed under this line include those related to the implementation, extension or improvement of separate collection of bio-waste to be treated in specific biological treatment facilities (composting, anaerobic digestion or both); projects for the separation and recycling of bio-waste at source using household and/or community comporting; projects for the implementation or improvement of separate collection of used cooking oil for recovery, particularly for biofuel; and projects related to the implementation or improvement of separate collection of textile waste to prepare them for reuse and recycling.

Construction of specific facilities for the treatment of separately collected bio-waste

The separate collection of municipal bio-waste must be implemented by 2024. This waste has to be treated in specific biological treatment facilities, as required by EU (Directive 2008/98/EC, Waste Framework Directive) and Spanish law, to be classified as recycled waste.

Construction of new preparation for reuse and recycling facilities for other separately collected waste

In addition to the mandatory municipal bio-waste separate collection and treatment, the improvement of existing (light packaging, paper, and glass) and implementation of mandatory separate collection of other types of waste (textile waste or hazardous household waste) is also required. These also require a differentiated treatment line to make them available for reuse and recycling. As a result, investment in waste treatment facilities is required.

Investments in collection facilities (e.g., civic amenity sites), classification and sorting facilities (packaging, paper, etc.) and improvements to existing mechanical-biological treatment plants
The investments in collection facilities such as civic amenity sites will increase the recycling of waste streams that are usually collected in these facilities (such as household hazardous waste)
There will always be waste that is collected as a mix. This must also be treated to maximise the recovery and use of the materials contained in it. By doing so, a contribution to achieving the EU targets for preparation for reuse and recycling is also made, in addition to reducing the waste destined for landfills. This requires investments in waste sorting and classification facilities for light packaging and other waste. Additionally, investments should be designated to improving existing mechanical-biological treatment plants to improve their efficiency, without boosting their capacity or existing useful life, as the promotion of separate collection of municipal waste will lead to a reduction in the amount of waste treated in these facilities.

Development of digitalisation tools for environmental management

Digitalisation plays a key role in the development of a circular economy. In order to achieve efficient management of the information needed to, among other things, ensure a secure and accessible supply chain of materials, reducing waste generation, as well as to facilitate telematic processing investments on digitalisation are needed.

Promotion of the circular economy at the company level

Complementary to other measures included in this investment programme, the deployment of the circular economy in Spain, in which the promotion of a new waste management model plays a central role, requires more than just investments in the waste management sector, it requires investments to introduce companies to circularity.

Funds to date

In April 2021, MITECO has granted 416.3 M€ to regions to promote waste management investments in (i) **separate collection of waste** (especially biowaste), (ii) new facilities for biowaste treatment, (iii) new facilities for preparing for reuse and recycling of separately collected waste (i.e., textiles, plastic), and (iv) new collection facilities (municipal recycling centres) and improvement on mixed municipal waste treatment facilities (existing MBT plants for the purpose of increasing resource efficiency or retrofitting to biowaste recycling operations). Regions will now have to approve their own regional calls before July 2022 in order to distribute the funds among the final recipients (i.e., municipalities).

In September 2021, the Government issued a 0.5 M€ contract for the digitisation of the Waste Registry.

In February 2021 a call for expression of interest for the promotion of Circular Economy in the private sector (focus on circularity in industrial processes) was launched. More than 1,200 proposals for an estimated investment value of 37,800 M€ were received. In 2022, a 190 M€ call will be launched to finance the most appropriate proposals. Potential projects to be financed include (i) actions to reduce the consumption of virgin raw materials, (ii) actions on eco-design and placing on the market of products made under eco-design schemes, (iii) waste management (not municipal waste), and (iv) digitalization in relation to circular economy.

3.2 Long list of high-performing waste management and recycling schemes in Spain and in the European Union

3.2.1 Indicators of performance of waste management and recycling schemes

There are many different indicators that can be used to measure the performance of waste systems and recycling schemes; however, our team decided to use the Municipal Recycling Rate and the Separate Waste Collection Rate. The legal basis for the Municipal Recycling Rate is escribed in the EU Waste Framework Directive[36], while the Separate Waste Collection Rate is escribed in the 'Operational Arrangements' of the Spanish Recovery and Resilience Plan[37]. Each of these indicators are used in the measurement of achievement for high-performing waste management and recycling schemes, though the long list EU waste schemes will rely more so on municipal recycling rates, while the list of autonomous communities will be measured by the separate collection rate.

Municipal Recycling Rate Targets

36 Directive 2008/98/CE on waste
37 Recovery & Resilience Facility. Operational arrangements between the European Commission and Spain – November 2021, downloadable at: https://ec.europa.eu/info/files/operational-arrangement-between-commission-and-spain_en

These targets are helpful to use not only because they are in-line with EU norms, but also because they are gradated for 2025, 2030 and 2035, allowing for multiple levels of achievement. The WFD has three compliance targets, two of which were used in benchmarking levels of achievements, are listed below:

1. By 2020, the preparing for re-use and the recycling of waste materials (such as paper, metal, plastic and glass) from households shall be increased to a minimum of overall 50 % by weight;
2. By 2025, the preparing for re-use and the recycling of municipal waste shall be increased to a minimum of 55 %, 60% and 65% by weight by 2025, 2030 and 2035 respectively;
3. *by 2020, the preparing for re-use, recycling and other material recovery, including backfilling operations using waste to substitute other materials, of non-hazardous construction and demolition waste shall be increased to a minimum of 70 % by weight*.

The third WFD target, was not used as data on the recycling of non-hazardous construction and demolition waste was not as accessible/available as the data outlined in the first two targets listed above.

Therefore, the benchmark with which the consultants compared the waste recycling rate of a municipality to select it in our long-list of high-performing schemes, is whether this rate reached or overtook already now the objectives set by the Waste Framework Directive for the future, namely:

- Prepare for the re-use and recycling of municipal waste to achieve:
    - 50% recycling by weight, by 2020
    - 55% recycling by weight, by 2025
    - 60% recycling by weight, by 2030
    - 65% recycling by weight, by 2035

As a result, there are 4 levels of achievement for our list of high-performing recycling schemes, with each corresponding to the target set for recycling rate by a certain year (2020/2025/2030/2035).

Separate Collection Rate Target

The target that will be used to assess level of achievement under the Spanish RRP commitment is 30% by 2026[38]. This benchmark is used in both the assessment of EU high-performing schemes (when municipal recycling rates are not available), and for the level of achievement of the 17 Spanish Autonomous Communities. As the targets are not gradated as with those in the WFD, measuring the achievement will simply be through a binary classification system (i.e., *Reached/Not Reached*). Some high-performing schemes may be included where the *rate* cannot be established, but that have similar metrics in relation to separate collection. These will be classed as *unclear*, as their rate is not clear or known, but their separate collection quantities are known and significant enough to include in the list of high-performing schemes.

3.2.2 *Sources of data*

As the recycling rates for municipal solid waste does not exist at such a granular level (local/municipal), our team sourced relevant examples from a variety of resources. Our team first consulted the national and regional statistical centres of various EU Member States, which provided

38 Recovery & Resilience Facility. Operational arrangements between the European Commission and Spain – November 2021, objective 188. Document downloadable at: https://ec.europa.eu/info/files/operational-arrangement-between-commission-and-spain_en

useful insights into high performers in a select number of municipalities. Waste coalitions and organisations also provided useful data on particularly high-performers (above 50% recycling rates), as well as news articles. The Table 3-24 List of high-performing schemes in the European Union, provides, for each of the high-performing schemes selected, the source of data being used.

In the case of Spain, several sources of publicly available data were consulted for the identification of high-performing schemes, as detailed in Table 3-23. In most cases, the sources consulted were examples of best practices provided by national and international associations. In other cases, the information was sourced directly from the municipality or from national, regional or local news outlets as well as specialized publications.

Table 3-23 Data sources for high-performing schemes in Spain

Source name and type	Descritpion	Link
Zero Waste Cities (website)	Zero Waste Europe is a Brussels based NGO founded in 2013. It empowers communities to rethink their relationship with resources, operating as a knowledge network and as an advocacy group. Its website contains a section highlighting best practices from frontrunner cities moving towards zero waste in Europe.	https://zerowastecities.eu/best-practices/
Alianza Residuo Cero (website)	It is an alliance made up of the entities Amigos de la Tierra, Ecologistas en Acción, Greenpeace, Retorna, Rezero and Surfrider. It is part of Zero Waste Europe.	https://www.alianzaresiduocero.org/
Green Best Practice Community (website)	An online tool of the European Commision that showcases green best practices, with a section specific to the waste management sector, with best practices for waste management strategy, waste collection, waste prevention and reuse and waste treatment.	https://greenbestpractice.jrc.ec.europa.eu/sector/1
Covenant of Mayors for Climate & Energy (website)	It is an international initiative that brings together local governments committed to achieve and exceed EU climate and energy objectives. Its website contains a "Good practices" section showcasing key actions in several sectors, including the waste sector.	https://www.covenantofmayors.eu/plans-and-actions/good-practices.html
Interreg Europe (website)	Interreg Europe is a cooperation programme, co-funded by the European Union. The European Union strives to reduce disparities in the levels of development, growth and quality of life in and across Europe's regions. The website has a section dedicated to best practices.	https://www.interregeurope.eu/policy-solutions/good-practices
Best Environmental Management Practice for the Waste Management Sector. Learning from frontrunners (publication)	A 2018 publication from the European Commission as part of the JRC Science for Policy Report. Authors: Dri M., Canfora P., Antonopoulos I. S., Gaudillat P.	https://ec.europa.eu/environment/emas/pdf/WasteManagementBEMP.pdf
User identification for municipal waste collection in high-density contexts (publication)	Publicaction from the project developed in the period March-June 2018 under the supervision of Maria Calaf Forn (ENT) in the framework of the "Circular Design" European Project coordinated by the UPC (Universitat Politècnica de Catalunya), by Dr. Jordi Segalàs, Gemma Tejedor and Aya Ulan. Authors: Diana Saleh, Marie Salova, Biel Bulbena, Thomas Loderus and Maria Calaf Forn (ENT)	https://ent.cat/wp-content/uploads/2019/07/User-identification-for-municipal-waste-collection_4.pdf
ENT Medio Ambiente y Gestión/Fundació ENT (website)	ENT Environment and Management was founded in 2002 to carry out innovative projects in the field of environmental management. Later, in 2010, the ENT Foundation was also established as a private non-profit research center	https://ent.cat/en/
Ajuntament de Bunyola (website)	Website of the municipal government of Bunyola, a municipality in the Autonomous Community of the Balearic Islands.	https://ajbunyola.net/ca/noticies/bunyola-poble-lider-en-reciclatge-mallorca
Equipamientos y Servicios Municipales (magazine)	A Spanish tecnichal publication specialized in the management, projections and news in the sector of equipment and services for municipalities.	https://www.eysmunicipales.es/

3.2.3 List of high-performing schemes

Through desk research we developed a long-list of high-performing EU schemes consisting of 'best practices'. We have looked into reports in the matter of Solid Municipal Waste published by EU and international city networks (EuroCities, ICLEI, ACR+, etc.), EU initiatives (e.g. Covenant of Mayors) and EU projects. The EU-funded H2020 project COLLECTORS containing reports on a few recent case studies of best practices concerning paper and packaging waste. The Zero Waste Cities network in addition features on their website best practices across Europe (including Spanish best cases, not featured in this Excel file). Other sources did not provide best practices examples but will be useful for future elements of the project (e.g. the Change Management Plan to be developed under Task 7.4). From these best examples we have selected only cases from the past 5 years (from 2017 onwards). Further desk research was undertaken to find particularly high performing schemes. The main sources of literature that were consulted included fact sheets from waste-oriented NGOs, organisations and other competent, non-governmental bodies. Individual, municipal websites were also consulted to source recycling rate data. Table 3-24 below presents the best practices we propose to focus on. For further data on the cases as well as the longer list of potential best practice examples please refer to the Excel file shared by the Project Manager (Laurent Zibell) on 10 May 2022.

Table 3-24 List of high-performing schemes in the European Union

Category of waste management activity	Location			Best practice	
	Country	Region / County	Municipality	Description	Municipal Recycling Rate
Household waste	Italy	Emilia-Romagna	Parma	Starting in 2014, the municipality launched a series of measures aimed at zero waste. First change: to promote recycling, separate door-to-door collections of organic waste, glass and plastic packaging were progressively introduced in Parma's central and residential areas. Another change was the introduction of an incentive tax: the less waste a household generates, the less they pay. It has produced good results. In just four years, the volume of waste has fallen to 110 kg per person per year. And by 2016 the waste recycling rate had shot up from 49% in 2012 to 76%.	76%

Category of waste management activity	Location			Best practice	
	Country	Region / County	Municipality	Description	Municipal Recycling Rate
Paper and Packaging Waste (PPW)	Netherlands	Overijssel (province)	Tubbergen	The municipality of Tubbergen is a small municipality in the rural east side of the Netherlands, close to the border of Germany. 9,514 tonnes of municipal solid waste (MSW) were generated in 2016. Tubbergen currently collects 94% of the generated paper and packaging waste (PPW) separately from the residual waste and has an estimated recycling rate of 85%. The municipality effectively manages its waste by working together with the regional waste management company NV ROVA. This includes the collection and processing of different types of waste: organic waste (door-to-door collection), commingled plastic, metal and drink cartons (PMD), residual waste and paper (door-to-door collection, bring points, CAS) and glass (bring points). PMD, paper and cardboard and residual waste are all collected using either mini containers or shared containers. In addition, paper and cardboard waste is periodically collected in the Tubbergen municipality by associations and schools (raising money with the paper and cardboard revenues). Glass is collected using 42 communal containers. PMD and metal is transported to Attero in Wijster, the residual waste is transported to Twence in Hengelo, and the paper and cardboard to Remondis and Peute in Rotterdam.	85%
Paper and Packaging Waste (PPW)	Belgium	Flanders	Ghent	Ghent is considered a best practice in terms of paper and packaging waste (PPW) of which 85% is currently collected separately from residual waste. The intermunicipality of IVAGO serves both the city of Ghent and the neighbouring municipality of Destelbergen. IVAGO has its own collection equipment but works together with private company SUEZ to complement the collection services. IVAGO collects residual waste, commingled plastics, metal and drink cartons (PMD), glass and paper and cardboard separately throughout the city and has defined three zones that each have their own collection approach. Depending on the zone, the waste is collected in containers, bags or at bring points. In addition, Ghent has six civic amenity sites where citizens can discard of their waste. The glass waste from Ghent is transported to High 5 Glass sorting and GRL Glass Sorting. Ghent's Paper waste is sorted by Stora Enso Paper Sorting. The residual waste is sent to IVAGO's incinerator. Lastly, PMD is sorted by Suez in the R&R BE North facility.	77%

Category of waste management activity	Location			Best practice	
	Country	Region / County	Municipality	Description	Municipal Recycling Rate
Municipal Solid Waste	Belgium	Flanders	N/A	Waste recycling in 2019 was 63.0% in Flanders, the highest in Belgium (it was 39.7% in Brussels and 43.6% in Wallonia). The average for Belgium was 54.8%.	63,05%
Organic waste, glass and plastic packaging	Romania	Crișana	Sălacea	In 2016, Romania recycled only 13% of its waste, one of the lowest recycling rates in Europe. In the Bihor region, Sălacea - a small town with a population of 3,000 - decided it could do much better. In 2018, the local council set up a selective waste collection system - separating organic waste, glass and plastic packaging - to ensure efficient sorting. In the first month, 66% of waste was recycled (compared to only 3% previously). In total, the volume of non-recyclable waste fell drastically from 109 to 19 kg per person per year.	66%
Biowaste	Slovenia	Central Slovenia	Ljubljana	The development of the most modern plant in Europe for treating biological waste has been a major step towards meeting the city's commitment to a minimum 75% recycling rate by 2025. The Regional Centre for Waste Management (RCERO) opened in 2015 and today services almost a quarter of all Slovenia, uses natural gas to produce its own heat and electricity, processes 95% of residual waste into recyclable materials and solid fuel, and sends less than 5% to landfill. It also turns biowaste into high-quality gardening compost.	95%
Municipal Solid Waste	Italy	Veneto	NA	Contarina is responsible for the management of waste from the municipalities belonging to the Priula Consortium, in the Treviso province that sits within the wider Veneto region, in an area covering approximately 1,300 square kilometres with about 554,000 inhabitants. In 2017, municipalities under Contarina's jurisdiction produced just 56kgs per capita and recycled 85%. Contarina's integrated waste management model has 5 key features: kerbside collection of waste, a progressive PayAs-You-Throw fee, effective communications with and to citizens, environmental supervision checks and an accessible information database regarding the local waste management system. Contarina has set themselves a goal of reducing residual waste from 58kgs per capita in 2017 to just 22kgs by 2022.	85%

Category of waste management activity	Location			Best practice	
	Country	Region / County	Municipality	Description	Municipal Recycling Rate
Biowaste	Italy	Lombardy	Milan	In 2011, the city of Milan started implementing an ambitious scheme to separately collect biowaste and recycle it. With 1.4 million inhabitants and an extremely densely populated area, this wasn't an easy task as biowaste collection schemes are more difficult to set-up in big cities. However, after 10 years, Milan is now one of the leading examples with 95 kilograms of biowaste collected per inhabitants and a 62% waste collection rate.	NA
Municipal Solid Waste	Wales	Monmouthshire	Newport	The social enterprise company Wastesavers has been working with the Council to implement one of the best structured separate collection systems in Europe today. In 2019 Newport not only achieved a recycling rate of 66%, but it also offers one of the lowest cost for households within Wales. Collection is organised and separated into the following categories: Red bag = plastics, cans, foil; Green box = cardboard, tetra cartons, glass jars; Blue box = paper, textiles, small electrical items. Wastesavers provides every household within Newport City with a weekly door to door collection of all materials except garden waste, which is collected alongside residual waste every second week. The story of Newport shows that when separate collection systems prioritise quality over just quantity, and invest heavily in meaningfully engaging with the community, combined with well-designed equipment, world-leading results can be achieved whilst simultaneously reducing costs for local residents.	66%
Municipal Solid Waste	Croatia	Međimurje	Prelog	Within just 5 years, the city of Prelog in northern Croatia has tripled the percentage of its separately collected waste. The city has reduced the amount of the mixed waste local residents produce to below 100 kg per capita, becoming a zero waste best practice in Croatia and beyond. This has been done through door-to-door separate waste collection; Construction of new local waste management infrastructures; Creating a fair but profitable system; through effective education & communication programmes for citizens; and through strong cooperation between the NGO Zelena akcija / Friends of the Earth Croatia / Zero Waste Croatia, the city of Prelog, and 11 other neighbouring municipalities (of different political affiliations) operated by the public company PRE-KOM from Prelog.	NA

Table 3-25 Long list of high-performing schemes in Spain

Category of waste management activity	Autonomous Community	Province	Name of municipality / common-wealth	Municipal Recycling Rate	Level reached for indicator (MRR)	Municipal Collection/ Separation Rate (MCSR)	Level reached for indicator (MCSR)	Source	Date Reached
Municipal Solid Waste	Balearic Islands	Balearic Islands	Bunyola	55.90%	Target for 2025 already reached	79.60%	Reached	Bunyola Municipality	2021
Municipal Solid Waste	Balearic Islands	Balearic Islands	Esporles	78.00%	Target for 2035 already reached			Diario de Mallorca	2022
Municipal Solid Waste	Basque Country	Gipuzkoa	N/A	51.00%	Target for 2020 already reached	70.00%	Reached	Zero Waste Cities	2015
Bio-waste	Basque Country	Gipuzkoa	N/A	51.00%	Target for 2020 already reached	70.00%	Reached	Waste Management BEMP	2015
Municipal Solid Waste	Basque Country	Gipuzkoa	Sasiesta Mankomunitatea (23 municipalities)	76.70%	Target for 2035 already reached			User identification for municipal waste collection	2019
Bio-waste	Basque Country	Gipuzkoa	Hernani			82.0%	Reached	Alianza Residuo Cero	2020
Municipal Solid Waste	Catalonia	Tarragona	Torredembarra	70.0%	Target for 2035 already reached			Covenant of Mayors	2020
Municipal Solid Waste	Catalonia	Barcelona	Argentona	68.50%	Target for 2035 already reached	76.20%	Reached	Zero Waste Cities	2014
Municipal Solid Waste	Catalonia	Josa i Tuixent	Lleida	58.20%	Target for 2025 already reached			Covenant of Mayors	2020

3.2.4 Common features of identified high-performing schemes

A preliminary analysis of the information collected at the end of the Inception Phase on the high-performing schemes in the European Union and in Spain is provided hereunder. This analysis will be deepened, based on additional data collection, in the Task 2.

Among the examples of high-performing waste schemes in the EU, the research focused on examples of municipalities that started with very low recycling rates (>20%) and that managed to achieve recycling rates above the 50% threshold. Some of the schemes listed above vastly improved their municipal waste recycling in just a few years; these examples were particularly sought-after so as to

demonstrate that sharp improvements from a low-recycling schemes are not only possible, but also that there are several real-world examples of these improvements. For instance, in Parma, Italy, the municipal recycling rate increase from 49% in 2012 to 76% in 2016; in Sălacea, Romania, the municipal waste recycled increased from 3% to 66% in just one month in 2018 according to the source (verifying this would need further research) and the volume of non-recyclable waste fell drastically from 109 to 19 kg per person per year; finally, in Prelog, Croatia, the municipality increased its separate collection rate by 200% in just 5 years (from 33 kg per capita to 100 kg per capita). These examples demonstrate that significant progress can be made in a short amount of time, regardless of the initial recycling/collection rate. The list also boasts great geographic diversity across Europe and Spain, demonstrating that these improvements are possible to achieve anywhere in the EU. Another common feature among 6 of the municipalities identified in the list of EU waste schemes is that they introduced door-to-door collection, mostly in the form of organic waste. Bring points for paper, plastic and glass were also considered to be an important factor in the recycling rates within at least half of the municipalities listed. Lastly, five of the municipalities introduced PMD (plastic and metal packaging and beverage cartons) commingling at several amenity sites within the municipality, instead of having separate bins for each of the waste-types.

In Spain, high-performing schemes were generally found in ACs that were also in the high-performing category. However, some outliers were found in some municipalities both in the medium and low performing groups, having reached high-performing status in a short period of time. Measures such as door-to-door collection were in general favoured in low-density areas, although they were also successfully applied in some high-density areas. Lower density areas also favoured the promotion of at-source home and community composting, as well as the creation of decentralized composting sites, whereas Pay-As-You-Throw and user-identification schemes were favoured in more densely populated areas.

4 Appendices

4.1 Minutes of the Kick-Off Meeting

Minutes of Kick-off Meeting

10 February 2022

4.1.1 Participants

MITECO:
- Ines Iribarren Campaña
- Margarita Ruiz Saiz-Aja
- Alicia Pollo Albeniz
- Gema Gonzalo Pedrero

European Commission, DG REFORM:
- Christoph Klockenbring
- Caroline Robert

Trinomics:
- Laurent Zibell
- Rob Williams
- Jessica Yearwood
- Irati Artola
- Laurent Frapaise

Metroeconomica:
- Maria Zubiaga
- Patxi Greño

4.1.2 Agenda

1. Introduction and presentation of participants (5', all)

2. Policy context of the Deliverable (10', MITECO)
3. Feedback on proposal (10', REFORM)
4. Overview of the Deliverable: Objective, scope (5', TRI)
5. Review of tasks (main purpose, anticipated difficulties, open issues): (60', TRI, Metroeconomica)
    - 7.1 Inception phase
    - 7.2 Action Plan and Roadmap
    - 7.3 Capacity-building Activities
    - 7.4 Change Management plan
    - 7.5 Communication Activities
    - 7.6 Contribution to the implementation of the Spanish RRP
6. Proposed timeline (15', TRI)
7. Organisation of work: periodic meetings, reporting, coordination with overall project (10', TRI)
8. Conclusion and closure of the meeting (5', TRI)

4.1.3 Summary of discussion points

Policy context of the Deliverable (MITECO)

Comprehensive presentation of Ines Iribarren covering the following aspects:

- Current regulatory framework for waste in Spain: on waste treatment and landfilling. The Waste Law is currently under revision by the Senate;
- Future regulatory framework for waste in Spain and hence the relevance thereof for Deliverable 7.
- Distribution of competences between the Ministry of Ecological Transition, Regional Authorities and Local authorities and the Coordination Committee of Waste. This cross-ministerial Coordination Committee on Waste can be a good place to collect information for this Deliverable and to disseminate its results
- Implementation of the RRF of Waste Management (investments). So far, 416 MEUR have been allocated by the central government to the Autonomous Communities, mainly to set up the separate collection of biowaste and the facilities to process biowaste. Autonomous Communities are mandated to distribute these funds further to the municipalities before July 2022, according to their own criteria (however "common criteria" specify >50% of funds allocated to the collection of biowaste). In 2022, further 150 MEUR in grants will be allocated to the Autonomous Communities. The criteria for the allocation of funds to the Autonomous Communities relate to: population, variation of population per season, waste generation, gap to 2020 targets, population density.

See slides for details (shared by Ines after the KoM on 10/02/2022)

Actions:

- MITECO to send the project team the slides presented by Ines (done 10-Feb-2022)
- MITECO to send the project team the Draft of the New Waste Law

4.1.4 Feedback on proposal (REFORM)

In other projects of DG REFORM, the tasks of this Deliverable would constitute an autonomous project. In this case, REFORM included these tasks in the overall project for the whole green a. However, this Deliverable 7 should be treated as a complete project on its own.

The consultants will thus need to develop the timeline and the methodology in greater detail, as it would be necessary for a whole project. None of the proposals received from consultants had the level of detail necessary for the needs of this Deliverable.

A specific difficulty is that this project overlaps with the discussion and adoption of the new Spanish Waste Law.

The Autonomous Communities are the key players, as many responsibilities in the field of waste have been delegated there.

The general approach to this Deliverable has been to develop frontrunners, and then to count on a snowballing effect to pull the others by mutual learning.

4.1.5 Objective and scope

This part was supported by one slide presented by Trinomics (attached).

No questions were raised on the objectives as presented in the slide.

Ceuta and Melilla, as Autonomous Cities with competencies analogous to those of Autonomous Communities, should be **included** in scope.

Measures to prevent the generation of waste at source should be **included** in the scope, because the future Waste Law includes prevention targets and measures.

The categories of waste to be included in scope are those defined as "**domestic waste**" by the Spanish Waste Law: all waste generated by households, including construction and demolition waste and hazardous waste when generated by households **(TBC).**

The categories of waste and the nature of the waste management operations in scope should be those defined by the Spanish law as under the responsibility of municipalities **(TBC).**

Actions

- MITECO to confirm that the waste flows in scope include all "domestic" waste flows as defined by the Spanish Waste Law, including the Construction & Demolition waste and the hazardous waste, when generated by households;
- MITECO to confirm that the categories of waste and the nature of the waste management operations in scope are those defined by the Spanish law as under the responsibility of municipalities.

4.1.6 Review of tasks (main purpose, anticipated difficulties, open issues)

This part was supported by a set of slides presented by Trinomics (attached). For each of the tasks, the main purpose of the task, identified difficulties and open issues were presented. These minutes present the discussions held during the meeting. It is assumed that the content of the slides that were not discussed in the meeting are agreed by the participants.

Task 7.1 – Inception phase

The purpose of this task is to get a clear picture of the starting point of the Deliverable:

- **Internal organisation**: scope, detailed methodology and timeline, communication and reporting procedures;
- **Initial picture**:
  - Current **state of play of waste management in Spain**, including (1) the performance achieved along the metrics set by the EU Waste Framework Directive, (2) an outline of clustering of municipalities per performance level, (3) the interplay between municipalities and Autonomous Communities, (4) the allocation of funds from the Recovery & Resilience Facility to waste management;
  - **Long list of high-performing schemes** in Spain and in the EU. Consultants can mention schemes from outside the EU if they come across them and consider them as interesting, but should not seek them actively.

Consequently, the duration of this Task 7.1 should be extended until end of March 2022.

Action

- Consultants to provide a comprehensive Inception Report including (1) Internal Organisation and (2) Initial picture by end March 2022

Task 7.2 – Action Plan and Roadmap

The **Action Plan and Roadmap** should define the **situation to be**, whereas the current state of play (to be drafted in Task 7.1) describes the situation as it currently is.

Data collection

Data collection can be performed at the level of the Autonomous Communities or of the municipalities. The level at which the data collection should be performed has not been specified during the meeting.
Consultants should collect quantitative data on **physical flows** regarding waste: (1) quantities of waste generated per waste stream; (2) how each waste stream is processed (or not). This data should be available from the reporting requirements stemming from the EU Waste Framework Directive.
Consultants should **not** seek financial or business-related data, such as: sale price of recovered material, turnover or profits of waste management companies, as this is protected by corporate confidentiality rules and is very unlikely to be disclosed.
Consultants should collect data on **waste collection fees** and on **gate fees**, as these are publicly available.
Consultant should stick to **official data and metrics**.
It may be useful to sample some municipalities to collect data in greater detail.

Clustering of municipalities in a "ladder" of performance levels
Consultants should define areas of performance and create a multi-dimensional clustering of municipalities, as some municipalities may perform well in some areas and less well in other areas.
Consultants should define, for each area of performance, a set of performance benchmarks. Each municipality should be assigned a benchmark to achieve for each area of performance, so as to set its ambitions at the level needed to ensure a meaningful progress, while remaining realistic. Benchmarks should also be set for good performers, because the requirements will increase over time.

Content of the Action Plan
The instruments to be recommended by the Action Plan should concentrate on those related to **Green Public Procurement**, such as (1) modelling of physical waste flows, (2) specifications of services to be included in calls for tender, (3) evaluation of tenders; but **not** on contractual arrangements, business modelling, market assessments or other business-sensitive economic or financial data.
No other policy tool should be considered than public procurement of waste management services by private companies.
Recommendations should apply to each stage in the process: (1) reduction of waste at source, (2) waste management and (3) waste treatment.
The financial resources of the Recovery & Resilience Plan related to waste management will already have been distributed before the end of this Deliverable, so that **no further funds** are available for investment related to the Action Plan and Roadmap.

Actions

- MITECO to specify the level at which data collection is expected: Autonomous Communities or (if available) municipalities.

Task 7.3 – Capacity-building Activities

The **training sessions** should be **recorded**, so that the persons that could not attend in real-time have the possibility to do so afterwards.
All 17 training sessions will be performed **online**, in order to maximise the number of attendees. Each session will last **one morning**.
MITECO will use its communication channels, such as the Coordination Committee on Waste or the national association of local entities, to **disseminate information** about the training sessions among Autonomous Communities and municipalities, and to **support the recruitment** of participants.

Actions

- Consultants to propose a **segmentation** of attendees (e.g., per size or population density of municipality, per function in the administration) so as to increase their homogeneity in each session beyond what would be reachable if the criterion were purely geographic. This is likely to increase the relevance of each session for its participants.

Task 7.4 – Change Management plan

The Change Management plan (CMP) should be seen as **complementary to the Action Plan and Roadmap**, as a document guiding what needs to be implemented according to the action plan, in other words, *what is needed for the actions in the action plan to happen on the ground?*

As per the ToR, the CMP addresses the **human, social and political disagreements** with the changes implied by the Action Plan & Roadmap, and the means to overcome these disagreements. The concrete technical issues for implementation, such as the best technical arrangement to perform a given waste processing function (e.g., the most effective and lowest-cost method to collect hazardous waste by households,) should be defined in the Action Plan & Roadmap of Task 7.2.

The CMP should **not** be included in the training sessions or in the web-based guide of best practices of Task 7.3.

The organisation to which the Change Management Plan should be applied (the target organisation) is to be defined in the Task 7.4 itself, according to where the main barriers lie on the road to the implementation of the Action Plan and Roadmap. It is likely to be the municipality itself, but this needs to be confirmed by a collection of evidence during this Task 7.4.

The identification of the target organisation can only take place once the nature of the change foreseen in the Action Plan & Roadmap has been defined, i.e., by the end of Task 7.2. One way to identify the main barriers to implementation can be to organise a workshop on the drivers and barriers to the implementation of the Action Plan & Roadmap, by the end of Task 7.2.

The CMP should be based on the best practices in the EU.

Consultants are **not** supposed to develop one CMP for each municipality but just one CMP for all, defined at a higher level (even in every target organisation this CMP may have to be done differently).

Task 7.5 – Communication Activities

Communications activities in Deliverable 7 need to **start early** in the project to involve stakeholders and get them engaged; it is an investment that will open doors for Deliverable 7 later on.

The communication material for the Deliverable 7 will be made available in **electronic form** only. No printing of documents is foreseen.

The **dissemination** of communication material will be done via the channels of MITECO or other Spanish official bodies, at national or regional level.

The communication material will be published in **Spanish (*Castellano*) only**. No translation should be performed in any of the Spanish regional languages.

The **target audience** of the communication actions are the Autonomous Communities and the municipalities. The Provinces are not included in this target audience.

The workshops organised for communication purposes in this Task 7.5 are **in addition** to those foreseen for the training sessions in Task 7.3.

A first action would be a presentation of this Deliverable to Autonomous Communities, municipalities and the press. MITECO will organise an event / specific meeting with regions and regional associations. This could be an online session of 2 hours where MITECO and consultants present what the purpose and

content is of this deliverable, with time for Q&A. The aim of such a session would be to inform regions, municipalities and the press of the project, get contacts of municipalities and start engaging them.

7.6 Contribution to the implementation of the Spanish RRP

Task 7.6 is limited in its ambition to feeding the overall Spanish Recovery & Resilience Plan with the data already specified in the Spanish Recovery & Resilience Plan and its Council Implementing Decision and in the Spanish Circular Economy Strategy.

The Task 7.6 consists in:

- *At the start of the project:* Defining the **collection and reporting processes and interfaces** for these indicators;
- *Over the duration of the project:* Providing the figures for these indicators at specific moments in time.

The indicators defined in the Council Implementing Decision for the Spanish Recovery & Resilience Plan are:

- Number of projects on Circular Economy supported;
- % of separately collected waste.

The consultants should develop **no additional indicator** beyond those already specified.

4.1.7 Proposed timeline

Proposed timeline seems fine except for the following:

- Task 7.5 that should start early in the project;
- Task 7.6 which will be more widespread;
- The timeline should include quarterly reporting on top of final reporting.

Action

- Consultants to modify the timeline accordingly in the Inception Report.

4.1.8 Organisation of work: periodic meetings, reporting, coordination with overall project

Steering Committee - *Bespoke* Steering Committee meetings, dedicated to Deliverable 7, will be held **every 3 months**, online.

Bilateral meetings – Laurent Zibell (Deliverable 7 lead) and Ines Iribarren (MITECO) to hold shortly **every two weeks** (depending on whether there is something to discuss or not this could change).

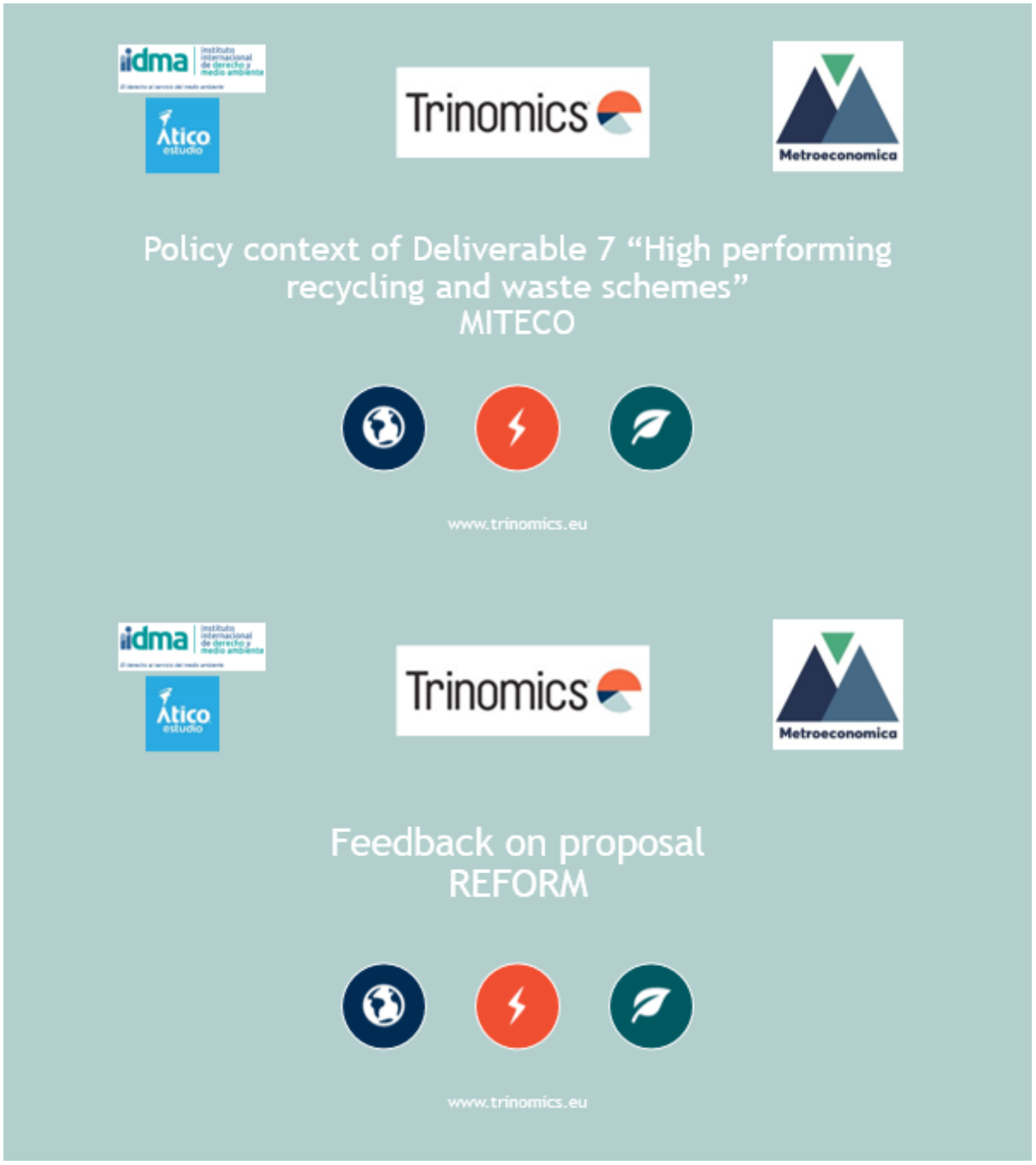
Reporting: will be done monthly, integrated into overall project reporting. Indicators of progress in Deliverable 7 will be provided per Task.

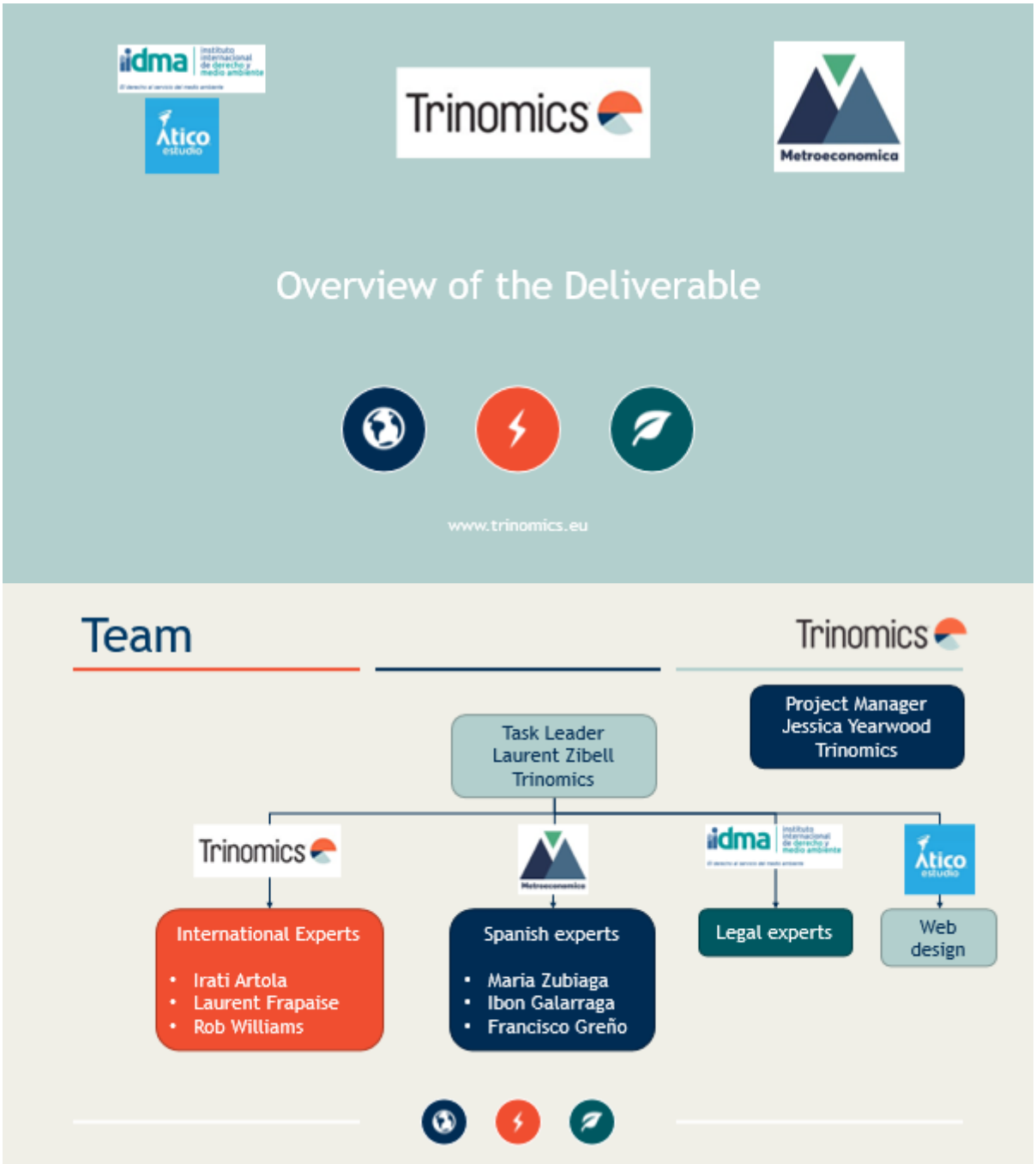
Sharing of documents – Trinomics will create a Shared folder on their SharePoint infrastructure. This is meant for storing documentation and deliverables. Deliverables however will be disseminated also via email for ease and for administrative purposes (recording of delivery).

4.2 Slides presented at the Kick-off Meeting

4.2.1 Slides presented by consultants supporting the meeting


Recovery & Resilience Plan for Spain
Deliverable 7 "Waste management"
Kick-off Meeting
Dr. Laurent Zibell, PhD
www.trinomics.eu
Agenda
09:30 - 09:35: Introduction and presentation of participants
09:35 - 09:45: Policy context (MITECO)
09:45 - 09:55: Feedback on proposal (REFORM)
09:55 - 10:00: Overview of the Deliverable: Objective, scope (Trinomics)
10:00 - 11:00: Review of tasks (main purpose, anticipated difficulties, open issues):
7.1 Inception phase
7.2 Action Plan and a Roadmap
7.3 Capacity-building Activities
7.4 Change Management plan
7.5 Communication Activities
7.6 Contribution to the implementation of the Spanish RRP
11:00 - 11:15: Timeline
11:15 - 11:25: Organisation of internal work: periodic meetings, reporting, coordination with overall project
11:25 - 11:30: Closure of meeting - AOB


Policy context of Deliverable 7 “High performing recycling and waste schemes”
MITECO
www.trinomics.eu
Feedback on proposal
REFORM
www.trinomics.eu


Overview of the Deliverable
www.trinomics.eu
Team
Project Manager
Jessica Yearwood
Trinomics
Task Leader
Laurent Zibell
Trinomics
International Experts
Irati Artola
Laurent Frapaise
Rob Williams
Spanish experts
Maria Zubiaga
Ibon Galarraga
Francisco Greño
Legal experts
Web design


Objectives & scope
Trinomics
Objectives
• Improved recycling, collection and treatment systems of waste at the municipal level
• Compliance of Spain with EU Waste Framework Directive recycling targets
• Dissemination of best practices
Scope
• Recycling, collection and treatment of municipal waste (not: Construction & Demolition, industrial, hazardous waste)
• Reduction of waste at source (re-use, maintain, repair)?
• Municipal level
• All 17 Spanish Autonomous Communities (not: Ceuta, Melilla)
idma
instituto internacional de derecho y medio ambiente
Ático estudio
Trinomics
Metroeconomica
Review of tasks
www.trinomics.eu

7.1 Inception phase

- Main purpose
  - Agree with client on specifics of:
    - Needs, objective, scope, political context
    - Method
    - Organisation of meetings + communication
  - Specify indicators of progress in Deliverable 7
  - State of play of waste management (in ES only?)
  - Long list of high-performing schemes (ES, EU, other?)
  - Clarify open issues
- Identified difficulties
  - Distinction to make between agreement on specifics and first content results (list of schemes, state of play)
- Open issues
  - Reduction of waste at source (re-use, maintain, repair): in scope?
  - Exclaves (Ceuta, Melilla): out of scope?
  - Construction & Demolition Waste, industrial waste, hazardous waste: out of scope?

7.2 Action Plan and Roadmap

- Main purpose
  - Action Plan: assessment of policy options + recommendations for high-performance recycling schemes (contract specifications, modelling of waste streams, business modelling, evaluation of tenders)
  - Roadmap: timeline of actions and milestones
  - Based on best practices (ES, EU, other)

7.2 Action Plan and Roadmap

- **Step 1:** Examples of **high-performing recycling schemes**
  Long list to be shared with MITECO and DG REFORM during inception, narrowed down based on KoM and Step 2
- **Step 2:** **Data collection** on e.g. volume of waste processed, gate fees, sale price of recovered material, turnover, profits, municipal waste taxes => **Benchmarks** to assess **recycling performance** in Spain
  Data to be collected via desk research + consultation with relevant stakeholders (survey, interviews)
- **Step 3:** **Documentary** research on: procurement and other tender documents, relevant legislation and regulations (with IIDMA)
- **Step 4:** Draft **contract specifications**, procedures for: **business case modelling**, **waste flow modelling**, market assessments, **evaluation of tenders**
- **Step 5:** Advice on the **management** and **practical implementation** of the Action Plan

7.2 Action Plan and Roadmap

- Identified difficulties
  - **Access to data** on (modelled and real) waste flows, collection fees, prices for secondary materials, business-relevant data, contract details
  - **Fragmentation** of responsibilities and of data reporting per Autonomous Community (timing, aggregation level)
  - **Heterogeneity** of starting points + of institutional contexts in Autonomous Communities + population size / density / qualification level
  - Compatibility with distribution of responsibilities set in Constitution + law
- Open issues
  - **Other policy tools** than contracts with private waste management companies?
  - **Ambition level** of transposition of best practices?
  - Grouping of starting points? "**Ladder**" of development stages (4 - 8)?
  - **Financial resources** available for investment in equipment / training / operational efficiency of waste management companies?
  - Inclusion of policies to **reduce waste at source**?

7.3 Capacity-building Activities

- Main purpose
  - 17 training schemes at regional level (3 offline, 14 online)
  - Web-based guide of best practices identified
- Identified difficulties
  - **Data collection** for **skills gap** analysis
  - **Heterogeneity** of **recipients** (managers / technicians / shop-floor operators)
  - **Heterogeneity** of **municipalities** (cf. 7.2)
- Open issues
  - Content of the training: best practices developed in 7.2?
  - Duration of each training session? One morning?
  - Group trainings per region or per characteristics of the municipalities x recipients of the training?
  - Relevance of substituting the 3 offline sessions with online ones?
  - Categories of personnel targeted?
  - Number of participants in training?
  - Recruitment of participants by MITECO?

7.4 Change Management Plan

- Main purpose
  - Procedures to support target actor in transformation towards increasing performance of waste recycling
  - Convince all players (management + staff) to contribute to change in organisation
- Identified difficulties
  - **Heterogeneity** of political context + of social relations
- Open issues
  - **Target actor:** autonomous community / province / municipality / waste management company?
  - CMP = a part of the toolbox to be transmitted during the **training** (Task 7.3) - and prepared beforehand?
  - Generic vs. specific approach?

7.5 Communication Activities

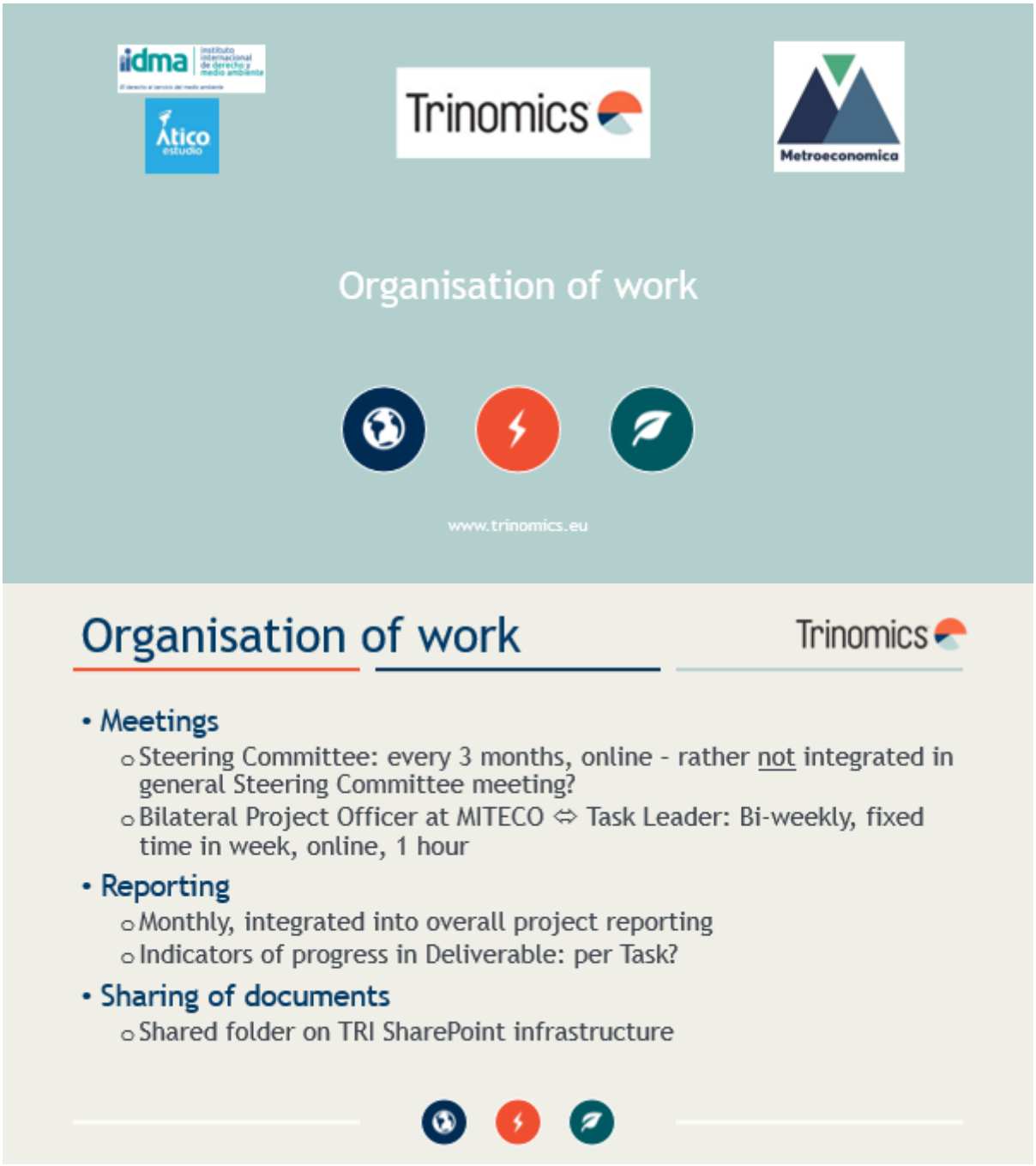
- Main purpose
  - Awareness raising and stakeholder engagement on outcomes of Deliverable
- Identified difficulties
  - Communication content increasing over time: compatible with regularity?
- Open issues
  - Communication on Action Plan & Roadmap only, once done, or also on supporting material obtained earlier (best practices)?
  - **Target audience**: regional / provincial / municipal authorities? General public?
  - Communication material in **electronic** form only?
  - **Dissemination** of communication material: via MITECO / ES government channels?
  - Organisation of communication workshops in addition to training sessions?
  - Recruitment of participants in workshops by MITECO?
  - **No** translation of material foreseen in **regional languages**. Confirm?
  - Connection to Deliverable 6

7.6 Contribution to the implementation of the Spanish RRP

- Main purpose
  - Define indicators to monitor progress of waste management performance
- Identified difficulties
  - Assessment of **availability of data** to constitute indicators
  - Changes in **existing**, **heterogeneous** reporting systems
  - Differences in ambition levels between Autonomous Communities
- Open issues
  - Flexibility to define indicators beyond Spanish Strategy for Circular Economy?

Proposed timeline

Year	2022											2023								
Month	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9
7.1 Inception phase																				
7.2 Action Plan and Roadmap	SI Long list		S2 - S3 Data collection					S4 Contract spec		S5 Implementation										
7.3 Capacity-building activities																				
7.4 Change Management Plan																				
7.5 Communication activities																				
7.6 Contribution to the implementation of the Spanish RRP																				
7.7 Reporting																				


Organisation of work
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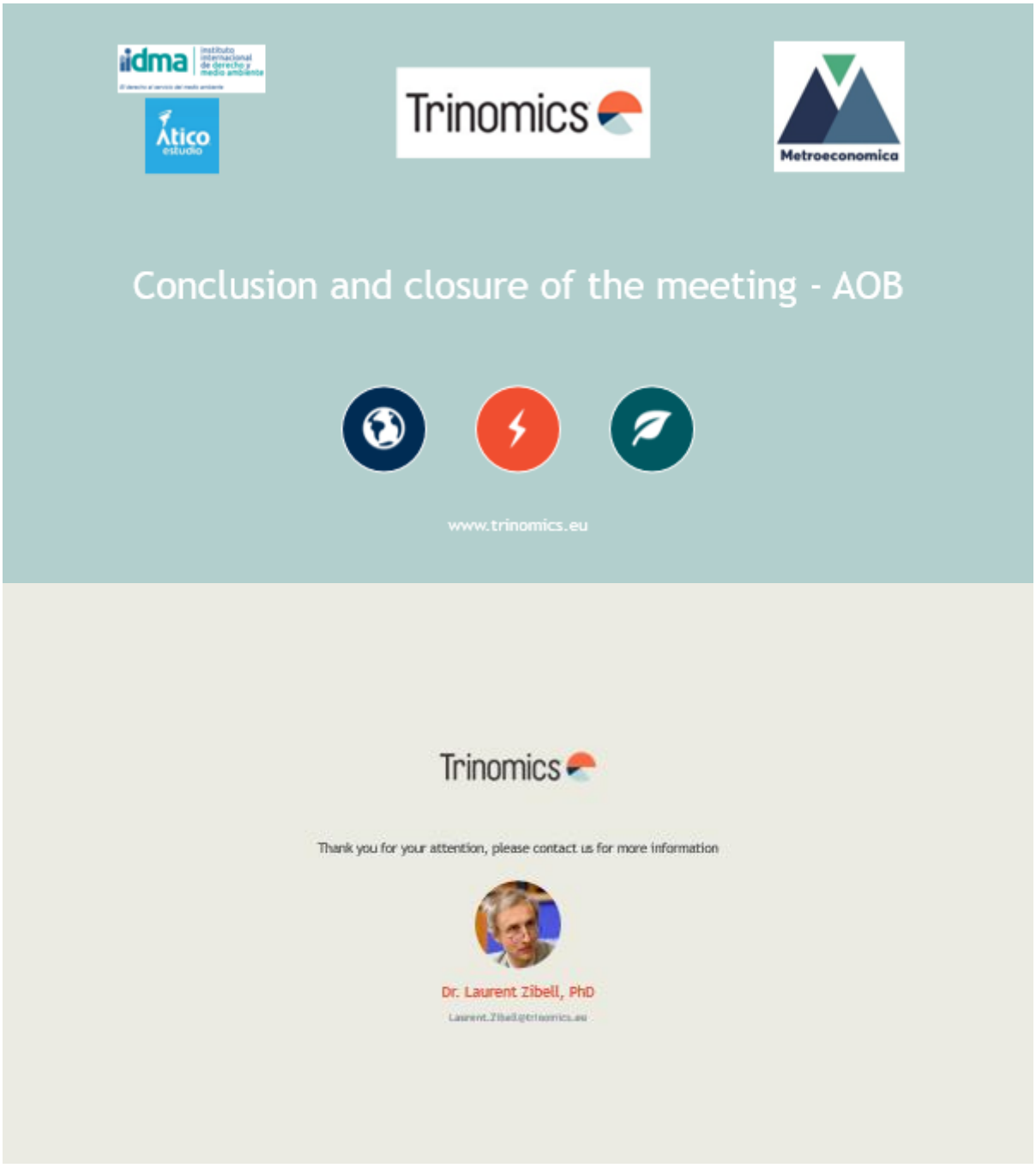
• Meetings
o Steering Committee: every 3 months, online - rather not integrated in general Steering Committee meeting?
o Bilateral Project Officer at MITECO ⇔ Task Leader: Bi-weekly, fixed time in week, online, 1 hour
• Reporting
o Monthly, integrated into overall project reporting
o Indicators of progress in Deliverable: per Task?
• Sharing of documents
o Shared folder on TRI SharePoint infrastructure



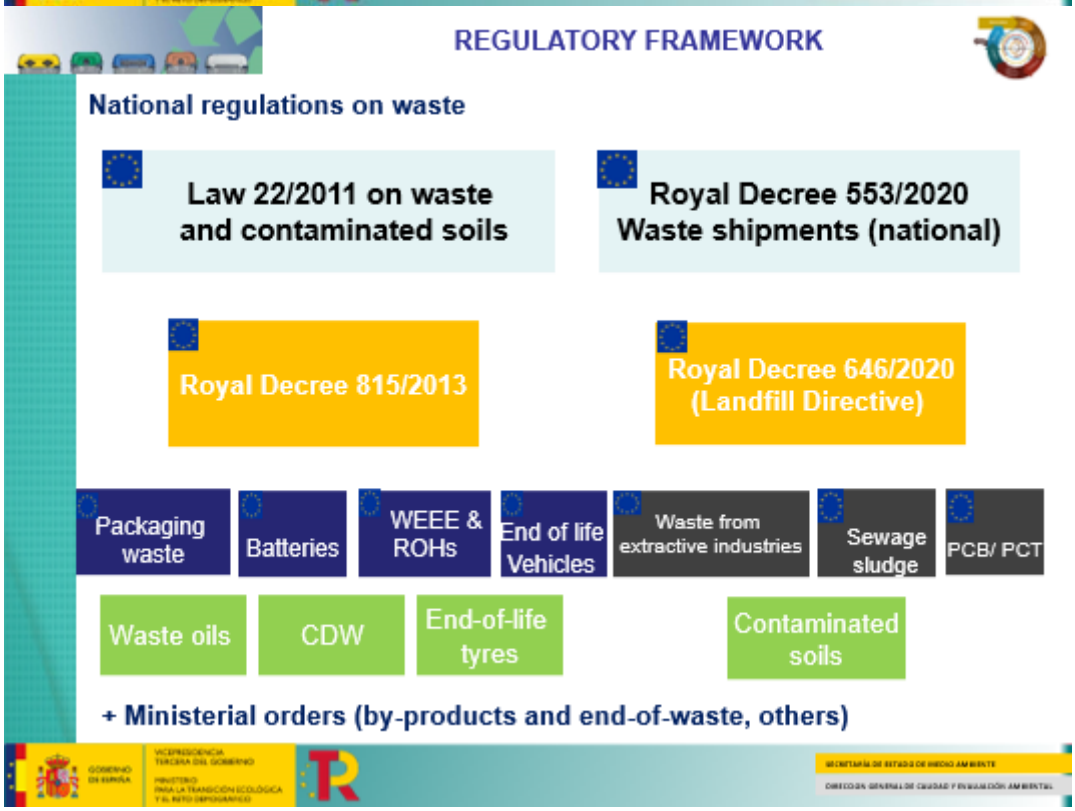
(In a separate document)

4.2.2 *Slides presented by MITECO on the policy context of the Deliverable*

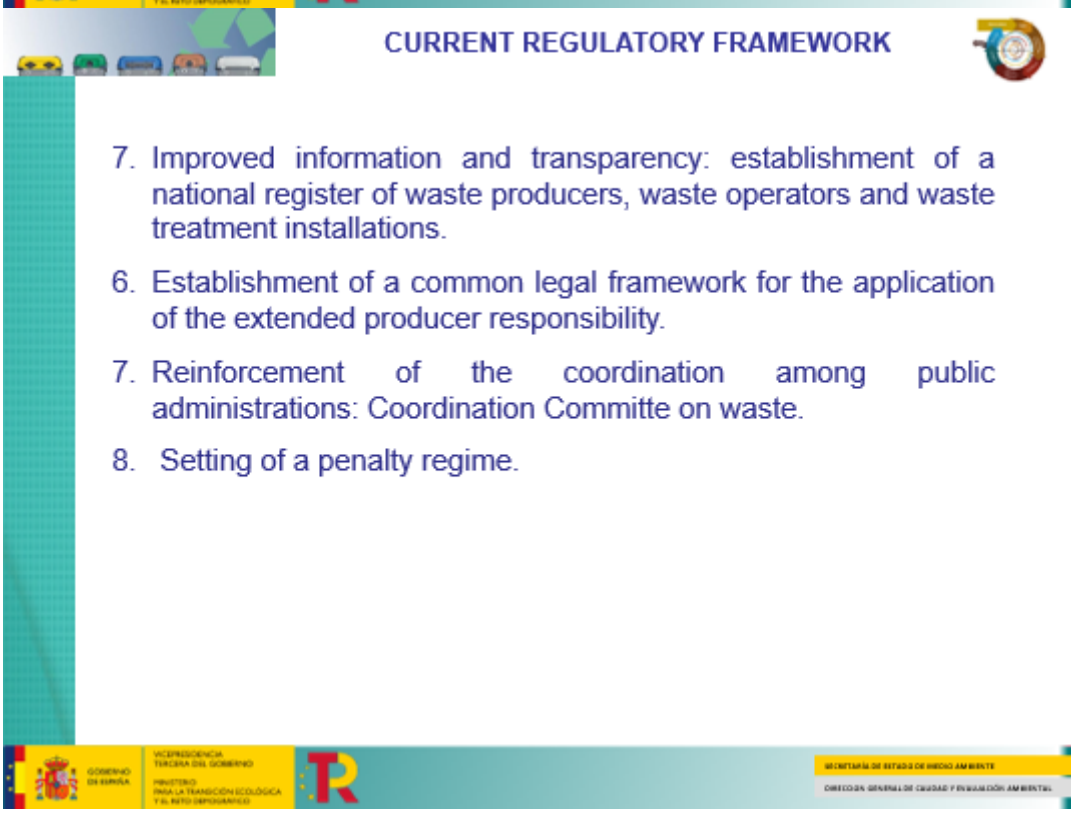

Kick-off meeting D7: "High performing recycling and waste schemes"
Policy context of the deliverable
Circular Economy Department
7 February 2022


CONTENIDO
1. Regulatory framework
2. Distribution of competences
3. Implementation of the RRF on waste management

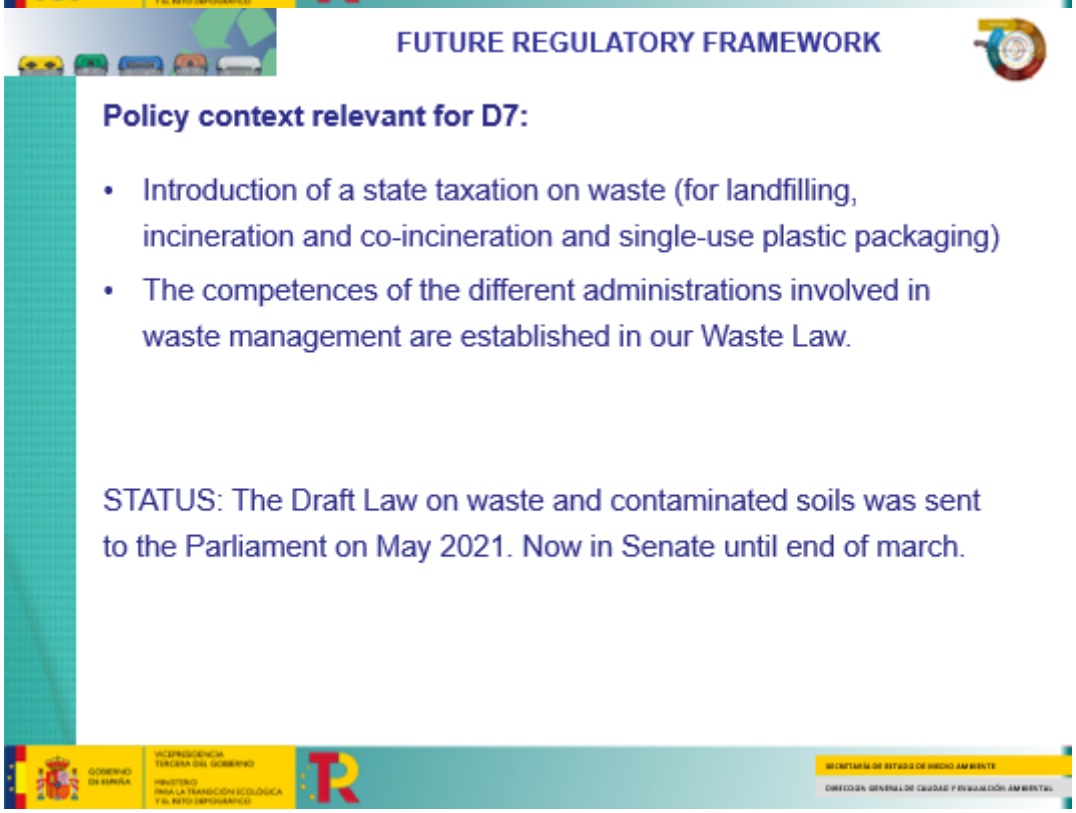

1. REGULATORY FRAMEWORK
2. Distribution of competences
3. Implementation of the RRF on waste management


REGULATORY FRAMEWORK
National regulations on waste
Law 22/2011 on waste and contaminated soils
Royal Decree 553/2020 Waste shipments (national)
Royal Decree 815/2013
Royal Decree 646/2020 (Landfill Directive)
Packaging waste
Batteries
WEEE & ROHs
End of life Vehicles
Waste from extractive industries
Sewage sludge
PCB/ PCT
Waste oils
CDW
End-of-life tyres
Contaminated soils
+ Ministerial orders (by-products and end-of-waste, others)


CURRENT REGULATORY FRAMEWORK
WASTE LAW
1. Incorporation of waste hierarchy in the management of waste.
2. Strengthening of prevention policies: introduction of quantitative prevention targets.
3. Incorporation of EU targets for municipal and commercial waste and for CDW.
4. Provisions to improve bio-waste management, differentiation between compost and mixed-waste compost (biostabilized material).
5. Development of the procedures to declare by-products and end-of-waste. Approval through Ministerial Order.


CURRENT REGULATORY FRAMEWORK
7. Improved information and transparency: establishment of a national register of waste producers, waste operators and waste treatment installations.
6. Establishment of a common legal framework for the application of the extended producer responsibility.
7. Reinforcement of the coordination among public administrations: Coordination Committe on waste.
8. Setting of a penalty regime.


FUTURE REGULATORY FRAMEWORK
Policy context relevant for D7:
• New Law on waste foreseen for Q4 2022
• Implementation of WFD and the SUP Directive
• Obligations on separate collection of waste:
• Paper, metals, plastics and glass, already in place.
• Biowaste, by 2024 (if > 5.000 inhab., before 30/06/2022).
• Waste cooking oils, hazardous household waste and bulky waste (furniture), by 2025.
• Introduction of EU targets for municipal waste and CDW
• Present compliance with WFD targets for municipal waste:
• In 2019: 38% of municipal waste prepared for re-use and recycled.


FUTURE REGULATORY FRAMEWORK
Policy context relevant for D7:
• Introduction of a state taxation on waste (for landfilling, incineration and co-incineration and single-use plastic packaging)
• The competences of the different administrations involved in waste management are established in our Waste Law.
STATUS: The Draft Law on waste and contaminated soils was sent to the Parliament on May 2021. Now in Senate until end of march.

1. Regulatory framework
2. **DISTRIBUTION OF COMPETENCES**
3. Implementation of the RRF on waste management

DISTRIBUTION OF COMPETENCES

MINISTRY FOR THE ECOLOGICAL TRANSITION:

a) Elaboration of national programmes/ plans on waste prevention and waste management.
b) Establishment of targets for waste prevention and waste management.
c) Executive body for waste shipments to / from third countries (non EU). Transit Authority.
d) Reporting obligations to the UE or International Bodies.
e) Cooperation and coordination with other public administrations
f) Any other assigned to the Ministry by sectoral waste legislation.

DISTRIBUTION OF COMPETENCES

REGIONAL AUTHORITIES:

a) Elaboration of regional programmes/ plans on waste prevention and waste management.
b) Authorization, monitoring, inspection and sanctioning of waste production and waste management activities.
c) Registration of the information regarding waste production and waste management in their territory.
d) Executive body for the transfer of waste within Spain or from / to EU countries.
e) Any other competence on waste issues

DISTRIBUTION OF COMPETENCES

LOCAL AUTHORITIES:

a) As a mandatory service: collection, transport and treatment of municipal waste generated by households, businesses and services.
b) Gathering information on waste management in their territory.
c) Monitoring, inspection and sanctioning within their competences.
d) They may also:
   - Elaborate waste management plans for waste of their competence (mandatory in the new Waste Law if > 5000 inh.)
   - Undertake the management of non-hazardous commercial waste and waste generated in industries as established by their respective municipal ordinances.

1. Regulatory framework
2. Distribution of competences
3. **IMPLEMENTATION OF THE RRF ON WASTE MANAGEMENT**

DISTRIBUTION OF COMPETENCES

COORDINATION COMMITTE ON WASTE

- Committe for the technical cooperation among different administrations
- Representatives from Regional Authorities, Local Authorities and other Ministries.
- 12 working groups:

AGE

Packaging waste; circular economy; financial securities; landfills; CDW; End-of-life tyres + end-of-life vehicles + waste oils + ships; WEEE; **organic waste**, simplification, standardization and electronic processing; by-products and end-of-waste; contaminated soils; waste shipments and inspection.

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IMPLEMENTATION OF THE RRF ON WASTE MANAGEMENT
INVESTMENT C12.I3. Plan to support the implementation of waste legislation and the promotion of the circular economy
Two different investments:
• (#187) Completion of projects to support the implementation of waste legislation and promote the circular economy in the enterprise. Q4 2023
• (#188) Increase separately collected municipal waste. Q2 2026
April 2021: Grant (416.3 M€ to regions) and approval of common specifications for waste management investments.
Regions will have to approve their own regional calls before July 2022 to distribute the funds among the final recipients.


IMPLEMENTATION OF THE RRF ON WASTE MANAGEMENT
INVESTMENT C12.I3. Plan to support the implementation of waste legislation and the promotion of the circular economy
Waste management investments in:
• Separate collection of waste (especially biowaste)
• New facilities for biowaste treatment
• New facilities for preparing for reuse and recycling of separately collected waste (ie. textiles, plastic)
• New collection facilities (municipal recycling centres) and improvement on mixed municipal waste treatment facilities (existing MBT plants for the purpose of increasing resource efficiency or retrofitting to biowaste recycling operations)
September 2021: Contract (0.5 M€) for the Waste Registry digitisation

IMPLEMENTATION OF THE RRF ON WASTE MANAGEMENT

INVESTMENT C12.I3. Plan to support the implementation of waste legislation and the promotion of the circular economy

February 2021: Call for interest launched regarding the promotion of Circular Economy in the private sector (focus on circularity in industrial processes).

More than 1.200 proposals received. Budget: 37.800 M€

2022: Call to be launched at the beginning of this year (190 M€).

Potential projects:

- Actions to reduce the consumption of virgin raw materials
- Actions on ecodesign and placing on the market of products made under ecodesign schemes
- Waste management (not municipal waste)
- Digitalization in relation to circular economy

THANK YOU

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