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CIM RC
COMUNIDADE INTERMUNICIPAL
REGIÃO DE COIMBRA

Interreg Europe Policy Learning Platform

Peer Review Final Report – Coimbra Region

BIOWASTE MANAGEMENT AND TARIFF SYSTEMS
Turning Challenges into Opportunities

5 March 2025

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1. Intermunicipal Community of Coimbra Region (CIM-RC)

1.1. Regional Institutional Context

Portugal is located in the Iberian Peninsula, in Southwestern Europe. It is the westernmost sovereign state in mainland Europe, bordered to the west and south by the Atlantic Ocean and by Spain in the north and east. Portugal has a population of 10 347 89 inhabitants (2021 national Census) with a demographic density of 111,7 (inh/km2) and with a higher population concentration along the coastline.

In Portugal, Intermunicipal Communities (CIMs) correspond to territorial units composed of a set of municipalities. In administrative terms, the CIMs manage the economic, social, and environmental development strategies of the territories covered, prioritizing the coordination of municipal investments and community funds.

The Intermunicipal Community of Coimbra Region (CIM-RC) is a public association of 19 municipalities, with a total of 436.949 inhabitants (Census, 2021) in a territory of 4,335.57km² (average of 101.7 inhabitants/km2).

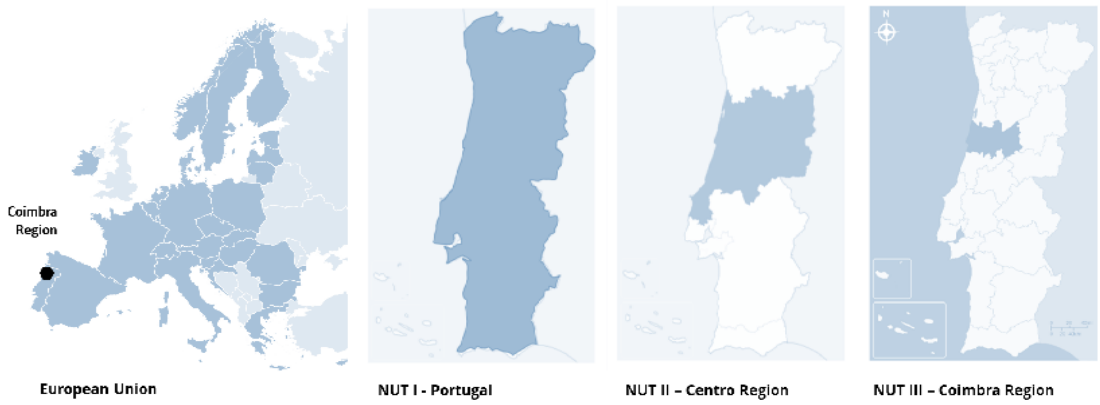


Figure 1 - Coimbra Region location within the NUTS

The Coimbra Region Intermunicipal Community (CIM-RC) is an intermunicipal entity with an associative nature, governed by Law No. 75/2013 of 12 September, as amended, and has the following purposes: to promote the planning and management of the strategy of economic, social and environmental development of the covered territory; to link municipal investments of inter-municipal interest; to participate in the management of programmes supporting regional development; and to plan the actions of local authorities.

In administrative and statistical terms, Coimbra Region constitutes a NUT III with identical denomination, located in the Centre Region (NUT II) of Portugal. It comprises 19 municipalities : Arganil, Cantanhede, Coimbra, Condeixa-a-Nova, Figueira da Foz, Góis, Lousã, Mealhada, Mira,

Miranda do Corvo, Montemor-o-Velho, Mortágua, Oliveira do Hospital, Pampilhosa da Serra, Penacova, Penela, Soure, Tábua and Vila Nova de Poiares.

The 19 municipalities exhibit very heterogeneous population characteristics and there is also a substantial dichotomy between coastal and inland areas, as well as between urban and rural municipalities, especially in terms of demography.

Figure 2 – CIM-RC Municipalities

1.2. Demographic Context

According to the data from the General Population Census, Coimbra Region has been characterised by significant demographic changes and affected by significant migratory phenomena and population loss in the last decades.

Considering the 19 municipalities that integrate CIM Coimbra Region, the population decrease tends to be more expressive in the interior, a territory of low population density, where a large part of the municipalities have values below 100 inhabitants/km2, which contrasts with the territories close to the coastline with a higher concentration of population and urban profile.

These territorial and demographic asymmetries, between the coast and the interior of Coimbra Region, which are becoming increasingly evident and more pronounced, are essentially the result of a greater concentration of population around the most important urban centres, particularly on the region´s coastline, which concentrates almost 75% of the inhabitants of CIM-RC.

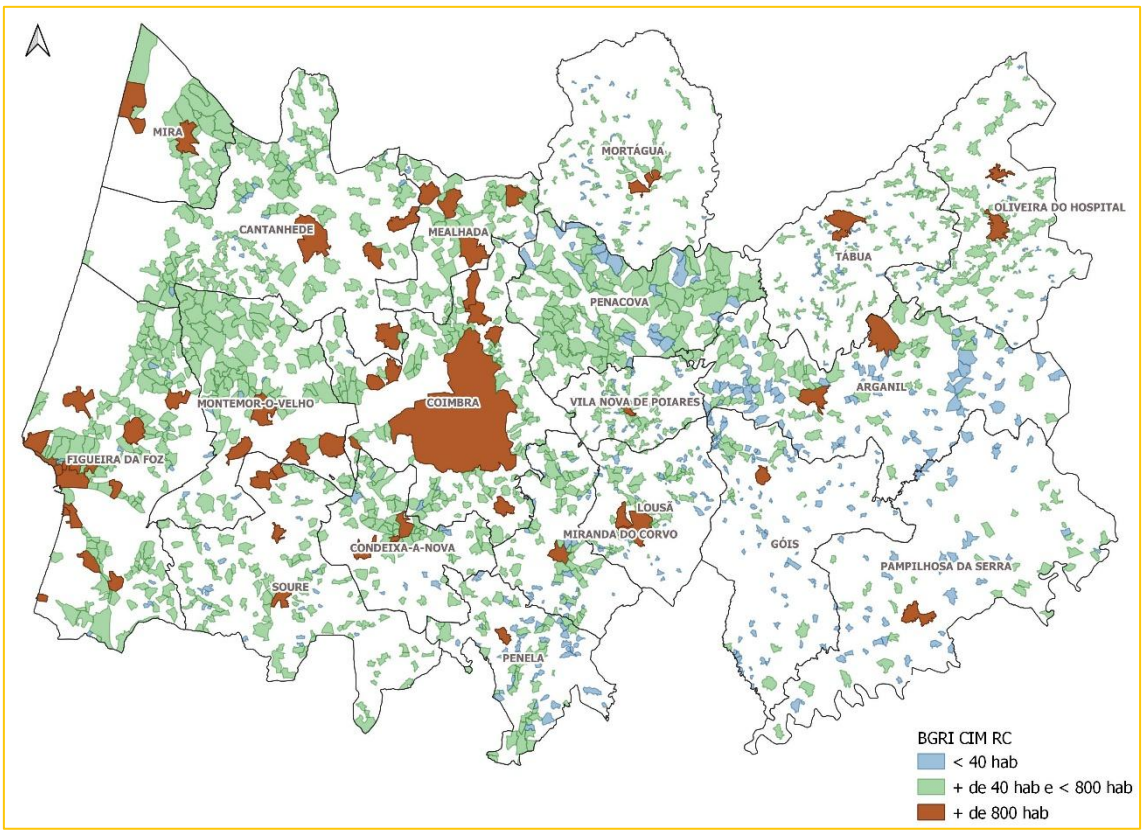


Figure 3 – largest population agglomerations in Coimbra Region

Some relevant demographic insights :

- More than fifty percent (**52%) of the population is concentrated in 59 places, 18% of the territorial area** (brown locations);
- More than **1800 locations with less than 40 inhabitants** ;
- **28% of the population has more than 65 years** ;
- Coimbra Region is one of the oldest regions in Portugal (**242 elderly people over 65 for every 100 young people**) ;

In the last available census decade (2011-2021), Coimbra Region registered a decrease in population of 5,3% from 460,139 (2011) to 436,929 inhabitants (2021). This population represents 19,6% of the population of the Centre Region and 4,2% of the population of the country.

The population decrease in Coimbra Region has several complementary explanations. On the one hand, there is a significant decrease in the number of births (-25% in 2017 compared to 2001), and a slight increase in the number of deaths (+4.6% between 2017 and 2001) generating a natural balance (difference between births and deaths) of -2,500 individuals. On the other hand, this number allows to project the existence of a negative migratory balance in the order of 30,000

individuals that is not offset by internal migration or by international migration whose numbers remain stable throughout the period under analysis.

In addition to socio-demographic fragilities, there are weaknesses at the level of business structure, where micro-enterprises predominate, based on economic activities of little added value, low technological density and innovation, and lack of export capacity.

2. Waste management in Coimbra Region

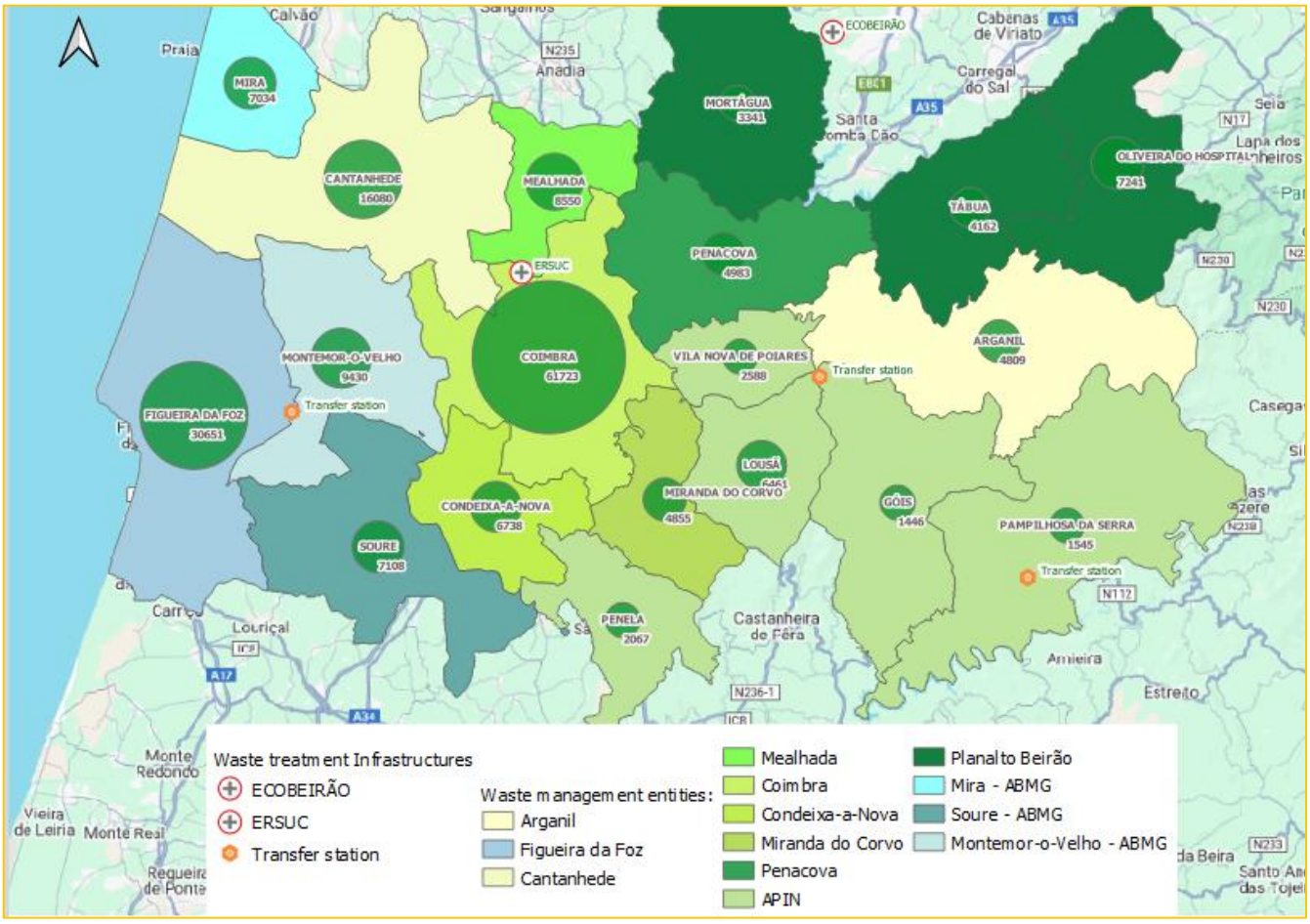
In Portugal the responsibility for waste management is dependent on the daily quantity produced per producer. If the daily production of municipal waste is more than 1.100L, the responsibility for waste management falls to the producer. This is the case of supermarkets and food establishments, for example. If the daily production of municipal waste does not exceed 1.100L (small establishments and households), waste management is a responsibility of the municipalities.

Waste management systems comprise two main types of collection carried out: undifferentiated collection and selective collection. Undifferentiated collection corresponds to the collection of urban waste without prior selection, which is the responsibility of low-level management entities (municipals or intermunicipal entities). Selective collection, which is carried out to keep the waste stream separated by type and nature is, in most systems, a responsibility of the high-level management entities, although it can also be managed by the low-level management entities.

Depending on the waste streams, the above-mentioned stages differ between regions, according to the technological options adopted to comply with the general principles of waste management, all of which seek to respond to the principle of the waste hierarchy, prioritizing recycling over recovery and, as a last resort, landfill disposal.

In Coimbra Region there´s **15 waste management entities**, 13 low-level management entities and 2 high-level management entities

I. Waste management entities - Waste treatment infrastructures - Waste production



II. Low-level management entities (collection of waste from households and delivery to the waste treatment facilities):

management entities (low - waste collection)	type of entity	Municipalities from Coimbra Region	note
APIN	intermunicipal company	5 (Góis, Lousã, Penela, Pampilhosa da Serra e VN Poiares)	*there are 5 other municipalities from other region*
Associação municípios Planalto Beirão	municipal association	3 (Tábua, Mortágua e Oliveira do Hospital)	*there are 16 other municipalities from other regions*
INOVA	municipal company	1 (Cantanhede)	
Coimbra	municipal	1	
Figueira da Foz	municipal	1	
Condeixa-a-Nova	municipal	1	
Soure	municipal	1	
Mealhada	municipal	1	
Penacova	municipal	1	
Arganil	municipal	1	
Mira	municipal	1	
Miranda do Corvo	municipal	1	
Montemor-o-Velho	municipal	1	

III. High-level management entities (selective collection and waste treatment and recovery facilities):

management entities (high - waste treatment)	type of entity	Municipalities from Coimbra Region
ERSUC	private operator	16 municipalities
ECOBEIRÃO	private operator	3 municipalities

The following table provides a summary of the most relevant data of ERSUC waste management and treatment system (High-level management entity). If we look at the indicators and data, it is possible to see that the treatment system is neither effective nor efficient (more than 60% of waste ends up in landfill) and the type of collection indicator shows that the system still favors undifferentiated collection (82,10%), with very low % for selective collection (16%). The physic characterization of the waste reveal that there´s a 39,98% potential of biowaste in the urban mixed waste.

urban waste management and treatment system - ERSUC		
Waste treatment infrastructures	2 landfills; 2 mechanical and biological treatment units; 2 Refused-Derived Fuel production units (RDF)	
waste capitation: kg/inhabitant/day	1,25 kg/inhab/day	
physical characterization of the waste produced	Biowaste	39,98%
	Paper/cardboard	8,11%
	Plastics	9,70%
	glass	7,47%
	textiles	5,31%
	sanitary textiles	11,03%
	bulky waste	2,03%
	wood	0,29%
	metals	1,36%
	thin (less 20 mm)	9,45%
	other	5,27%
Types of waste collection	undifferentiated collection	82,10%
	selectiv collection	16,00%
	big producers	1,90%
final destinations for municipal waste	landfill	63,00%
	compost	11,00%
	recycling	13,00%
	other	6,00%

The following table provides a summary of the most relevant data of Planalto Beirão waste management and treatment system (High-level management entity). In Planalto Beirão 79% of waste ends up in landfill and the type of collection indicator also shows that the system still favors undifferentiated collection (82,74%), with very low % for selective collection (14,16%). The physic characterization of the waste reveal that there´s a 32,70% potential of biowaste in the urban mixed waste.

urban waste management and treatment system - PLANALTO BEIRÃO		
Waste treatment infrastructures	1 landfill; 1 mechanical and biological treatment unit; 1 Refused-Derived Fuel production units (RDF) 1 waste sorting unit	
waste capitation: kg/inhabitant/day	1,18 kg/inhab/day	
physical characterization of the waste produced	Biowaste	32,70%
	Paper/cardboard	9,40%
	Plastics	11,80%
	glass	8,53%
	textiles	5,03%
	sanitary textiles	9,96%
	bulky waste	3,03%
	wood	0,31%
	metals	1,56%
	thin (less 20 mm)	10,82%
	other	6,86%
Types of waste collection	undifferentiated collection	82,74%
	selective collection	14,16%
	big producers	3,11%
final destinations for municipal waste	landfill	79,00%
	compost	5,00%
	recycling	13,00%
	other	2,00%

2.1. Characterization of municipalities and waste data (RASARP 2023)

Low-level management entities (broken down by municipality)

Municipality	Arganil	Cantanhede (INOVA)	Coimbra	Condeixa-a-Nova	Figueira da Foz
type of intervention area	Predominantly rural area	Predominantly rural area	Medium urban area	Predominantly rural area	Medium urban area
Population	11 067	34 218	140 796	16 733	58 982
Houses	10 851	21 045	82 004	8 403	44 139
Household	4 694	13 722	59 987	6 341	24 606
Area (km2)	332,84	390,88	319,4	138,68	379,05
Population density (inhab/km2)	33,3	87,5	440,8	120,7	155,6
Inhabitants per household	2,36	2,49	2,35	2,64	2,40
Management model	direct administration (municipal services)	Delegation (municipal company)	direct administration (municipal services and private operators)	direct administration (municipal services)	direct administration (with private operator)
Type of collection system available	Door-to-door (bins): 0% Door-to-door (bags): 0% **Collection by proximity: 100%**	Door-to-door (bins): 0% Door-to-door (bags): 0% **Collection by proximity: 100%**	Door-to-door (bins): 0% Door-to-door (bags): 0% **Collection by proximity: 100%**	Door-to-door (bins): 0% Door-to-door (bags): 0% **Collection by proximity: 100%**	Door-to-door (bins): 0% Door-to-door (bags): 0% **Collection by proximity: 100%**
Urban waste collected (tons/year) - 2022	4809	16080	61723	6738	30651
Urban waste collected undifferentiated (tons/year) - 2022	4188	13828	53374	5897	26424
Biowaste potential (tons/year)	1675	5531,2	21349,6	2358,8	10569,6
selectively collected biowaste (tons/year) - 2022	54	724	292	128	23
multimaterial selective collection (tons/year) - 2022	621	2252	8349	841	3232
Volume of activity for recycling (tons/year) - 2022	121	1099	1487	303	995
% separately collected waste	12,9%	14,0%	13,5%	12,5%	10,5%
% of selectively collected waste that goes to recycling	19,5%	48,8%	17,8%	36,0%	30,8%
Undifferentiated waste - kg/inhab/year	378,42	404,11	379,09	352,42	448,00
multimaterial selective - kg/inhab/year	56,11	65,81	59,30	50,26	54,80

Municipality	Mealhada	Mira	Miranda do Corvo	Montemor-o-Velho	Soure
type of intervention area	Predominantly rural area	Predominantly rural area	Predominantly rural area	Predominantly rural area	Predominantly rural area
Population	19 358	12 126	12014	24 587	17 264
Houses	10 414	8 861	7282	13 329	11 267
Household	7 657	4 941	4766	9 561	7 203
Area (km2)	111	124,03	126,38	114,3	263,91
Population density (inhab/km2)	174,9	97,8	95,06	215,1	65,4
Inhabitants per household	2,53	2,45	2,52	2,57	2,40
Management model	direct administration (municipal services)	direct administration (with private operator)	direct administration (municipal services)	direct administration (with private operator)	direct administration (municipal services)
Type of collection system available	Door-to-door (bins): 0% Door-to-door (bags): 0% **Collection by proximity: 100%**	Door-to-door (bins): 0% Door-to-door (bags): 0% **Collection by proximity: 100%**	Door-to-door (bins): 0% Door-to-door (bags): 0% **Collection by proximity: 100%**	Door-to-door (bins): 0% Door-to-door (bags): 0% **Collection by proximity: 100%**	Door-to-door (bins): 0% Door-to-door (bags): 0% **Collection by proximity: 100%**
Urban waste collected (tons/year) - 2022	8550	7034	4855	9430	7108
Urban waste collected undifferentiated (tons/year) - 2022	6945	6245	4154	8214	6423
Biowaste potential (tons/year)	2778	2498	1661,6	3285,6	2569,2
selectively collected biowaste (tons/year) - 2022	0	0	0	21	76
multimaterial selective collection (tons/year) - 2022	1605	789	701	1216	685
Volume of activity for recycling (tons/year) - 2022	249	148	236	306	150
% separately collected waste	18,8%	11,2%	14,4%	12,9%	9,6%
% of selectively collected waste that goes to recycling	15,5%	18,8%	33,7%	25,2%	21,9%
Undifferentiated waste - kg/inhab/year	358,77	515,01	345,76	334,08	372,05
multimaterial selective - kg/inhab/year	82,91	65,07	58,35	49,46	39,68

Municipality	Penacova	Penela	Góis	Lousã	Pampilhosa da Serra
type of intervention area	Predominantly rural area	Predominantly rural area	Predominantly rural area	Predominantly rural area	Predominantly rural area
Population	13 119	5 443	3 806	17 012	4 067
Houses	8 385	4 382	5 048	10 464	5 605
Household	5 285	2 248	1 637	7 025	1 933
Area (km2)	216,73	132,49	263,3	138,4	396,46
Population density (inhab/km2)	60,5	41,1	14,5	122,9	10,3
Inhabitants per household	2,48	2,42	2,32	2,42	2,10
Management model	Delegation (intermunicipal company)	Delegation (intermunicipal company)	Delegation (intermunicipal company)	Delegation (intermunicipal company)	Delegation (intermunicipal company)
Type of collection system available	Door-to-door (bins): 0% Door-to-door (bags): 0% **Collection by proximity: 100%**	Door-to-door (bins): 0% Door-to-door (bags): 0% **Collection by proximity: 100%**	Door-to-door (bins): 0% Door-to-door (bags): 0% **Collection by proximity: 100%**	Door-to-door (bins): 0% Door-to-door (bags): 0% **Collection by proximity: 100%**	Door-to-door (bins): 0% Door-to-door (bags): 0% **Collection by proximity: 100%**
Urban waste collected (tons/year) - 2022	4983	2067	1446	6461	1545
Urban waste collected undifferentiated (tons/year) - 2022	4382	1818	1271	5682	1358
Biowaste potential (tons/year)	1753	727	509	2273	543
selectively collected biowaste (tons/year) - 2022	0	0	0	0	0
multimaterial selective collection (tons/year) - 2022	601	249	174	779	186
Volume of activity for recycling (tons/year) - 2022	116	48	34	151	36
% separately collected waste	12,1%	12,1%	12,1%	12,1%	12,1%
% of selectively collected waste that goes to recycling	19,3%	19,3%	19,3%	19,3%	19,3%
Undifferentiated waste - kg/inhab/year	334,03	334,03	334,03	334,03	334,03
multimaterial selective - kg/inhab/year	45,79	45,79	45,79	45,79	45,79

Municipality	Vila Nova de Poiares	Mortágua	Oliveira do Hospital	Tábua
type of intervention area	Predominantly rural area	Predominantly rural area	Predominantly rural area	Predominantly rural area
Population	6 813	8 960	19 421	11 163
Houses	4 439	6 211	13 943	8 706
Household	2 793	3 709	7 838	4 515
Area (km2)	84,45	251,18	234,52	199,79
Population density (inhab/km2)	80,7	35,7	82,8	55,9
Inhabitants per household	2,44	2,42	2,48	2,47
Management model	Delegation (intermunicipal company)	Direct administration (association of municipalities)	Direct administration (association of municipalities)	Direct administration (association of municipalities)
Type of collection system available	Door-to-door (bins): 0% Door-to-door (bags): 0% **Collection by proximity: 100%**	Door-to-door (bins): 0% Door-to-door (bags): 0% **Collection by proximity: 100%**	Door-to-door (bins): 0% Door-to-door (bags): 0% **Collection by proximity: 100%**	Door-to-door (bins): 0% Door-to-door (bags): 0% **Collection by proximity: 100%**
Urban waste collected (tons/year) - 2022	2588	3341	7241	4162
Urban waste collected undifferentiated (tons/year) - 2022	2276	3018	6541	3760
Biowaste potential (tons/year)	910	1207	2616	1504
selectively collected biowaste (tons/year) - 2022	0	0	0	0
multimaterial selective collection (tons/year) - 2022	312	323	699	402
Volume of activity for recycling (tons/year) - 2022	60	50	108	62
% separately collected waste	12,1%	9,7%	9,7%	9,7%
% of selectively collected waste that goes to recycling	19,3%	15,4%	15,4%	15,4%
Undifferentiated waste - kg/inhab/year	334,03	336,81	336,81	336,81
multimaterial selective - kg/inhab/year	45,79	36,01	36,01	36,01

3. Policy Challenge

In Portugal the waste sector is experiencing one of the greatest challenges since the first Strategic Plan for Municipal Waste was implemented in 1996 (PERSU I). To meet the ambitious targets, set out by the Directive 2018/851 of May 30, 2018, which amends Directive 2008/98/EC on waste sector, it became necessary to reformulate the strategies to create new guidelines for the waste sector. The National strategic plan for the waste sector (PERSU 2030) aims to establish measures and implement actions that will enable the country to be aligned with EU policies and guidelines.

To achieve the objectives and targets set out in the national strategic plan, the municipalities prepared Action Plans (PAPERSU) to align the national and the local level strategies, and implement projects, services and actions in the next years (until 2030).

Coimbra Region is facing several challenges in the waste sector, particularly regarding biowaste (collection and treatment at source like home and community composting), low recycling rates, and high percentage of waste sent to landfill.

One of the biggest challenges in the waste sector is to implement tariff systems to separate waste management costs from water consumption and water invoices. The current system, where waste management costs are included in water invoices, lacks effectiveness in incentivizing citizens to reduce waste production and improve recycling habits. This approach dilutes the responsibility of waste producers and fails to adhere to the "polluter pays" principle. The transition to a separate tariff system is hindered by insufficient funding for municipalities to meet waste management goals, with the excessive burden on municipal tariffs posing a significant obstacle. Additionally, the implementation of new collection systems and investments in infrastructure to meet PERSU 2030 targets, particularly for bio-waste collection, will further increase operational costs, potentially exacerbating the municipal tariff deficit. These challenges underscore the need for a more equitable and effective waste management financing model.

The municipalities/waste management entities in the Coimbra Region are facing increasingly complex and demanding challenges in the waste sector. Among the various challenges that the management entities/municipalities have to respond to, the following stand out:

- ✓ **Lack of funding for municipalities to go ahead with the necessary investments set out in Action Plans (currently available funds cover only 5% of the planned investments).**

- ✓ **Overdependence on landfills: Most of the waste produced in Coimbra Region municipalities is sent directly or indirectly to landfill (63% ERSUC and 79% Ecobeirão), far exceeding the 10% limit set by the EU for landfill by 2030.**

- ✓ **The selective collection of biowaste and multi-material has little expression in Portuguese municipalities and in Coimbra Region, where undifferentiated collection prevails (+ 82%).**

- ✓ **Lack of a common strategy for the waste management sector (13 waste collection management entities and 2 waste treatment entities);**

- ✓ **Recycling rates are very low and fall short of the targets set in PERSU 2030: The Coimbra Region has recycling rates (24% and 18% in the Region's two SGRUs) well below the European Union's target of 55% by 2025 and 60% by 2035.**

- ✓ **Landfills reaching maximum capacity in the short term (a working group has been set up to study solutions (+ incineration plants? new landfills?);**

- ✓ **Operational challenges: Lack of human resources, gap of time between planning and implementation**

4. Motivation for requesting a Peer Review

In most municipalities of our region, waste collection has always been done with the same traditional models and collection systems, and with the same results (low recycling rates and high landfill rates). Coimbra Region municipalities know that there´s a strong need to change the paradigm on waste management to reach the ambitious targets and objectives.

In 2023/2024 Municipalities made their Waste Action Plans (PAPERSU), which included strategies to ensure compliance with European targets, with new waste collection models, home and community composting, innovation and technology improvements in waste collection services.

Considering that the municipal Action Plans were only made in 2023/2024 - because the national strategic plan was only released in March 2023 - the supposed 10-year plan turns out to be a 6-year plan. It’s well known that there won't be much time for experiments and pilot projects. This is the main reason why CIM-RC is requesting this expert support.

At the Intermunicipal Council meeting of June 18th, 2024, the 19 municipalities of Coimbra Region agreed to delegate to CIM-RC the management of the process of elaboration and submission of the application (majority decision), under the terms of the technical information no. 2391 of June 11, 2024.

In this sense, the 19 municipalities agreed that CIM Coimbra Region could organize and manage the application for the Peer Review (PR), to speed up the process and be more efficient, but also because it is the entity that represents the Region.

Nevertheless, in this PR we expected to have all 19 municipalities of CIM-RC - represented by the 15 waste management entities – so they can assimilate the experience of other municipalities/regions that had the same difficulties and with the same demographic, social and economic framework, allowing the possibility to shorten the learning curve and implement more adapted, more effective and more efficient collection systems and models.

Municipalities also want to guarantee they implement the best technical solutions and make wise investments, without compromising the financial sustainability of the services, but with a positive impact in the main waste management indicators, by increasing recycling rates, biowaste collection and decrease the waste landfill rate.

Thus, with this Peer Review, Coimbra Region aims to exchange and assimilate experiences, learning from the good practices of other EU regions that had the same difficulties and the same demographic, social and economic framework as Coimbra Region. This will enable CIM Coimbra Region to gain a better understanding of the type of measures and strategies that will guarantee the implementation of the best technical solutions and make wise investments, without compromising the financial sustainability of the services, but with a positive impact in the main waste management indicators, by increasing recycling rates, biowaste collection and decrease the waste landfill rate. On the other hand, the result achieved will act as a supporting tool for decision-making and enhance potential future collaborations with the peers.

5. Peer Review Event in Coimbra Region

5.1 Introduction

The intermunicipal Community of Coimbra Region hosted a Peer Review event on March 5 and 6, organized by the Interreg Europe Policy Learning Platform. The Peer Review event model plays a crucial role in disseminating best practices and fostering collaboration among regions, which is essential for addressing common environmental challenges. By bringing stakeholders together, the event promoted meaningful connections and a deeper sense of unity, which will be essential for future collaborations.

The Interreg Europe Policy Learning Platform invited six experts/Peers to the Peer review to share and present some of the best european practices in the waste sector. Peers presented technical solutions, projects, innovative methods and gave valuable contributions and insights about waste sector, with special emphasis on selective collection and treatment of biowaste at source and the implementation of tariff systems.

The event main objective was to debate, share ideias and brainstorm the best solutions to address the needs of management entities in the Coimbra region and to empower local technicians to overcome the demanding challenges the waste sector is facing.

5.2 Participants

In the event we had six Peers who came to provide their experience, share best practices, give recommendations and clarify issues related to two current and structuring issues in the waste sector. In addition to the experts, the event was attended by the Portuguese Environment Agency, the CCDRC and the low (11 municipalities and APIN) and high (ERSUC) waste management entities of the Coimbra Region. **A total of 30 participants attended the event**.

List of participants:

Peers (6):

- ✓ Andrius Jučas, Alytus Region Waste Management Center, Lithuania
- ✓ Steffen Walk, European Compost Network, Germany
- ✓ Kristel Vandenbroek, Vlaco Flanders, Belgium
- ✓ Filipe Carneiro & Susana Freitas, LIPOR, Portugal
- ✓ Vera Melo, Cascais Ambiente, Portugal

Interreg Europe (4):

- ✓ Antoine Duquennoy, Interreg Europe Policy Learning Platform
- ✓ Katharina Krell, Interreg Europe Policy Learning Platform

- ✓ Magda Anagnostou, Interreg Europe Joint Secretariat
- ✓ Magda Michaliková, Interreg Europe Policy Learning Platform

Stakeholders – Low level Waste Management Entities of the Coimbra Region (12):

- ✓ Penacova Municipality Councilor
- ✓ Director of environmental department in Figueira da Foz municipality.
- ✓ Head of environment and urban services division in Condeixa-a-Nova municipality
- ✓ Head of environmental unit in Miranda do Corvo municipality
- ✓ Head of energy and environment division in Soure municipality
- ✓ Coordinator of Waste collection unit in APIN (intermunicipal entity of water & waste
- ✓ Project manager in Environment services unit in Montemor-o-Velho municipality
- ✓ Project manager of Waste management unit in Coimbra municipality
- ✓ Project manager of Environmental services unit in INOVA (municipal entity of Cantanhede municipality).
- ✓ Project manager of environment unit in Mealhada municipality
- ✓ Project manager of environment unit in Montemor-o-Velho municipality
- ✓ Project manager of environment unit in Mira municipality

High level Waste Management Entities (1):

- ✓ ERSUC

Special Guests (2):

- ✓ Member of the board of director of the Portuguese Environment Agency
- ✓ Regional Coordination and Development Commission of the Center, I.P

Organization (5):

- ✓ CIM Coimbra Region Vice-President
- ✓ CIM Coimbra Region coordinator
- ✓ CIM Coimbra Region project manager
- ✓ CIM Coimbra Region project officer
- ✓ CIM Coimbra Region internship

Figure 4 - Group photo

5.2 Recommendations and key takeaways

The event was divided into two central thematic blocks, designed for experts to present technical solutions, best practices, and recommendations to address the outlined challenges.

1st Theme – Financial Incentives and Tariff Systems

The first thematic block aimed to address issues related to the implementation of tariff systems that enable the transition from waste tariffs calculated based on water consumption (current model) to models calculated based on the amount of non-recyclable waste produced by each user, thereby applying the polluter-pays principle:

1. **Implementation of Tariff Systems**, such as PAYT, RAYT, SAYT. Which system yields the best results and has greater acceptance among citizens?

2. **Fundamental principles for establishing tariffs** that reflect the true cost of waste management services. What steps should be taken from planning to implementing new tariff models?

3. **Integration of selective collection systems** (containers, vehicles, etc.) considering the need to implement tariff systems based on the amount of waste produced by each resident. What is the most effective and efficient model?

4. **Measures for planning, implementing, and managing tariff systems** to reduce the learning curve.

To address these questions, experts delivered detailed presentations showcasing examples and best practices implemented in Lithuania, Belgium, Portugal, and other European countries.

Summary of Expert Contributions on the 1st Theme:

- **Kristel Vandenbroek (Flanders Region, Belgium):** Presented bio-waste collection schemes implemented in Flanders. Most municipalities conduct door-to-door collection using containers ranging from 40L to 240L or bags (15L to 60L). Collections occur weekly or biweekly. The implemented PAYT system includes tariffs for non-recyclable waste and lower tariffs for bio-waste. PAYT considers volume, collection frequency, or weight (varies by municipality). Success stories were shared where municipalities reduced non-recyclable waste generation from 160 kg/person/year to 84 kg/person/year within a short timeframe (1–2 years).

- **Steffen Walk (European Compost Network, Germany):** Provided a detailed presentation on PAYT/SAYT systems with successful examples (Parma, Ahrweiler in Germany). Highlighted the importance of having a fixed tariff component to cover significant service costs and a variable component (based on container volume, collection frequency, weight). Steffen also summarized indicators and monitoring methods for evaluating the impact and success of tariff systems implementation.

- **Filipe Carneiro and Susana Freitas (LIPOR, Portugal):** Presented LIPOR's roadmap for municipalities transitioning to a PAYT system, identifying all phases involved. Emphasized ensuring adequate cost coverage before implementing PAYT and adapting/updating municipal regulations. Concluded with Maia's success story focusing on lessons learned during PAYT implementation.

- **Andrius Jučas (Alytus Region, Lithuania):** Presented existing collection systems and the PAYT system implemented in Alytus Region. PAYT includes a fixed component (€59/year per single-family household with a 5% discount for adopting home composting; €33/year for apartments with a 5% discount for using electronic billing) and a variable component based on container quantity, volume, frequency for single-family homes or apartment area multiplied by a unit value (€0.62). Service monitoring is rigorous with fines applied for improper waste disposal.

2nd Theme – Selective Collection and On-Site Treatment of Bio-Waste

The second thematic block presented technical solutions and best practices for selective collection and on-site treatment of biowaste (home, community, centralized composting) to address the following questions:

1. What are the most effective and efficient biowaste collection systems and on-site treatment solutions for rural and urban areas?
2. What role does technology play in optimizing biowaste collection processes?
3. Home and community composting: How can we ensure the quality of produced compost? What are the best technological innovations for composting? Examples of reliable measurement methods in home/community composting?
4. How can behaviors be motivated and changed to encourage selective separation of biowaste?

Experts provided detailed presentations showcasing examples and best practices implemented in Lithuania, Belgium, Portugal, and other European countries (Annex II – Expert Presentations).

Summary of Expert Contributions on the 2nd Theme:

- **Kristel Vandenbroek (Flanders Region, Belgium):** Explained how to plan and organize biowaste management at a regional scale using Flanders' example—organizing its 308 municipalities into 25 Intermunicipal Associations for waste management/collection. Shared practical cases of home/community composting and good practices for motivating citizens.
- **Andrius Jučas (Alytus Region, Lithuania):** Discussed biowaste management in Alytus's urban/rural areas: selective collection only in urban zones; home/community composting schemes tailored to each area's characteristics in rural zones. Strict controls ensure proper separation of bio-waste with dedicated teams enforcing compliance.
- **Steffen Walk (European Compost Network, Germany):** Compared various composting types (home/community/centralized) and analyzed quality control methods for compost production. Highlighted data collection importance and indicator definition for monitoring operations.
- **Filipe Carneiro & Susana Freitas (LIPOR, Portugal):** Shared organic valorization/composting examples implemented within LIPOR's intervention area.
- **Vera Melo (Cascais Ambiente, Portugal):** Presented "green bag" collection scheme implemented by Tratolixo municipalities with modern optical sensor systems at Tratolixo

facilities enabling automatic sorting of green bags mixed with non-recyclable waste—significantly reducing operational costs/investment needs in fleet/equipment.

Recommendations & Key Conclusions from Experts:

General Recommendations:

- Define an integrated bio-waste management strategy among all entities within the region.
- Consider operational/exploitation costs alongside investment costs when selecting technical solutions.
- Prioritize green waste due to easier management/lower collection costs.

Governance Model Recommendations:

- Develop an integrated territorial strategy among municipalities.
- Improve cooperation between high-level/low-level waste management entities.
- Share equipment/infrastructure among regional entities.
- Ensure regular communication/collaboration between stakeholders/political decision-makers.

Tariff Systems & Financial Incentives Recommendations:

- Establish tariffs reflecting true waste management costs based on cost-effectiveness/transparency/sustainability principles.
- Implement PAYT through defined phases: technical solution selection → equipment acquisition → pilot project → communication campaign → monitoring/control.

BioWaste Management Recommendations:

- Make biowaste separation mandatory through updated municipal regulations.
- Group territorial areas where integrated management models are viable.
- Plan selective collection systems compatible with future PAYT implementation.

On-Site Treatment Recommendations:

- Promote home composting as a primary solution in rural areas due to low costs.
- Implement community composting only where home composting isn't feasible.

- Deploy "Master Composters" to oversee projects—examples include Vlaco's volunteer network (Flanders) or LIPOR's professional network.

5.3 Possible calendar of implementation

In Portugal, the Action Plans for waste management are currently under analysis and evaluation by the competent authorities. As a result, some organizations prefer to wait official validation of these plans before proceeding with concrete proposals for implementing the recommendations discussed during the event.

To facilitate the planning and visualization of activities, a spreadsheet in Excel format was sent to all stakeholders present at the event, requesting contributions regarding the possible timelines required to implement the **26 recommended actions**. The responses obtained were compiled and analyzed, allowing for an initial reflection on the priorities and phases of implementation.

Montemor-o-Velho Municipal:

Biowaste Management and Tariff Systems - Turning Challenges into Opportunities
Coimbra, 4 and 5th march 2025

Calendário de implementação das recomendações propostas - Calendar of implementation of the proposed recommendations

Applicability [1]	Recommendations	abr/25	mai/25	jun/25	jul/25	ago/25	set/25	out/25	nov/25	dez/25	jan/26	fev/26	mar/26	Comments
Very likely to be applied	**General recommendations** - It is important to implement a combination of technical, political and regulatory instruments in order to achieve the objectives and targets set for the sector (mandatory separation of bio-waste in municipal regulations, implementation of collection and treatment solutions at source, waste management plans, updated municipal regulations, etc.)						x							PAPERSU parovado; Regulamento de Resíduos em atualização; existência de compostagem doméstica; a preparar compostagem comunitária.
Depends on specific political decisions/conditions	**General recommendations** - summarize/benchmark the existing models and technical solutions in the region and develop an integrated strategy for all the low management entities in the Coimbra region based on this framework, which is coherent, standardized and tailored to the needs and characteristics of all the municipalities.													Articulação com a CIM RC.
Very likely to be applied	**General recommendations** - When choosing the technical solutions to be implemented, not only the investment (CAPEX) should be considered, but also the operating and operational costs (human resources, fuel, etc.).													É efetuada essa análise prévia ao incentimento.
Depends on specific political decisions/conditions	**General recommendations** - Consider reviewing the management and governance model and creating a common territorial strategy for waste management among all municipalities.													Articulação com a CIM RC.
Very likely to be applied	**General recommendations** - Improve cooperation between low level and high level management entities (meetings at fixed intervals, etc.)						x							
Very likely to be applied	**General recommendations** - Improve cooperation between low level management entities (meetings, events, at fixed intervals, etc.)						x							
Rather seen as not applicable at the moment	**General recommendations** - **S**haring infrastructures and assets/equipment between downstream management entities													
Depends on specific political decisions/conditions	**Recommendations Tariff systems** - take into account the fundamental principles for setting tariffs and ensuring that they reflect the true cost of waste management services (cost-effectiveness; transparency and reasonableness; the polluter pays principle). - see recommendations tab tariff systems									x				
Depends on specific political decisions/conditions	**Recommendations Tariff systems** - take into account the phases of implementing a PAYT system: 1- Definition of the technical solution; 2- Acquisition of equipment; 3-Implementation of a pilot project; 4-Communication and publicity campaign; 5-Monitoring and control. see recommendations tab Tariff systems									x				
Depends on specific political decisions/conditions	**Recommendations Tariff systems** - take into account the importance of ensuring adequate cost coverage prior to implementing PAYT and adapting and updating municipal regulations									x				
Depends on specific political decisions/conditions	**Recommendations Tariff systems** - plan and inspection and monitoring teams to ensure that waste is sorted, deposited and collected correctly.									x				
Very likely to be applied	**Recommendations - Bio-waste management** - Make the separation of bio-waste obligatory (European and national legislation already exists, this obligation needs to be reflected in municipal regulations, which need to be updated and modernized);													Já foram efetuados investimentos e sensibilizçaão nesse sentido, pelo que se continuará a fazer investimento
Depends on specific political decisions/conditions	**Recommendations - Bio-waste management (selective collection)** - evaluate the possibility of grouping territorial areas (52% of biowaste is concentrated in 18% of territorial area, without bordars) and which have the potential to create an integrated management model (along the lines of the inter-municipal associations in Flanders).													
Very likely to be applied	**Recommendations - Bio-waste management (selective collection)** - Consider collection systems compatible with the introduction of PAYT systems, prior to their implementation													Investimento nos biorresíduos efetuado de forma a aplicar o PAYT.
Very likely to be applied	**Recommendations - Bio-waste management (selective collection)** - In the planning and sizing phase of bio-waste selective collection solutions, systems that are easy to handle, operate and implement should be considered so that they can be easily expanded, before creating a more complex system.													Foi efetuado investimento, comunicação e sensibilização nesse sentido.
Very likely to be applied	**Recommendations - Bio-waste management (treatment at source)** - Home composting has low investment and operating costs; but it must be carried out correctly - training, monitoring, dissemination.													Foi efetuado investimento, comunicação e sensibilização nesse sentido.
Very likely to be applied	**Recommendations - Bio-waste management (treatment at source)** - Home composting may be the preferred option for more rural areas;													
Very likely to be applied	**Recommendations - Bio-waste management (treatment at source)** - Community composting has higher costs as it requires teams to monitor and manage the composting islands and compost.													
Rather seen as not applicable at the moment	**Recommendations - Biowaste Management (treatment at source)** - Do not implement selective collection of biowaste in areas with domestic/community composting.													Território muito disperso e diversos tipos de alojamentos.
Very likely to be applied	**Recommendations - Bio-waste management (treatment at source)** - Criteria for home composting projects (see composting recommendations tab)													Previsto no PAPERSU
Very likely to be applied	**Recommendations - Bio-waste management (treatment at source)** - Criteria for community composting projects (see composting recommendations tab)													Previsto no PAPERSU
Very likely to be applied	**Recommendations - Bio-waste management (treatment at source)** - Create a team responsible for maintaining the composting islands and treating the compost (evaluate no-cost solutions: volunteers (scouts, etc.);												x	Alternativa a ponderar.
Very likely to be applied	**Recommendations - Bio-waste management (treatment at source)** - Train and enable households to deliver bio-waste to community composters;						x							Previsto no PAPERSU
Very likely to be applied	**Recommendations - Bio-waste management (treatment at source)** - Give visibility to and publicize the results and the compost created.						x							Previsto no PAPERSU
Very likely to be applied	**Recommendations - Bio-waste management (treatment at source)** - allocate a "Master composter" to accompany composting projects, provide training, raise awareness, control compost quality.						x							Previsto no PAPERSU
Rather seen as not applicable at the moment	**Recommendations - Bio-waste management (treatment at source)** - Evaluate the preparation of an economic feasibility study to install a small-scale composting plant (centralized composting) identical to the Centralized Composting Project presented in Germany.													Dependência das diretrizes da APA.

APIN (5 municipalities):

Biowaste Management and Tariff Systems - Turning Challenges into Opportunities — **Coimbra, 4 and 5th march 2025**

Calendário de implementação das recomendações propostas - Calendar of implementation of the proposed recommendations

Applicability [1]	Recommendations	abr/25	mai/25	jun/25	jul/25	ago/25	set/25	out/25	nov/25	dez/25	jan/26	fev/26	mar/26	abr/26	mai/26	jun/26	jul/26	ago/26	set/26	out/26	nov/26	Comments
Very likely to be applied	**General recommendations** - It is important to implement a combination of technical, political and regulatory instruments in order to achieve the objectives and targets set for the sector (mandatory separation of bio-waste in municipal regulations, implementation of collection and treatment solutions at source, waste management plans, updated municipal regulations, etc.)				x	x	x	x	x	x												**PAPERSU plans to draw up new regulations that include the collection of bio-waste. Implementation is dependent on the approval of PAPERSU and available funding.**
Depends on specific political decisions/conditions	**General recommendations** - summarize/benchmark the existing models and technical solutions in the region and develop an integrated strategy for all the low management entities in the Coimbra region based on this framework, which is coherent, standardized and tailored to the needs and characteristics of all the municipalities.																					
Very likely to be applied	**General recommendations** - When choosing the technical solutions to be implemented, not only the investment (CAPEX) should be considered, but also the operating and operational costs (human resources, fuel, etc.).																					**CAPEX and OPEX are taken into account when implementing projects.**
Depends on specific political decisions/conditions	**General recommendations** - Consider reviewing the management and governance model and creating a common territorial strategy for waste management among all municipalities.																					
Depends on specific political decisions/conditions	**General recommendations** - Improve cooperation between low level and high level management entities (meetings at fixed intervals, etc.)																					
Depends on specific political decisions/conditions	**General recommendations** - Improve cooperation between low level management entities (meetings, events, at fixed intervals, etc.)																					
Very likely to be applied	**General recommendations - S**haring infrastructures and assets/equipment between downstream management entities	x	x																			**Data on the location of undifferentiated collection equipment and bio-waste collection will be made available on official websites.**
Depends on specific political decisions/conditions	**Recommendations Tariff systems** - take into account the fundamental principles for setting tariffs and ensuring that they reflect the true cost of waste management services (cost-effectiveness; transparency and reasonableness; the polluter pays principle). - see recommendations tab tariff systems								x	x	x	x										**Dependent on the drafting of the Regulation, which will include the new tariff system.**
Depends on specific political decisions/conditions	**Recommendations Tariff systems** - take into account the phases of implementing a PAYT system: 1- Definition of the technical solution; 2- Acquisition of equipment; 3-Implementation of a pilot project; 4-Communication and publicity campaign; 5-Monitoring and control. see recommendations tab Tariff systems								x	x	x	x										**awareness-raising and training campaigns for the implementation of the PAYT**
Depends on specific political decisions/conditions	**Recommendations Tariff systems** - take into account the importance of ensuring adequate cost coverage prior to implementing PAYT and adapting and updating municipal regulations																					
Depends on specific political decisions/conditions	**Recommendations Tariff systems** - plan and inspection and monitoring teams to ensure that waste is sorted, deposited and collected correctly.																					**The PAPERSU does not provide for the implementation of a monitoring plan and teams.**
Very likely to be applied	**Recommendations - Bio-waste management** - Make the separation of bio-waste obligatory (European and national legislation already exists, this obligation needs to be reflected in municipal regulations, which need to be updated and modernized);																					**APIN has been implementing the selective collection of bio-waste since December 2023. It currently includes the municipalities of Lousã and Vila Nova de Poiares.**
Depends on specific political decisions/conditions	**Recommendations - Bio-waste management (selective collection)** - evaluate the possibility of grouping territorial areas (52% of biowaste is concentrated in 18% of territorial area, without bordars) and which have the potential to create an integrated management model (along the lines of the inter-municipal associations in Flanders).																					
Very likely to be applied	**Recommendations - Bio-waste management (selective collection)** - Consider collection systems compatible with the introduction of PAYT systems, prior to their implementation																					**The biowaste selective collection project includes access control for domestic customers only in the municipality of Lousã.**
Very likely to be applied	**Recommendations - Bio-waste management (selective collection)** - In the planning and sizing phase of bio-waste selective collection solutions, systems that are easy to handle, operate and implement should be considered so that they can be easily expanded, before creating a more complex system.																					**APIN has been implementing the selective collection of bio-waste since December 2023. It currently includes the municipalities of Lousã and Vila Nova de Poiares.**
Very likely to be applied	**Recommendations - Bio-waste management (treatment at source)** - Home composting has low investment and operating costs; but it must be carried out correctly - training, monitoring, dissemination.																					**APIN has been implementing community composting (schools and IPSS) since December 2022 and domestic composting since**
Very likely to be applied	**Recommendations - Bio-waste management (treatment at source)** - Home composting may be the preferred option for more rural areas;																					**APIN has been implementing community composting (schools and IPSS) since December 2022 and domestic composting since April 2023. The SIC/APIN project**
Very likely to be applied	**Recommendations - Bio-waste management (treatment at source)** - Community composting has higher costs as it requires teams to monitor and manage the composting islands and compost.																					**APIN has been implementing community composting (schools and IPSS) since December 2022 and domestic composting since**
Very likely to be applied	**Recommendations - Biowaste Management (treatment at source)** - Do not implement selective collection of biowaste in areas with domestic/community composting.																					**There are areas considered to have a low population density but which do not have the conditions to implement domestic composting, so in the**
Very likely to be applied	**Recommendations - Bio-waste management (treatment at source)** - Criteria for home composting projects (see composting recommendations tab)																					**APIN has been implementing community composting (schools and IPSS) since December 2022 and domestic composting since**
Very likely to be applied	**Recommendations - Bio-waste management (treatment at source)** - Criteria for community composting projects (see composting recommendations tab)																					**APIN has been implementing community composting (schools and IPSS) since December 2022 and domestic composting since**
Very likely to be applied	**Recommendations - Bio-waste management (treatment at source)** - Create a team responsible for maintaining the composting islands and treating the compost (evaluate no-cost solutions: volunteers (scouts, etc.);																					**It is not planned because the community composters are located inside schools and IPSSs, so the users, staff and**
Rather seen as not applicable at the moment	**Recommendations - Bio-waste management (treatment at source)** - Train and enable households to deliver bio-waste to community composters;																					**PAPERSU does not provide for the implementation of community composters for domestic customers.**
Very likely to be applied	**Recommendations - Bio-waste management (treatment at source)** - Give visibility to and publicize the results and the compost created.	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	**All sensitization and training campaigns are publicized in advance to the client, via email, sms and on the company's**
Very likely to be applied	**Recommendations - Bio-waste management (treatment at source)** - allocate a "Master composter" to accompany composting projects, provide training, raise awareness, control compost quality.					x	x	x	x	x												**The PAPERSU foresees sensitization and monitoring campaigns for household**
Depends on specific political decisions/conditions	**Recommendations - Bio-waste management (treatment at source)** - Evaluate the preparation of an economic feasibility study to install a small-scale composting plant (centralized composting) identical to the Centralized Composting Project presented in Germany.																					**It depends on political decisions and available investment.**

Penacova:

Biowaste Management and Tariff Systems - Turning Challenges into Opportunities	2025	Coimbra, 4 and 5th march

Calendário de implementação das recomendações propostas - Calendar of implementation of the proposed recommendations

Applicability [1]	Recommendations	abr/25	mai/25	jun/25	jul/25	ago/25	set/25	out/25	nov/25	dez/25	jan/26	fev/26	mar/26	...	...	...	Comments
Depends on specific political decisions/conditions	**General recommendations** - It is important to implement a combination of technical, political and regulatory instruments in order to achieve the objectives and targets set for the sector (mandatory separation of bio-waste in municipal regulations, implementation of collection and treatment solutions at source, waste management plans, updated municipal regulations, etc.)							x	x	x	x	x	x				The Waste Regulation can only be revised once the PAPERSU has been approved
Depends on specific political decisions/conditions	**General recommendations** - summarize/benchmark the existing models and technical solutions in the region and develop an integrated strategy for all the low management entities in the Coimbra region based on this framework, which is coherent, standardized and tailored to the needs and characteristics of all the municipalities.							x	x	x	x	x	x				
Very likely to be applied	**General recommendations** - When choosing the technical solutions to be implemented, not only the investment (CAPEX) should be considered, but also the operating and operational costs (human resources, fuel, etc.).							x	x	x	x	x	x				
Depends on specific political decisions/conditions	**General recommendations** - Consider reviewing the management and governance model and creating a common territorial strategy for waste management among all municipalities.							x	x	x	x	x	x				
Depends on specific political decisions/conditions	**General recommendations** - Improve cooperation between low level and high level management entities (meetings at fixed intervals, etc.)							x	x	x	x	x	x				
Depends on specific political decisions/conditions	**General recommendations** - Improve cooperation between low level management entities (meetings, events, at fixed intervals, etc.)							x	x	x	x	x	x				
Depends on specific political decisions/conditions	**General recommendations** - **S**haring infrastructures and assets/equipment between downstream management entities							x	x	x	x	x	x				
Very likely to be applied	**Recommendations Tariff systems** - take into account the fundamental principles for setting tariffs and ensuring that they reflect the true cost of waste management services (cost-effectiveness; transparency and reasonableness; the polluter pays principle). - see recommendations tab tariff systems							x	x	x	x	x	x				
Depends on specific political decisions/conditions	**Recommendations Tariff systems** - take into account the phases of implementing a PAYT system: 1- Definition of the technical solution; 2- Acquisition of equipment; 3-Implementation of a pilot project; 4-Communication and publicity campaign; 5-Monitoring and control. see recommendations tab Tariff systems							x	x	x	x	x	x				
Very likely to be applied	**Recommendations Tariff systems** - take into account the importance of ensuring adequate cost coverage prior to implementing PAYT and adapting and updating municipal regulations							x	x	x	x	x	x				
Depends on specific political decisions/conditions	**Recommendations Tariff systems** - plan and inspection and monitoring teams to ensure that waste is sorted, deposited and collected correctly.							x	x	x	x	x	x				
Depends on specific political decisions/conditions	**Recommendations - Bio-waste management** - Make the separation of bio-waste obligatory (European and national legislation already exists, this obligation needs to be reflected in municipal regulations, which need to be updated and modernized);							x	x	x	x	x	x				
Depends on specific political decisions/conditions	**Recommendations - Bio-waste management (selective collection)** - evaluate the possibility of grouping territorial areas (52% of biowaste is concentrated in 18% of territorial area, without bordars) and which have the potential to create an integrated management model (along the lines of the inter-municipal associations in Flanders).							x	x	x	x	x	x				
Very likely to be applied	**Recommendations - Bio-waste management (selective collection)** - Consider collection systems compatible with the introduction of PAYT systems, prior to their implementation	x	x	x	x	x	x	x	x	x	x	x	x				
Very likely to be applied	**Recommendations - Bio-waste management (selective collection)** - In the planning and sizing phase of bio-waste selective collection solutions, systems that are easy to handle, operate and implement should be considered so that they can be easily expanded, before creating a more complex system.							x	x	x	x	x	x				
Very likely to be applied	**Recommendations - Bio-waste management (treatment at source)** - Home composting has low investment and operating costs; but it must be carried out correctly - training, monitoring, dissemination.	x	x	x	x	x	x	x	x	x	x	x	x				
Very likely to be applied	**Recommendations - Bio-waste management (treatment at source)** - Home composting may be the preferred option for more rural areas;	x	x	x	x	x	x	x	x	x	x	x	x				
Very likely to be applied	**Recommendations - Bio-waste management (treatment at source)** - Community composting has higher costs as it requires teams to monitor and manage the composting islands and compost.	x	x	x	x	x	x	x	x	x	x	x	x				
Rather seen as not applicable at the moment	**Recommendations - Biowaste Management (treatment at source)** - Do not implement selective collection of biowaste in areas with domestic/community composting.																
Depends on specific political decisions/conditions	**Recommendations - Bio-waste management (treatment at source)** - Criteria for home composting projects (see composting recommendations tab)	x	x	x	x	x	x	x	x	x	x	x	x				
Depends on specific political decisions/conditions	**Recommendations - Bio-waste management (treatment at source)** - Criteria for community composting projects (see composting recommendations tab)	x	x	x	x	x	x	x	x	x	x	x	x				
Very likely to be applied	**Recommendations - Bio-waste management (treatment at source)** - Create a team responsible for maintaining the composting islands and treating the compost (evaluate no-cost solutions: volunteers (scouts, etc.);							x	x	x	x	x	x				
Depends on specific political decisions/conditions	**Recommendations - Bio-waste management (treatment at source)** - Train and enable households to deliver bio-waste to community composters;	x	x	x	x	x	x	x	x	x	x	x	x				
Rather seen as not applicable at the moment	**Recommendations - Bio-waste management (treatment at source)** - Give visibility to and publicize the results and the compost created.																
Very likely to be applied	**Recommendations - Bio-waste management (treatment at source)** - allocate a "Master composter" to accompany composting projects, provide training, raise awareness, control compost quality.	x	x	x	x	x	x	x	x	x	x	x	x				
Rather seen as not applicable at the moment	**Recommendations - Bio-waste management (treatment at source)** - Evaluate the preparation of an economic feasibility study to install a small-scale composting plant (centralized composting) identical to the Centralized Composting Project presented in Germany.																

Soure:

Biowaste Management and Tariff Systems - Turning Challenges into Opportunities																		Coimbra, 4 and 5th
								march 2025										
Calendário de implementação das recomendações propostas - Calendar of implementation of the proposed recommendations																		
Applicability [1]	**Recommendations**	**abr/25**	**mai/25**	**jun/25**	**jul/25**	**ago/25**	**set/25**	**out/25**	**nov/25**	**dez/25**	**jan/26**	**fev/26**	**mar/26**	**...**	**...**	**...**	**Comments**
pecific political decisio	**General recommendations** - It is important to implement a combination of technical, political and regulatory instruments in order to achieve the objectives and targets set for the sector (mandatory separation of bio-waste in municipal regulations, implementation of collection and treatment solutions at source, waste management plans, updated municipal regulations, etc.)																
pecific political decisio	**General recommendations -** summarize/benchmark the existing models and technical solutions in the region and develop an integrated strategy for all the low management entities in the Coimbra region based on this framework, which is coherent, standardized and tailored to the needs and characteristics of all the municipalities.																
pecific political decisio	**General recommendations -** When choosing the technical solutions to be implemented, not only the investment (CAPEX) should be considered, but also the operating and operational costs (human resources, fuel, etc.).																
n as not applicable at t	**General recommendations -** Consider reviewing the management and governance model and creating a common territorial strategy for waste management among all municipalities.																
Very likely to be applie	**General recommendations -** Improve cooperation between low level and high level management entities (meetings at fixed intervals, etc.)									x							
Very likely to be applie	**General recommendations -** Improve cooperation between low level management entities (meetings, events, at fixed intervals, etc.)									x							
pecific political decisio	**General recommendations - S**haring infrastructures and assets/equipment between downstream management entities																
Very likely to be applie	**Recommendations Tariff systems -** take into account the fundamental principles for setting tariffs and ensuring that they reflect the true cost of waste management services (cost-effectiveness; transparency and reasonableness; the polluter pays principle). - see recommendations tab tariff systems	x															
Very likely to be applie	**Recommendations Tariff systems -** take into account the phases of implementing a PAYT system: 1- Definition of the technical solution; 2- Acquisition of equipment; 3-Implementation of a pilot project; 4-Communication and publicity campaign; 5-Monitoring and control. see recommendations tab Tariff systems		**x (in some areas)**														
pecific political decisio	**Recommendations Tariff systems -** take into account the importance of ensuring adequate cost coverage prior to implementing PAYT and adapting and updating municipal regulations																
pecific political decisio	**Recommendations Tariff systems -** plan and inspection and monitoring teams to ensure that waste is sorted, deposited and collected correctly.																
Very likely to be applie	**Recommendations - Bio-waste management** - Make the separation of bio-waste obligatory (European and national legislation already exists, this obligation needs to be reflected in municipal regulations, which need to be updated and modernized);	x															
pecific political decisio	**Recommendations - Bio-waste management (selective collection)** - evaluate the possibility of grouping territorial areas (52% of biowaste is concentrated in 18% of territorial area, without bordars) and which have the potential to create an integrated management model (along the lines of the inter-municipal associations in Flanders).																
Very likely to be applie	**Recommendations - Bio-waste management (selective collection)** - Consider collection systems compatible with the introduction of PAYT systems, prior to their implementation	x															
Very likely to be applie	**Recommendations - Bio-waste management (selective collection) -** In the planning and sizing phase of bio-waste selective collection solutions, systems that are easy to handle, operate and implement should be considered so that they can be easily expanded, before creating a more complex system.	x															
Very likely to be applie	**Recommendations - Bio-waste management (treatment at source) -** Home composting has low investment and operating costs; but it must be carried out correctly - training, monitoring, dissemination.									x							
Very likely to be applie	**Recommendations - Bio-waste management (treatment at source) -** Home composting may be the preferred option for more rural areas;									x							
pecific political decisio	**Recommendations - Bio-waste management (treatment at source) -** Community composting has higher costs as it requires teams to monitor and manage the composting islands and compost.																
Very likely to be applie	**Recommendations - Biowaste Management (treatment at source) -** Do not implement selective collection of biowaste in areas with domestic/community composting.									x							
Very likely to be applie	**Recommendations - Bio-waste management (treatment at source) -** Criteria for home composting projects (see composting recommendations tab)									x							
pecific political decisio	**Recommendations - Bio-waste management (treatment at source) -** Criteria for community composting projects (see composting recommendations tab)																
pecific political decisio	**Recommendations - Bio-waste management (treatment at source) -** Create a team responsible for maintaining the composting islands and treating the compost (evaluate no-cost solutions: volunteers (scouts, etc.);																
pecific political decisio	**Recommendations - Bio-waste management (treatment at source) -** Train and enable households to deliver bio-waste to community composters;																
pecific political decisio	**Recommendations - Bio-waste management (treatment at source) -** Give visibility to and publicize the results and the compost created.																
pecific political decisio	**Recommendations - Bio-waste management (treatment at source) -** allocate a "Master composter" to accompany composting projects, provide training, raise awareness, control compost quality.																
pecific political decisio	**Recommendations - Bio-waste management (treatment at source) -** Evaluate the preparation of an economic feasibility study to install a small-scale composting plant (centralized composting) identical to the Centralized Composting Project presented in Germany.																

Figueira da Foz:

Biowaste Management and Tariff Systems - Turning Challenges into Opportunities Coimbra, 4 and 5th march 2025																		
Calendário de implementação das recomendações propostas - Calendar of implementation of the proposed recommendations																		
Applicability [1]	**Recommendations**	**abr/25**	**mai/25**	**jun/25**	**jul/25**	**ago/25**	**set/25**	**out/25**	**nov/25**	**dez/25**	**jan/26**	**fev/26**	**mar/26**	**…**	**…**	**…**	**Comments**
Very likely to be applied	**General recommendations** - It is important to implement a combination of technical, political and regulatory instruments in order to achieve the objectives and targets set for the sector (mandatory separation of bio-waste in municipal regulations, implementation of collection and treatment solutions at source, waste management plans, updated municipal regulations, etc.)		x														
Very likely to be applied	**General recommendations -** summarize/benchmark the existing models and technical solutions in the region and develop an integrated strategy for all the low management entities in the Coimbra region based on this framework, which is coherent, standardized and tailored to the needs and characteristics of all the municipalities.		x														
pecific political decisio	**General recommendations -** When choosing the technical solutions to be implemented, not only the investment (CAPEX) should be considered, but also the operating and operational costs (human resources, fuel, etc.).		x														
n as not applicable at t	**General recommendations -** Consider reviewing the management and governance model and creating a common territorial strategy for waste management among all municipalities.								x								
Very likely to be applied	**General recommendations -** Improve cooperation between low level and high level management entities (meetings at fixed intervals, etc.)		x														
Very likely to be applied	**General recommendations -** Improve cooperation between low level management entities (meetings, events, at fixed intervals, etc.)													x			
n as not applicable at t	**General recommendations - S**haring infrastructures and assets/equipment between downstream management entities													x			
Very likely to be applied	**Recommendations Tariff systems -** take into account the fundamental principles for setting tariffs and ensuring that they reflect the true cost of waste management services (cost-effectiveness; transparency and reasonableness; the polluter pays principle). - see recommendations tab tariff systems				x												
Very likely to be applied	**Recommendations Tariff systems -** take into account the phases of implementing a PAYT system: 1- Definition of the technical solution; 2- Acquisition of equipment; 3-Implementation of a pilot project; 4-Communication and publicity campaign; 5-Monitoring and control. see recommendations tab Tariff systems				x												
Very likely to be applied	**Recommendations Tariff systems -** take into account the importance of ensuring adequate cost coverage prior to implementing PAYT and adapting and updating municipal regulations				x												
Very likely to be applied	**Recommendations Tariff systems -** plan and inspection and monitoring teams to ensure that waste is sorted, deposited and collected correctly.																
Very likely to be applied	**Recommendations - Bio-waste management** - Make the separation of bio-waste obligatory (European and national legislation already exists, this obligation needs to be reflected in municipal regulations, which need to be updated and modernized);							x									
n as not applicable at t	**Recommendations - Bio-waste management (selective collection)** - evaluate the possibility of grouping territorial areas (52% of biowaste is concentrated in 18% of territorial area, without bordars) and which have the potential to create an integrated management model (along the lines of the inter-municipal associations in Flanders).												x				
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Very likely to be applied	**Recommendations - Bio-waste management (treatment at source) -** Home composting has low investment and operating costs; but it must be carried out correctly - training, monitoring, dissemination.	x															
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Very likely to be applied	**Recommendations - Biowaste Management (treatment at source) -** Do not implement selective collection of biowaste in areas with domestic/community composting.	x															
Very likely to be applied	**Recommendations - Bio-waste management (treatment at source) -** Criteria for home composting projects (see composting recommendations tab)					x											
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5.4 – Conclusions

Overall, the event successfully facilitated the exchange of knowledge and best practices in waste management, focusing on financial incentives, tariff systems, selective biowaste collection, and on-site treatment. Experts from various European countries contributed valuable insights and recommendations tailored to address specific regional challenges.

Key conclusions from the event include:

1. **Transitioning to Polluter-Pays Systems:** Moving from water consumption-based waste tariffs to models based on non-recyclable waste production is essential. PAYT (Pay-As-You-Throw) systems, considering volume, collection frequency, or weight, have proven effective in reducing waste generation, as demonstrated in Flanders´, Germany and Alytus Region.

2. **Importance of Tariff Structure:** Establishing tariffs that reflect the true cost of waste management requires a fixed component for service costs and a variable component based on waste generation. Clear indicators and monitoring methods are crucial for evaluating the impact of tariff systems.

3. **Integrated Bio-Waste Management:** An integrated strategy involving all regional entities is crucial for effective bio-waste management. Prioritizing green waste and considering both investment and operational costs are essential.

4. **Governance and Collaboration:** Developing integrated territorial strategies, improving cooperation between waste management entities, and ensuring regular communication between stakeholders and policymakers are vital for successful waste management.

5. **Mandatory BioWaste Separation:** Updating municipal regulations to mandate biowaste separation is necessary. Selective collection systems should be compatible with future PAYT implementation.

6. **On-Site Treatment Solutions:** Promoting home composting in rural areas and community composting where home composting is not feasible offers cost-effective solutions. Deploying "Master Composters" can improve the quality of compost produced.

7. **Phased Implementation of PAYT:** Implementing PAYT should follow a phased approach: technical solution selection, equipment acquisition, pilot project, communication campaign, and monitoring/control.

8. **Data-Driven Decision Making:** The importance of data collection and indicator definition for monitoring operations was highlighted to make effective decisions.

These conclusions emphasize the need for integrated, data-driven, and collaborative approaches to improve waste management practices and achieve sustainability goals.

5.5. Stakeholder Feedback and Assessment

Penacova municipality:

"Although I only participated in a small part of the event, I believe it was well-run and very relevant. The testimonies of the European experts were very interesting, giving me the impression that while we have made some progress in bio-waste management, we still have a long way to go, lacking financial resources to mobilize for the implementation of bio-waste initiatives and PAYT systems."

Condeixa-a-Nova municipality:

“Participation in this event proved extremely useful and timely, considering the current challenges that all Portuguese municipalities are facing in implementing a new waste management model. This model must necessarily include selective collection solutions and/or on-site treatment of biowaste, adapted to each territory, based on its different specificities and defined strategies. The sharing of experiences that took place alerted us to the scale of this change and the constraints associated with the process, but above all, it allowed us to connect with ongoing solutions, efficient operating practices, technologies, and new or innovative approaches to mobilize and involve the community in a problem that affects everyone. This event was an excellent moment for learning, discussion, and reflection on the future of selective collection of bio-waste in the central region.”

APIN representative:

“The event held on March 5th and 6th, 2025, at the CIM facilities in Coimbra was highly positive. The sharing of experiences with other EU countries, as well as projects implemented nationally (Cascais Ambiente and Lipor) in the field of biowaste management, even if the scenarios are different in relation to APIN's area of intervention, allows us to retain relevant information that helps us leverage our projects. The importance of implementing the PAYT system, as well as the need to monitor domestic composters, two relevant topics addressed at the event, but to achieve success in implementation, awareness campaigns and training with the population (domestic and non-domestic) are crucial.”

INOVA municipal company of Cantanhede municipality:

“The event was extremely valuable, not only for the content shared but also for the humility and ease with which they involved and welcomed us, offering the possibility of mutual support.

The presentation of practical cases with their respective results and difficulties in various European regions showed us that the challenges we face are common and cross-cutting to all countries.

It became clear that it is possible to reduce the amounts of waste collected and increase recycling rates with the implementation of PAYT and with investment in the collection of biowaste.

Regarding the Excel file, we have not yet been able to outline and plan a strategy suitable for the municipality."

Montemor-o-Velho municipality:

""The event was an enriching experience for the participants, in terms of getting to know the realities of other countries and establishing a network of contacts. However, given the climate and culture of the participating countries, there are solutions presented, specifically in terms of organic waste collection, which are not applicable in our territory."

Soure municipality:

"I would also like to inform you that the Technical Event was a success in the exchange of information/experiences, contributing on a large scale to an increase in knowledge in this area, thus allowing for a better understanding for future implementations with regard to bio-waste. Thank you."