

“Biowaste collection: learning from experiences”

Breakout session

15:15 – 16:30

Hotel Elisabeth



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BEAUTIFUL
OVAM

Francesc Giró i Fontanals

Agència de Residus de Catalunya



Mike Stinavage

ENT



Gemma Nohales

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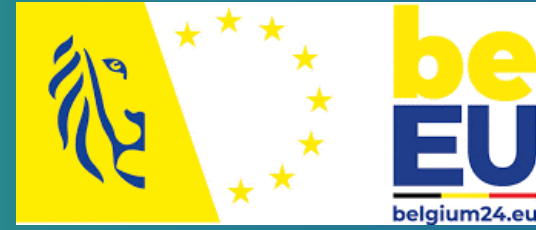
Agència de Residus de Catalunya



Case study Catalunya



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“A futureproof EU Waste Framework Directive” workshop

Biowaste Collection: learning from experiences

30 years of experience in Biowaste Separate Collection in Catalonia.

Menchelen - Belgium, 14th June 2024

FRANCESC GIRÓ i FONTANALS

Director of Strategic Planning

LEARNING FROM FRONT-RUNNERS

SHARING OUR EXPERIENCE

GERMANY

ITALY

AUSTRIA

BOLIVIA

GREECE

LEBANON

**BIOWASTE
Separate Collection**

**AERATED SYSTEM
DOOR TO DOOR**

**DECENTRALIZED
Biowaste Management**

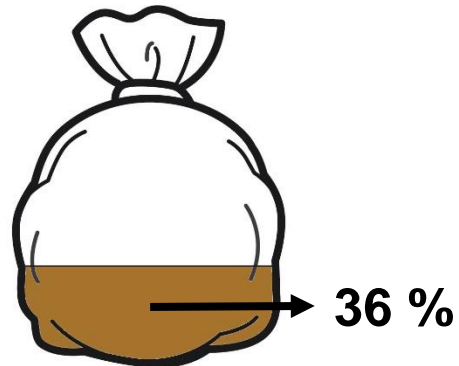
Optimizing the Separate Collection of Biowaste, Quantity & Quality, Traceability, Environmental Taxation



<https://www.enicbcmed.eu/projects/sircles>

Separate Collection MSW in Catalonia

1993 → 1.4 %
2023 → 45.4 %



~1,200,000 T/year
150 kg / inhab-year

BIOWASTE

Legal Obligations > LAW

Separate Collection Binding Targets (PRECAT20) > PROGRAM

Infrastructures Network (PINFRECAT20) > PLAN

Economic Tools

- ENVIRONMENTAL TAXATION
- Subsidies to Public administrations for implementing & improving Separate Collection of Biowaste

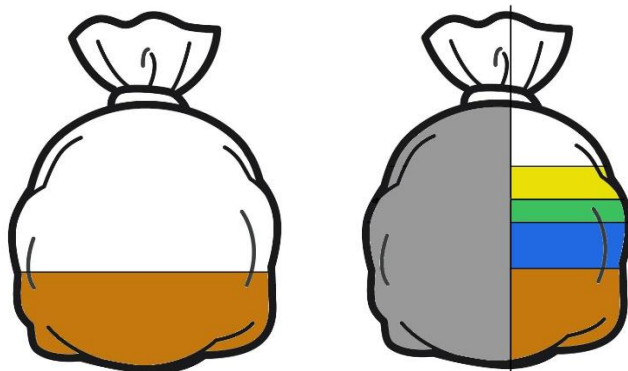
Answering the main questions

Why?

- **Legal reasons**
 - **Catalan Law on Waste (1993)**
 - **Biowaste Separate Collection COMPULSORY**
 - Planning High Efficiency Separate Collection
 - **Waste Directive (2008/2018)**
 - MW Recycling Targets (50%>**55%**>**60%**>**65%**)
 - Biowaste Separate Collection COMPULSORY (2024)
- **Environmental reasons**
 - Efficient use of resources
 - Fighting against climate change
 - Improving soil fertility & protection
- **Economic reasons**
 - **Environmental Taxation linked to Biowaste QUALITY monitoring**

What?

- **Biowaste (typology)**
 - Leftovers from food and food preparation, plant and animal origin, fresh or cooked (32%)
 - Green waste (4%)
- **Characteristics of Biowaste**
- **Amount of Biowaste (36%)**
 - Potential ~1,200,000 T/year
 - Distribution between Separate Collection of Biowaste & Residual Waste



Who?

- **Biowaste Producers:**
 - **Households** (Homes, Apartments, etc.)
 - **Commercial activities** (can generate between 25% to 40% of the overall biowaste):
 - Commercial establishments: supermarkets, markets, shops, etc.)
 - HORECA (hotels, bars, restaurants, canteens, etc.)
 - Other activities that have community canteens (schools, hospitals, nursing homes, factories, etc.)
- **Seasonality of the generation**
 - Down
 - High (associated with tourism)

Answering the main questions

How?

- **Separation at source**
 - Using compostable bags (EN-13432) and ventilated bucket [aerated system]
 - Prevention
 - Reduces problems: odours, flies, leachates, ...
 - Comfortable for users
 - Higher quality of biowaste



How?

When?

- **Separate Collection**
 - Thorough **Road Containers**
 - Permanent (24 h x 365 d)
 - Limitations / Closure



Door to Door

- **BIOWASTE**
 - 2/3 times/week
- Residual waste
 - Once per week
 - Fortnightly

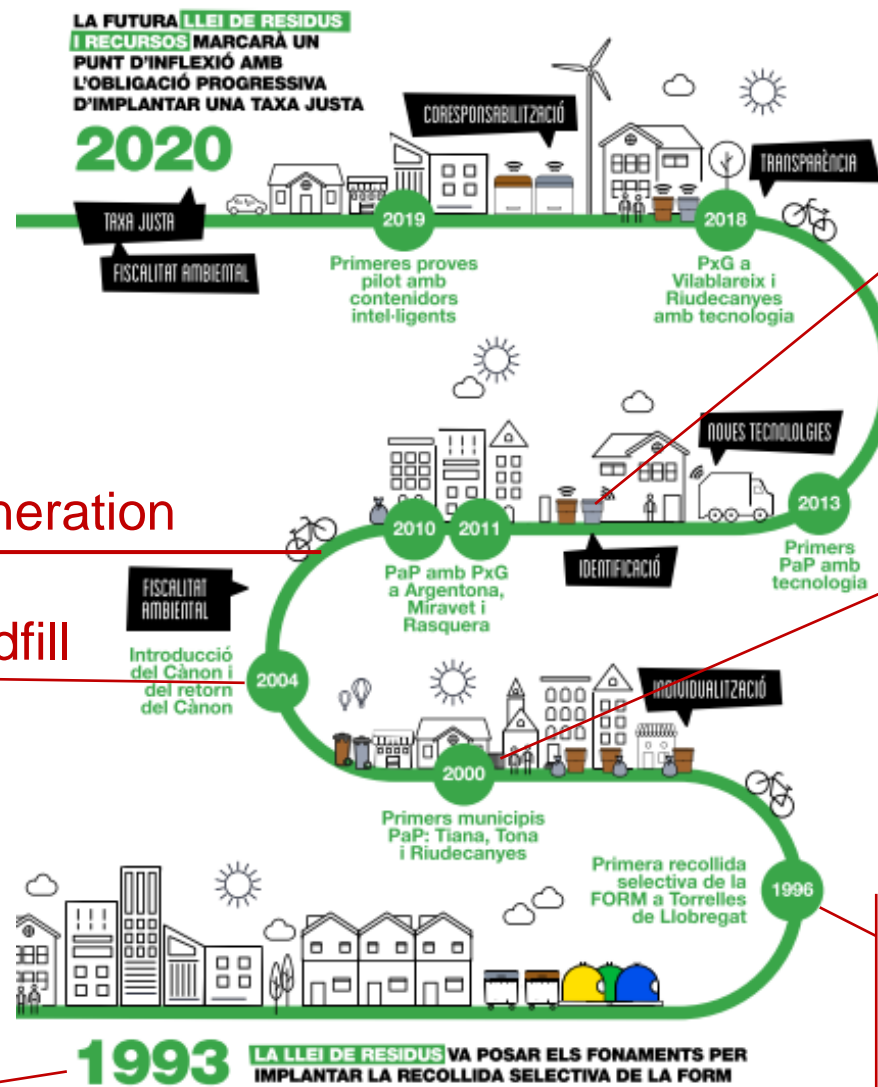


Where?

- **Biological treatment**
 - **Composting [C]**
 - Home-composting
 - Community Composting
 - Composting plants
 - **Anaerobic Digestion [AD]**
 - **Combined systems [AD+C]**
- Facilities with:
 - Different dimensions and technological systems



A long journey of 30 years. Some main milestones



**FAIR TAX
(PAYT & BBP)**

**DOOR TO DOOR
Collection**

**Separate
Collection of
BIOWASTE**

**QUANTITY
&
QUALITY**

- ✓ Optimization of the Separate Collection
 - ✓ technique
 - ✓ environmental
 - ✓ economic
- ✓ Co-responsibility
- ✓ User identification
- ✓ Transparency
- ✓ Fair Tax

**Environmental
Taxation**

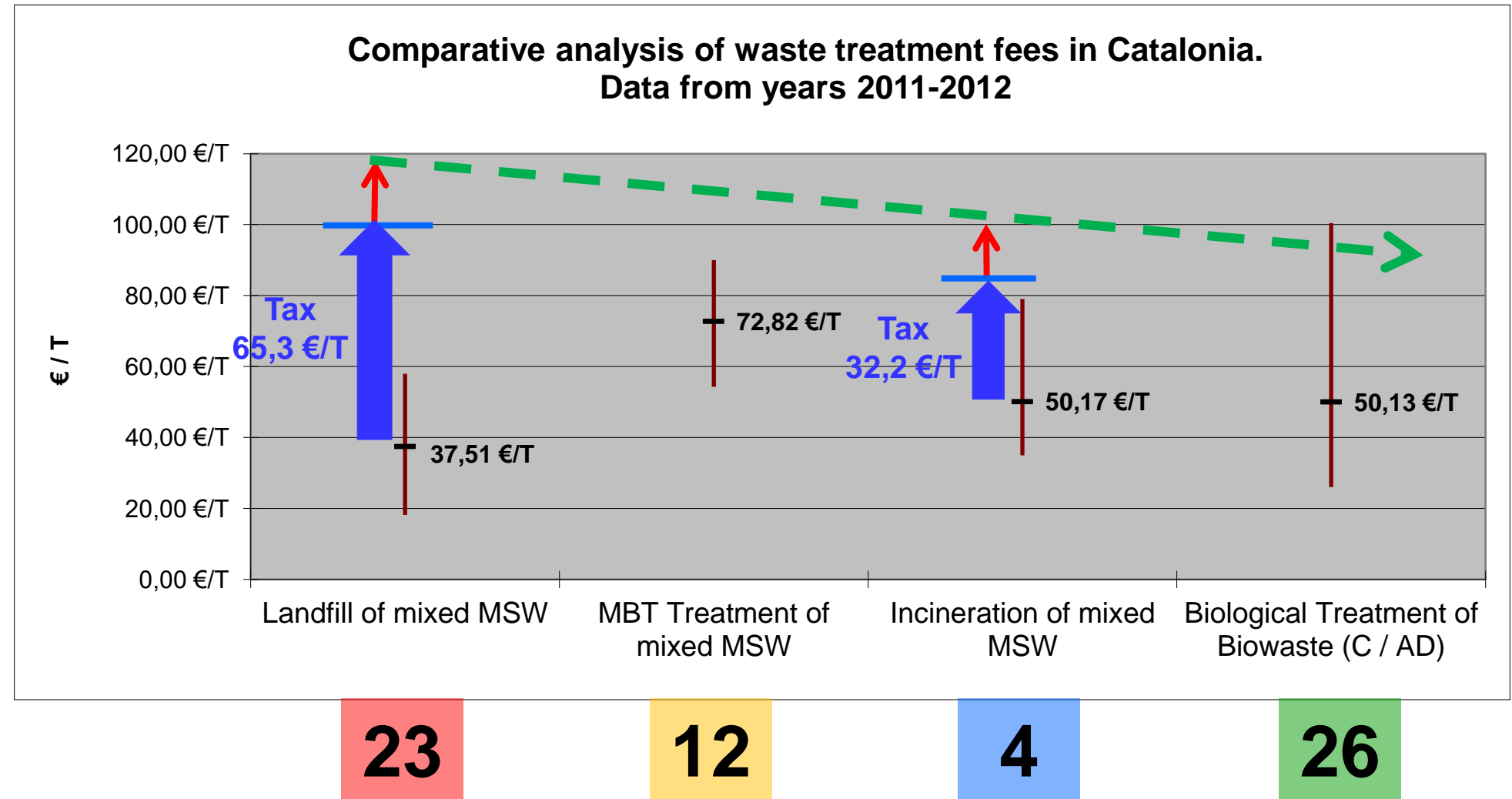
Incineration

Landfill

**Law on Waste
Biowaste Separate
Collection
COMPULSORY**

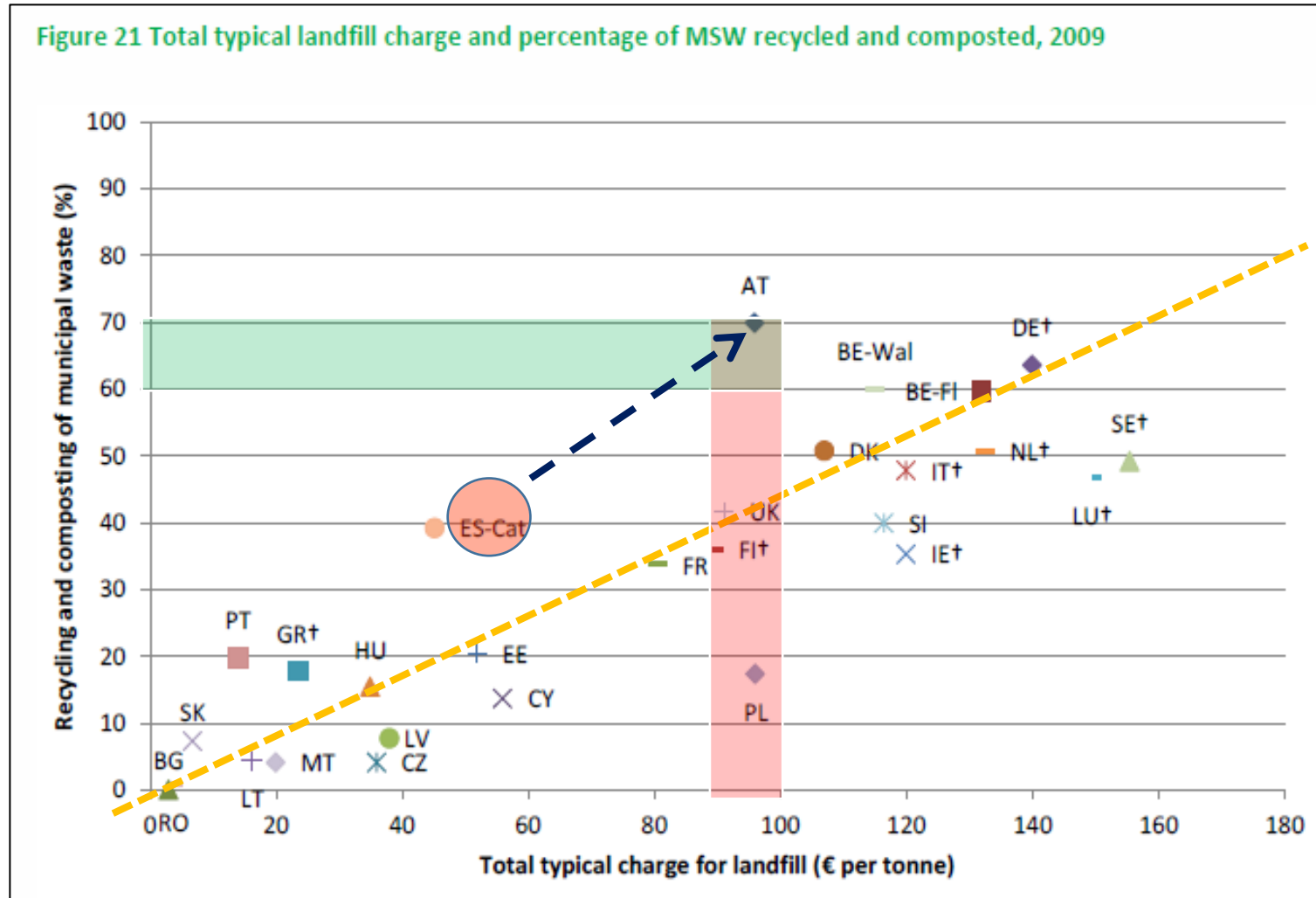
Why the landfill & incineration tax was implemented?

Because the cost of waste treatment did not respect the priority of the waste hierarchy. Landfilling and incineration fee was cheaper than recycling fee !



Why the landfill & incineration tax was implemented?

Due to the need & will to improve waste recycling rates



There is a direct correlation between the cost of landfill and the rate of recycling and composting. The more expensive, the more recycling.

Source: Use of economic instruments and Waste Management Performances. Final Report April 10, 2012 (DG ENV)

Environmental Taxation on Waste in Catalonia

Figure 21 Total typical landfill charge and percentage of MSW recycled and composted, 2009

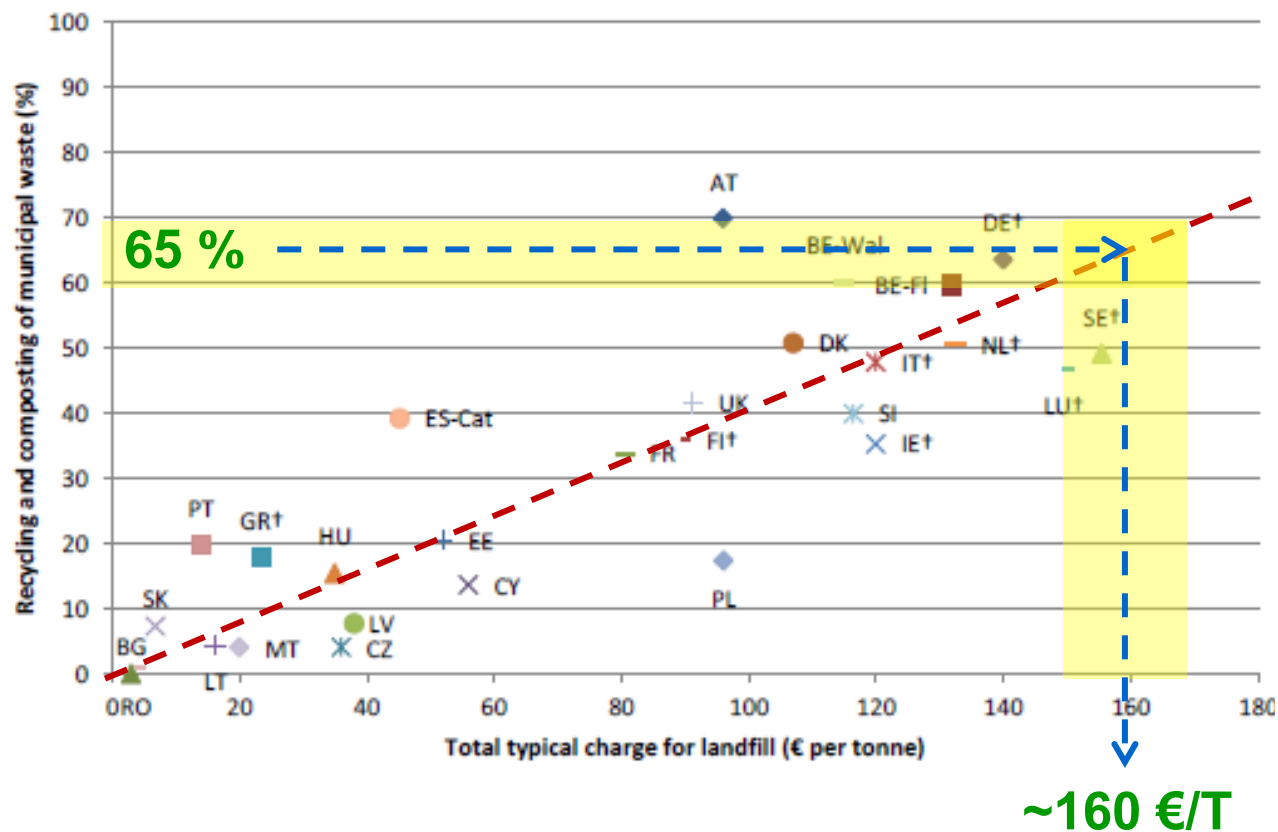
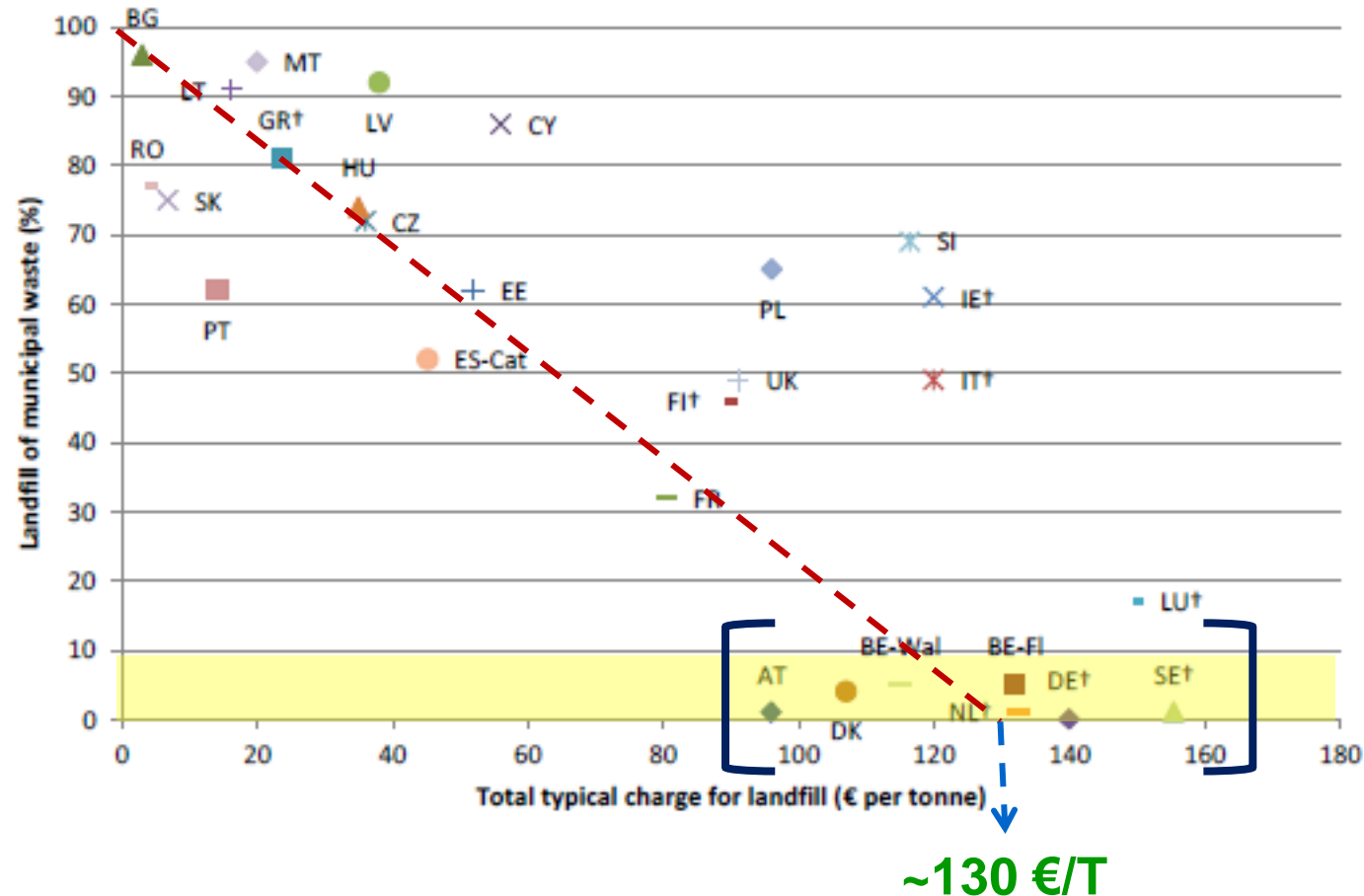


Figure 20 Total typical landfill charge and percentage of MSW landfilled, 2009

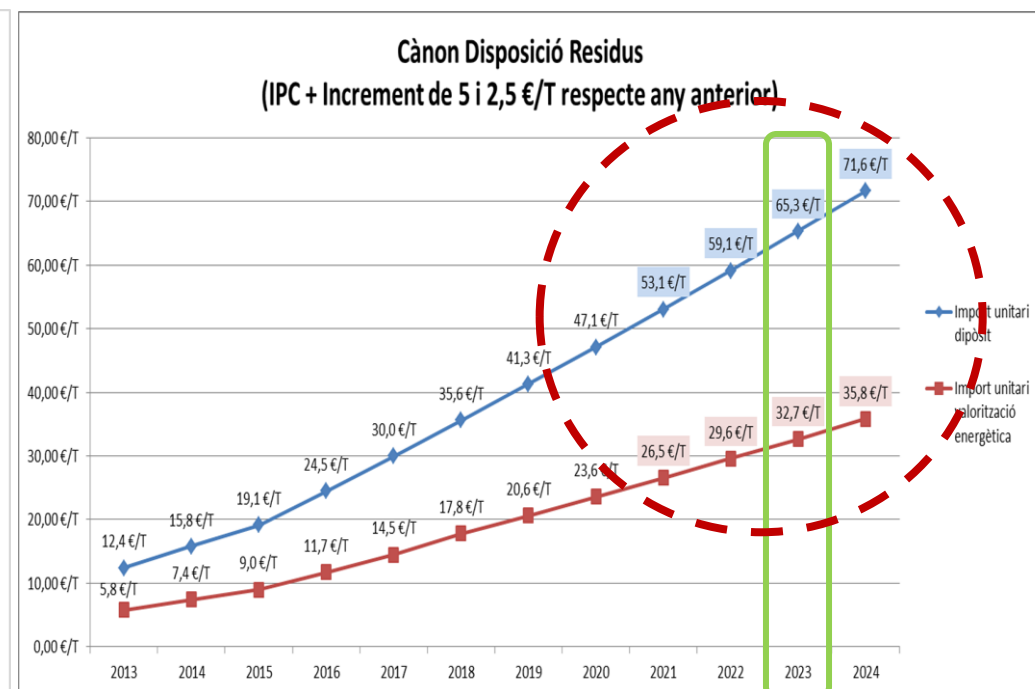
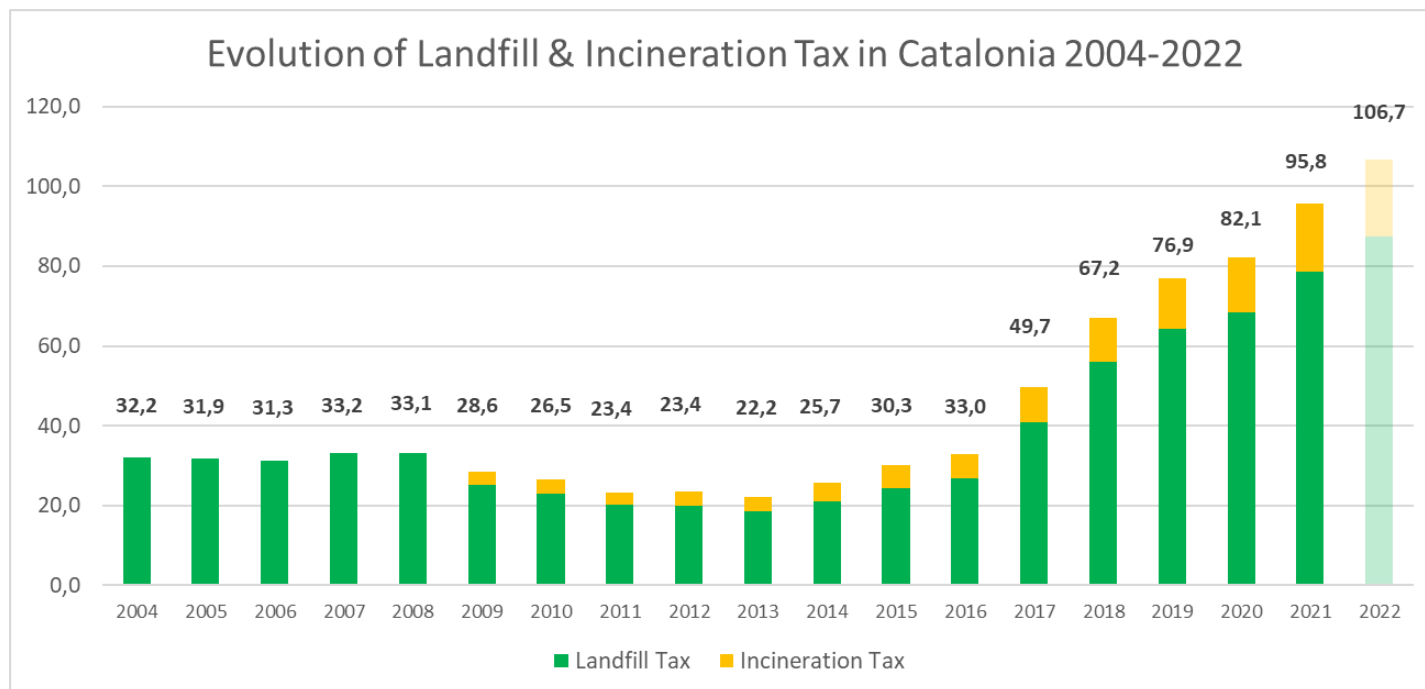


Overall Economic Charge (€/T) = Fee (€/T) + Tax (€/T)

Use of Economic instruments and Waste management Performances.
European Commission (DG ENV) April 2012

Environmental Taxation on waste

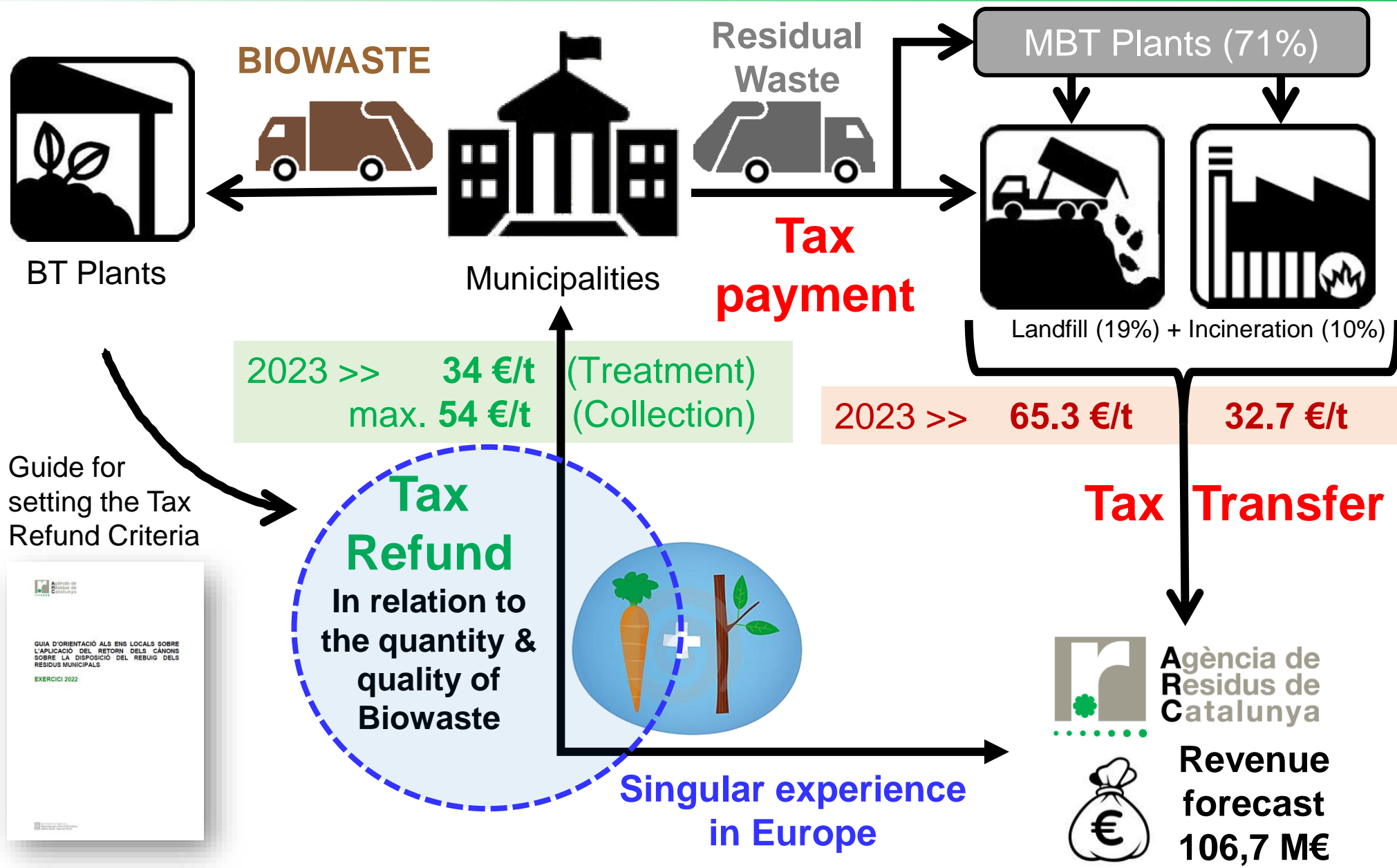
Tax Rate (€/T)	2004-2008	2009	2010	2011	2012-2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Landfill Tax	10	10	10	12	12,4	15,8	19,1	19,1	30	35,6	41,3	47,1	53,1	59,1	65,3
Incinerator Tax	---	5	5	5,5	5,7	7,4	9	9	14,5	17,8	20,6	23,6	26,5	29,6	32,7



Overall revenue 2004-2022: 853 M €
 Overall refunded Tax 2004-2022: 819 M€ (96%)

Expected TAX increase

Scheme on Environmental Taxation on waste

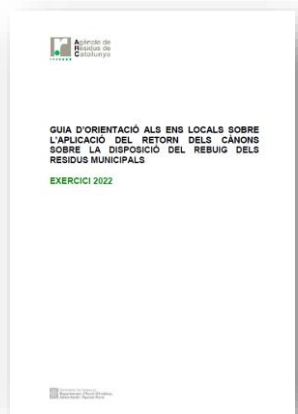


LANDFILL
 Average Fee: 52.0 €/T
 Tax 2023: 65.3 €/T
TOTAL = 117.3 €/T

Incinerator
 Average Fee: 70.0 €/T
 Tax 2023: 32.7 €/T
TOTAL = 102.7 €/T

In 2035, in order to achieve EU targets, the overall charge (fee + tax) for landfill should reach between €130/T and €150/T

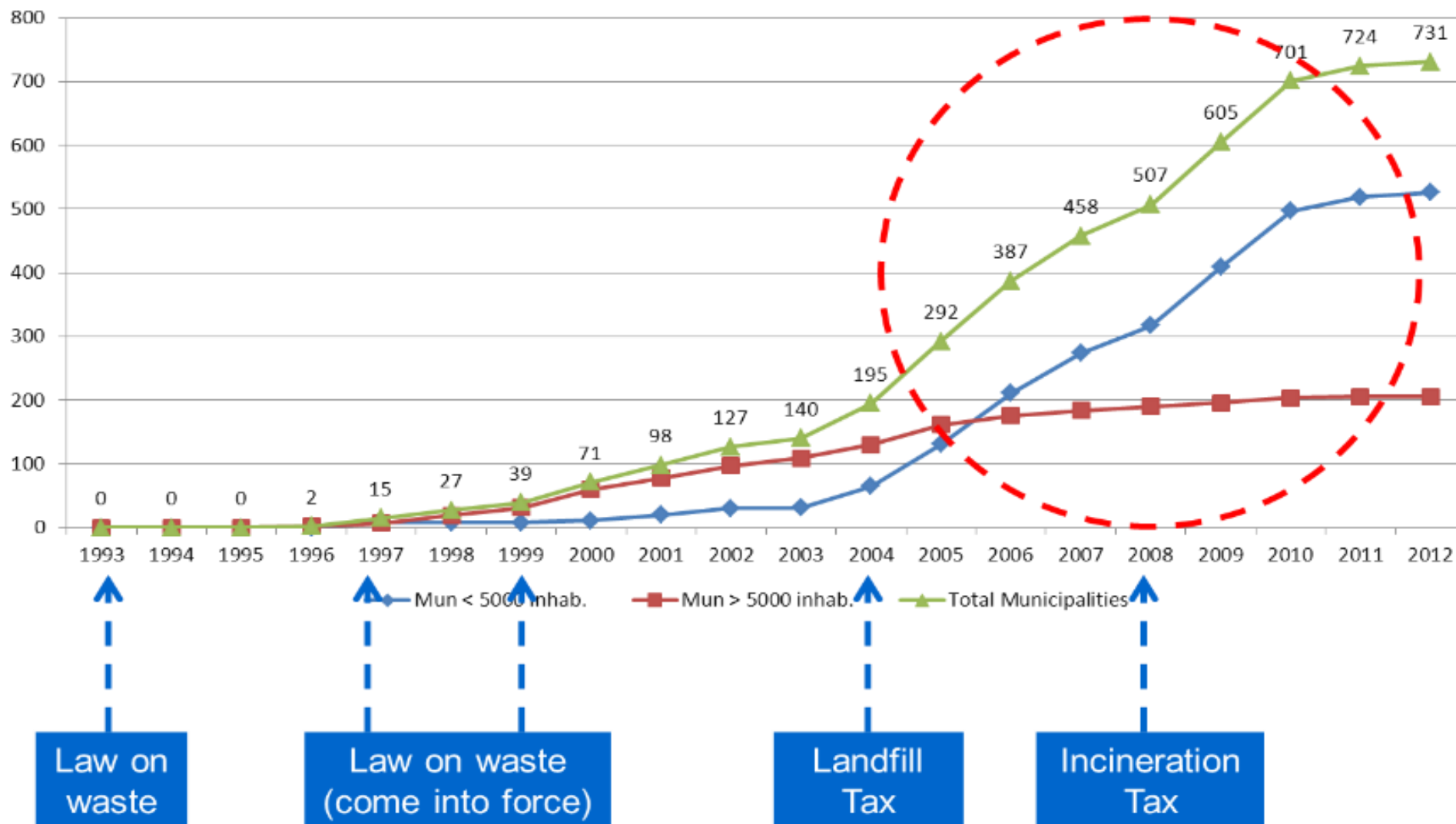
Guide for setting the Tax Refund Criteria



Environmental Taxation on Waste in Catalonia

Number of Catalan municipalities that implemented separate collection of biowaste since Law on Waste was approved

The Landfill and Incineration Tax has been very effective in stimulating the implementation of Separate Collection of Biowaste

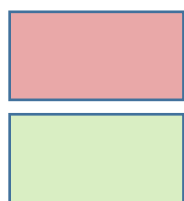
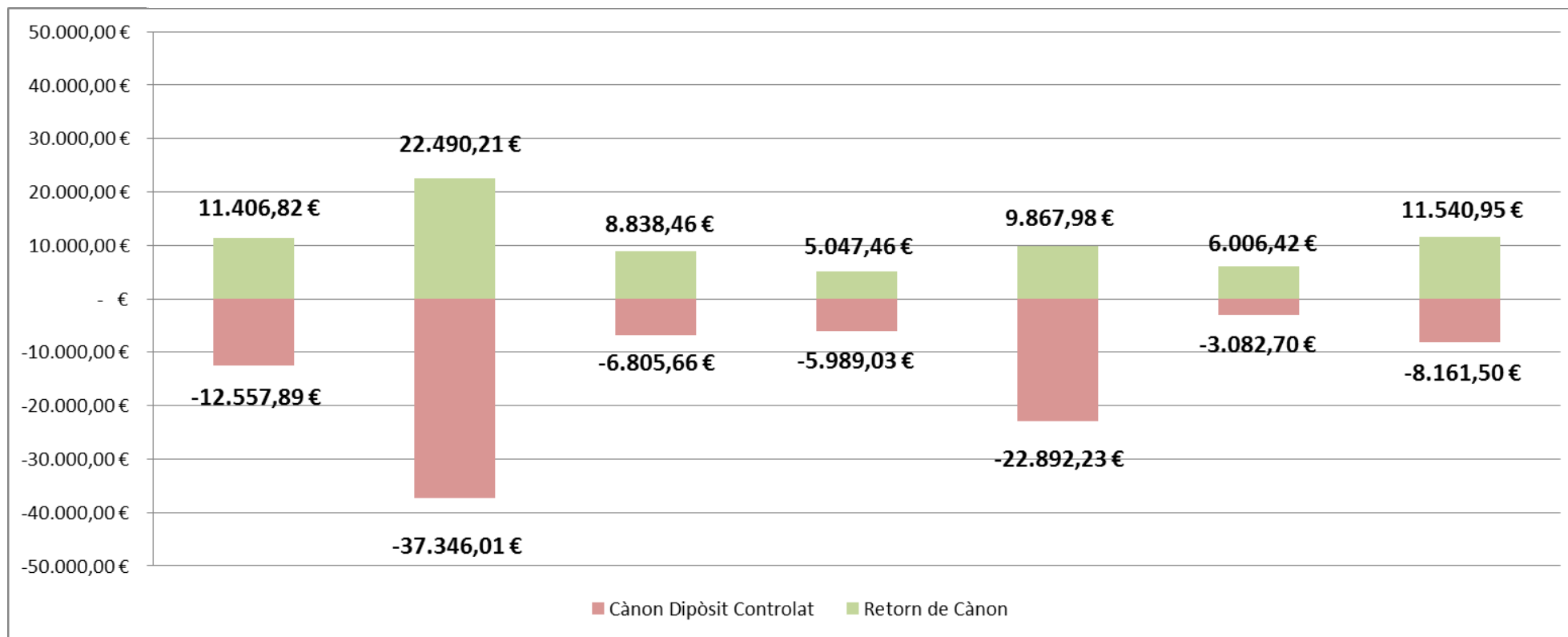


Environmental Taxation on Waste in Catalonia

Municipi 1 3.751 hab. Municipi 2 7.130 hab. Municipi 3 2.026 hab. Municipi 4 776 hab. Municipi 5 5.681 hab. Municipi 6 1.264 hab. Municipi 7 3.136 hab.

How does the landfill and incinerator tax affect Catalan municipalities?

Balance in 7 Catalan municipalities



Economic amount supported through the landfill / incinerator tax

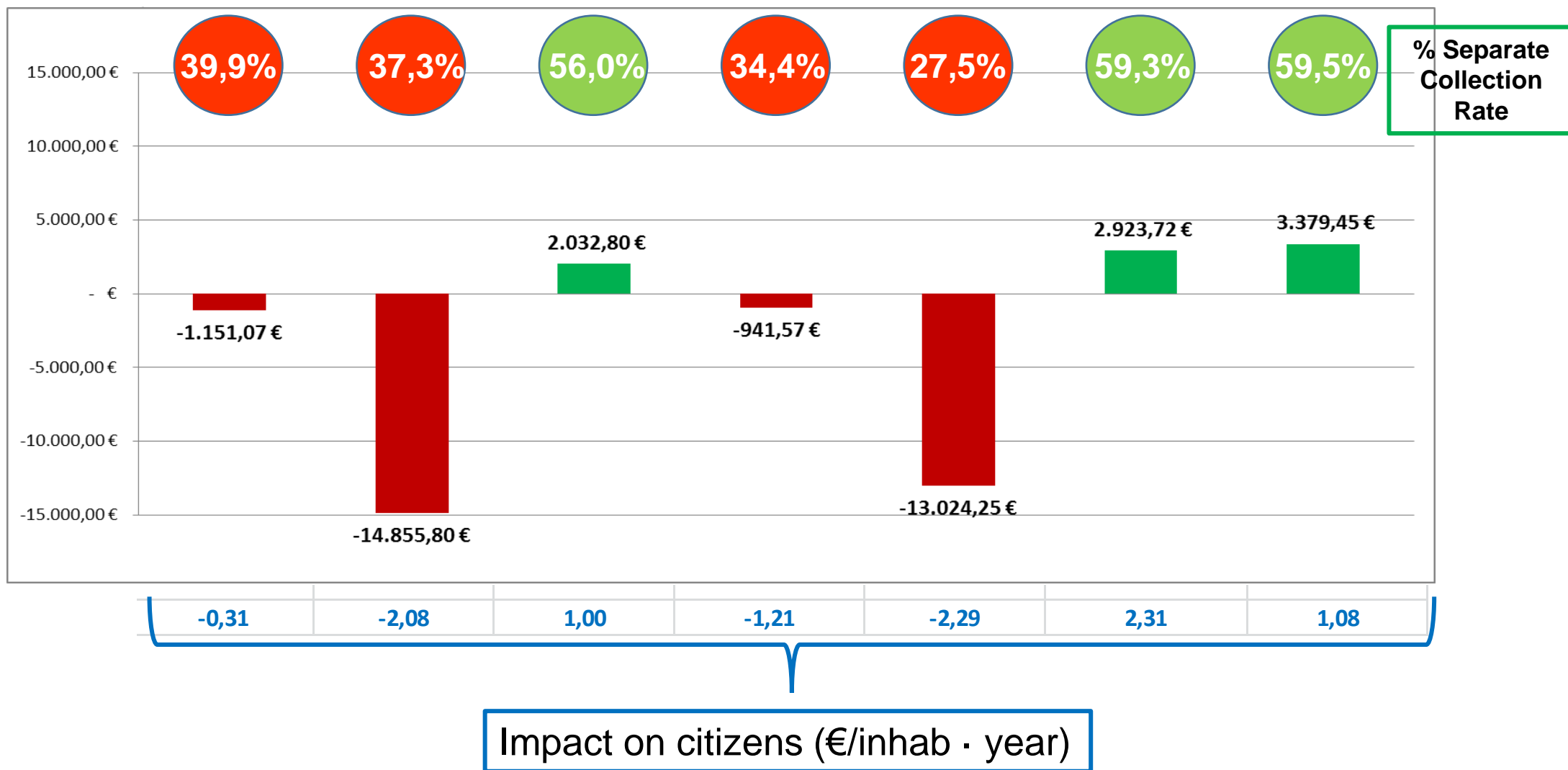
Economic amount corresponding to the Tax refund received

Environmental Taxation on Waste in Catalonia

Municipi 1 3.751 hab. Municipi 2 7.130 hab. Municipi 3 2.026 hab. Municipi 4 776 hab. Municipi 5 5.681 hab. Municipi 6 1.264 hab. Municipi 7 3.136 hab.

How does the landfill and incinerator tax affect Catalan municipalities?

Balance in 7 Catalan municipalities



Biowaste Quality Monitoring (since 2005)

- ~ 650 biowaste circuits (public or private)
- ~ 2,000 biowaste quality controls / year
- > 25,000 quality controls (since 2005)



Leftovers from food and food preparation



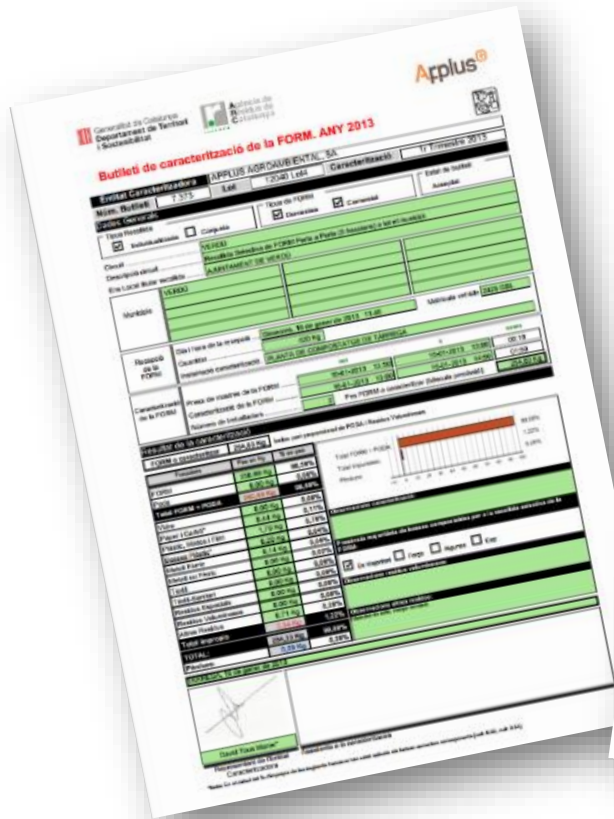
Impurities



Food Waste



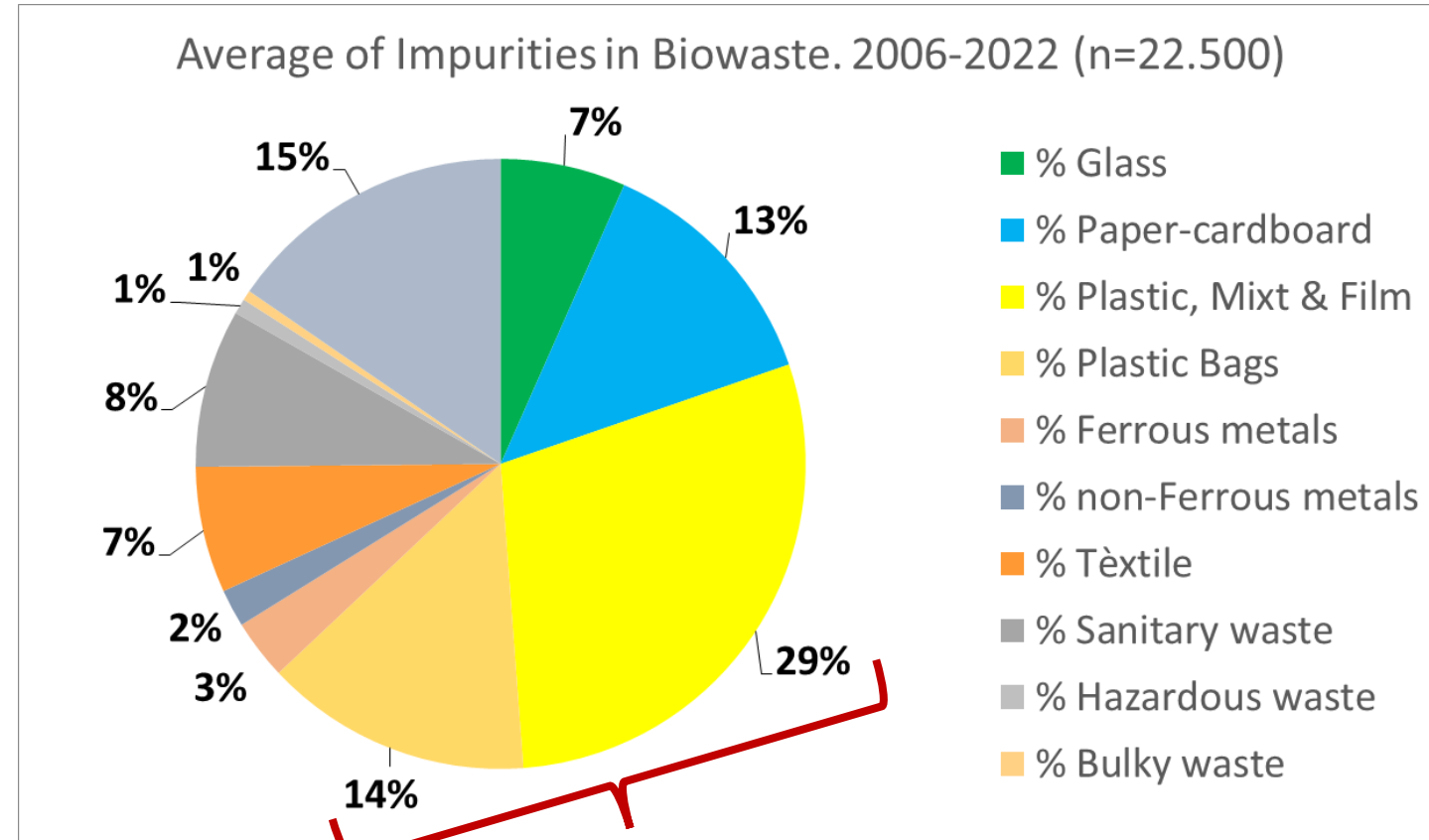
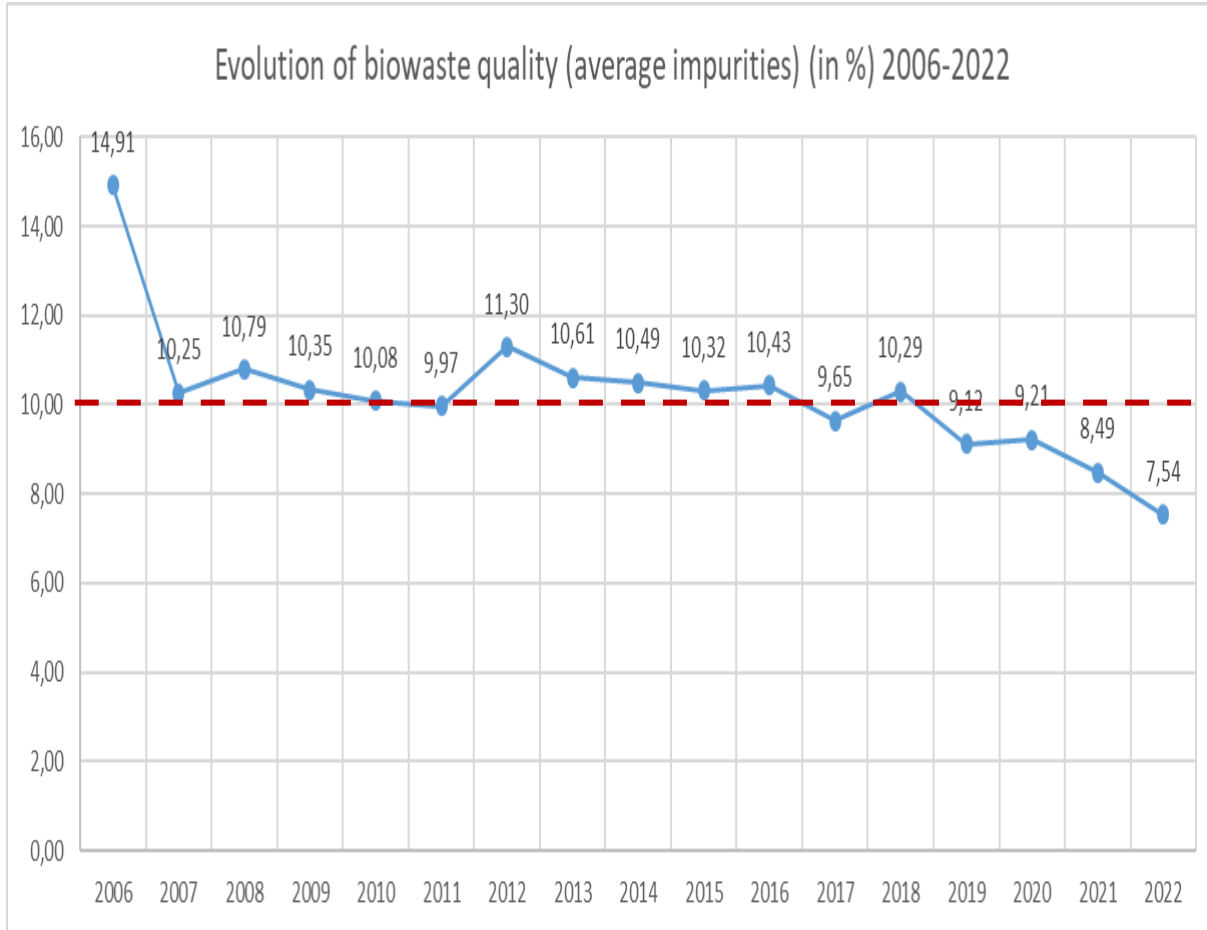
Green Waste




All this information is available in:

<https://sdr.arc.cat/cform/ListCaracteritzacions.do>

Biowaste Quality Monitoring (since 2005)



43% PLASTIC

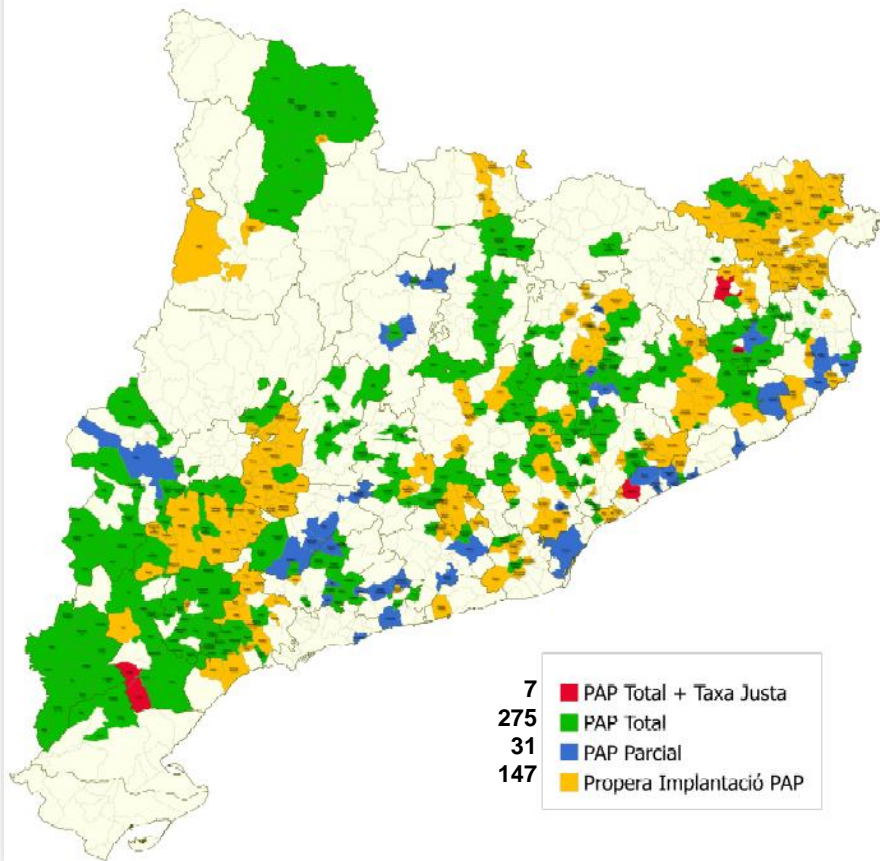
--- Target PRECAT20: < 10 % impurities

Average Impurities (2022): 7.5 %

DRAGGING EFFECT:
 Impurities present in Biowaste must be removed but this generates biowaste losses of the order of 2.5 to 3.0 times the amount of impurities

The Contribution of Door-to-Door collection

Implantació de la Recollida Selectiva Porta a Porta a Catalunya. Maig 2022

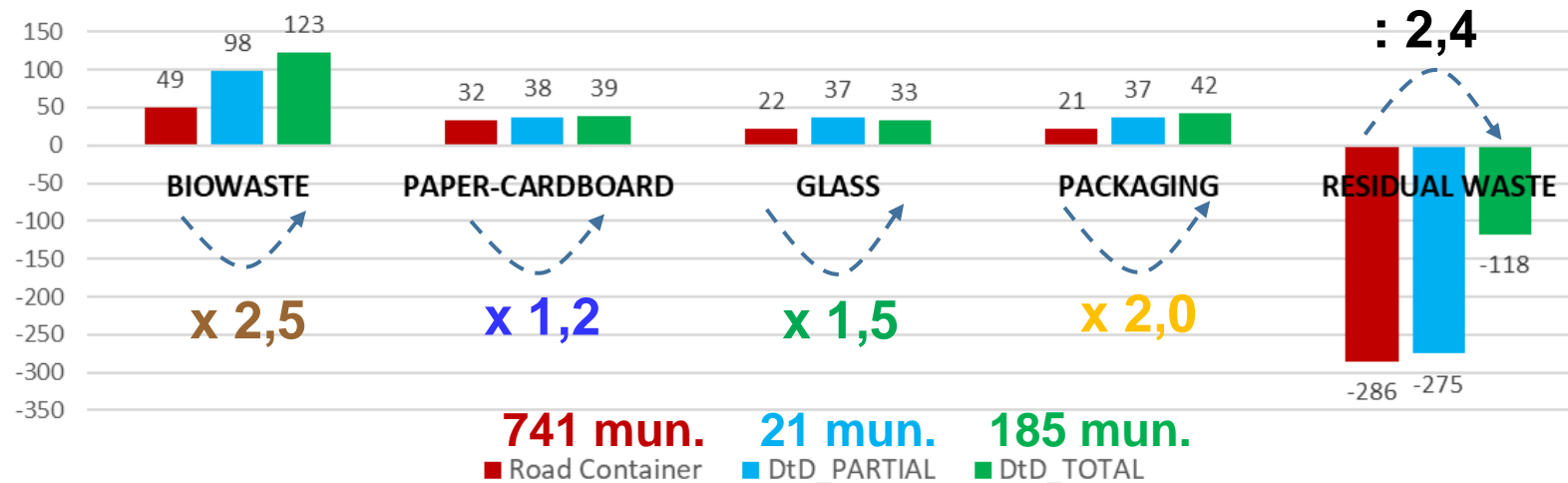


313 municipalities (33%)

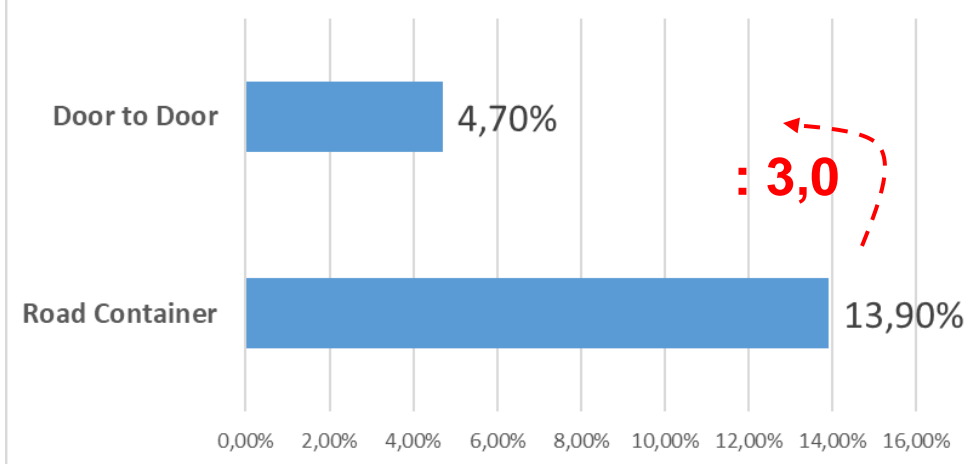
460 municipalities in future (49%)

860,000 inhabitants involved (11%)

Performances of Separate Collection (per fractions & SC System)
Year 2020 (Kg/inhab-yr)



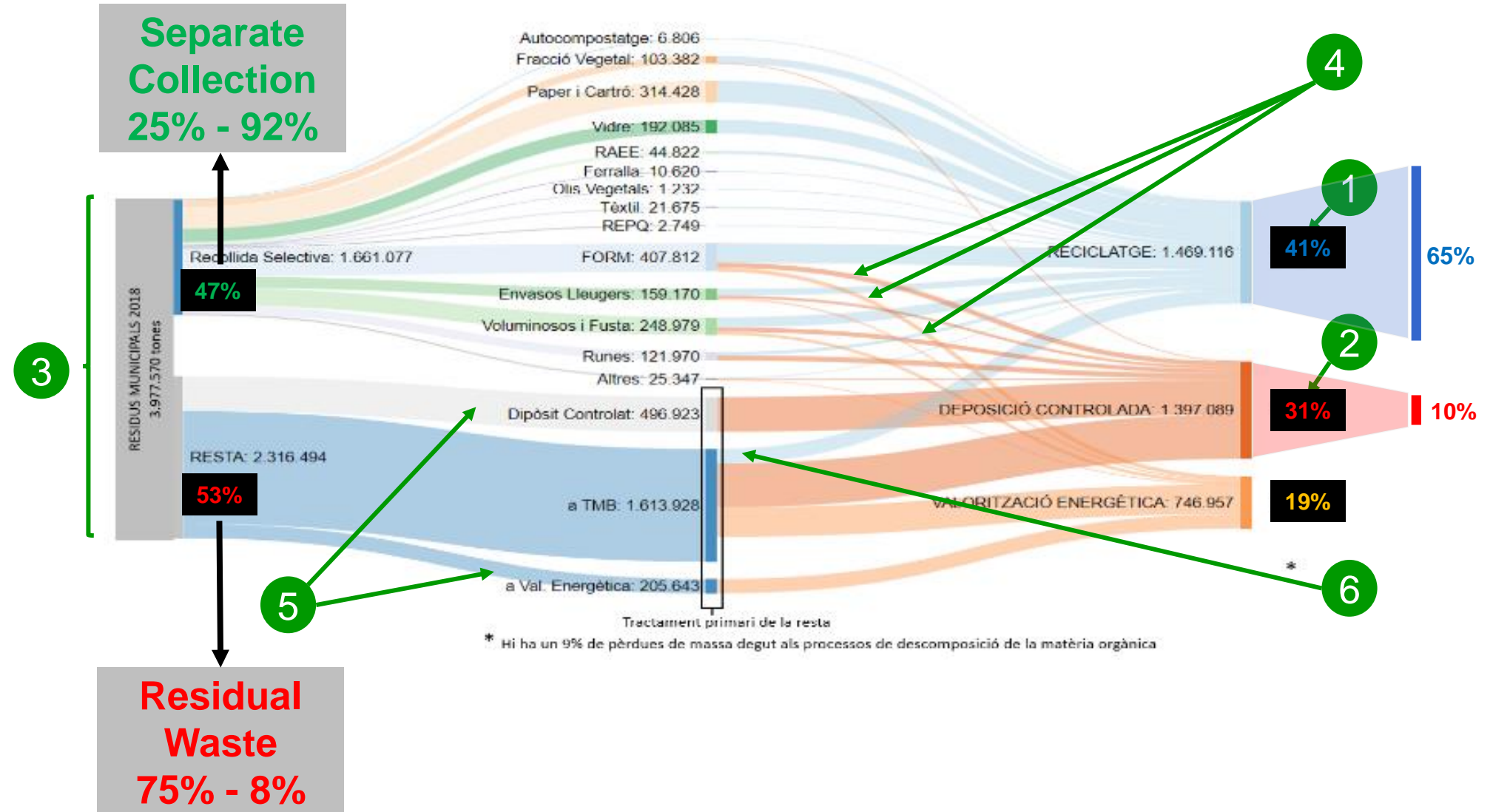
Biowaste Quality (% impurities) [2020]



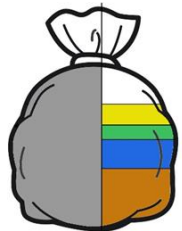
Current Situation (2022) of Municipal Waste Management in Catalonia vs EU targets

HOW TO ACHIEVE THE EU TARGETS (2035)

1. Increase recycling levels up to 65% (2035)
2. Reduce waste disposal up to 10% of the total
3. Maximize separate collection of MW in relation to the Residual Waste
4. Improve the quality of MW separate collection
5. Treat 100% of the residual waste thorough MBT (before landfill or incineration)
6. Improve the efficiency of MBT facilities



Residual Waste

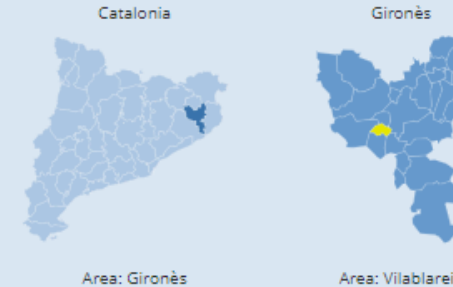
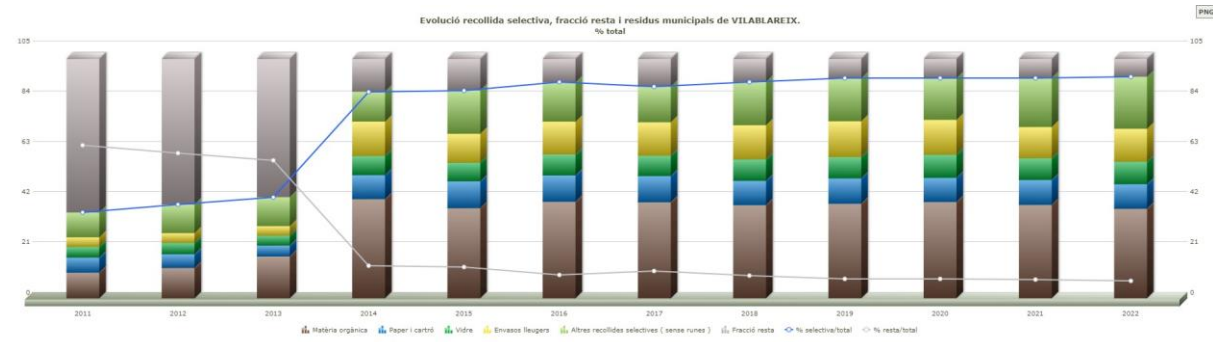


Separate Collection

Municipalities with the best results.

Exemple 1: Vilablareix Municipality

Vilablareix	
Code	172155
County	Gironès
Population (2022)	3,396
Surface area (km ²)	6.17
Density (inh./km ²)	550.4
Altitude (m)	114

Separate Collection System: Door to Door (5+3 fractions)



Year of Implementation of Door to Door: October 2013

Separate Collection Rate (2022): 92.61 %

Biowaste Separate Collection (2022): 108 kg/inhab·year

Biowaste Quality: 0,58% impurities

Residual Waste Collection (2022): 22 kg/inhab·year

Recyclable fractions in Residual Waste: 18.5%

Organic Matter in Residual Waste: 3%

MW Generation (2022): 0.82 kg/inhab·day

300 kg/inhab·year

Year of Implementation of Fair Tax (PAYT): 2018

Population Participation: 98 %

More info: <http://www.vilablareixportaaporta.cat/>

Municipalities with the best results.

Exemple 2: Community of municipalities La Plana

Mancomunitat La Plana
 County
Osona
 Number of municipalities **12**
 Population (2022)
34,500



Inauguration of the new composting plant for biowaste of very high quality (June 2022)



Separate Collection System: Door to Door (4+2 fractions)

DILLUNS	DIMARTS	DIMECRES	DIJOUS	DIVENDRES	DISSABTE	DIUMENGE
Reciclables	Orgànica + restes vegetals al contenidor específic	Resta	Orgànica + restes vegetals al contenidor específic	Reciclables	No hi ha recollida	Orgànica + restes vegetals al contenidor específic
Bossa semi-transparent	Cubell + bossa compostable	Qualsevol bossa	Cubell + bossa compostable	Bossa semi-transparent		Cubell + bossa compostable
+ Bolquers En una bossa a part	+ Bolquers En una bossa a part	+ Bolquers A la mateixa bossa	+ Bolquers En una bossa a part	+ Bolquers En una bossa a part		+ Bolquers En una bossa a part

Year of Implementation of Door to Door: since 2000

Separate Collection Rate (2022): 70% - 88%

Biowaste Separate Collection (2022): 121 kg/inhab·year

Biowaste Quality: 0,93% impurities

Residual Waste Collection (2022): 71 kg/inhab·year

MW Generation (2022): 1.13 kg/inhab·day
 413 kg/inhab·year

Implementation of Fair Tax (PAYT): In process

More info: <https://www.mancoplana.cat/93-arees/medi-ambient/>

Future challenges for biowaste management

Challenge-1

Advance in "efficient" separate collection systems in large cities and in municipalities with high density in order to achieve the European targets



Challenge-2

All municipalities should apply a fair tax (PAYT or equivalent) to citizens and economic activities in order to encourage better municipal waste management



Challenge-3

Keep improving the quality of biowaste, always promoting the separate collection with a compostable bag, and achieving less than 5% of impurities



Challenge-4

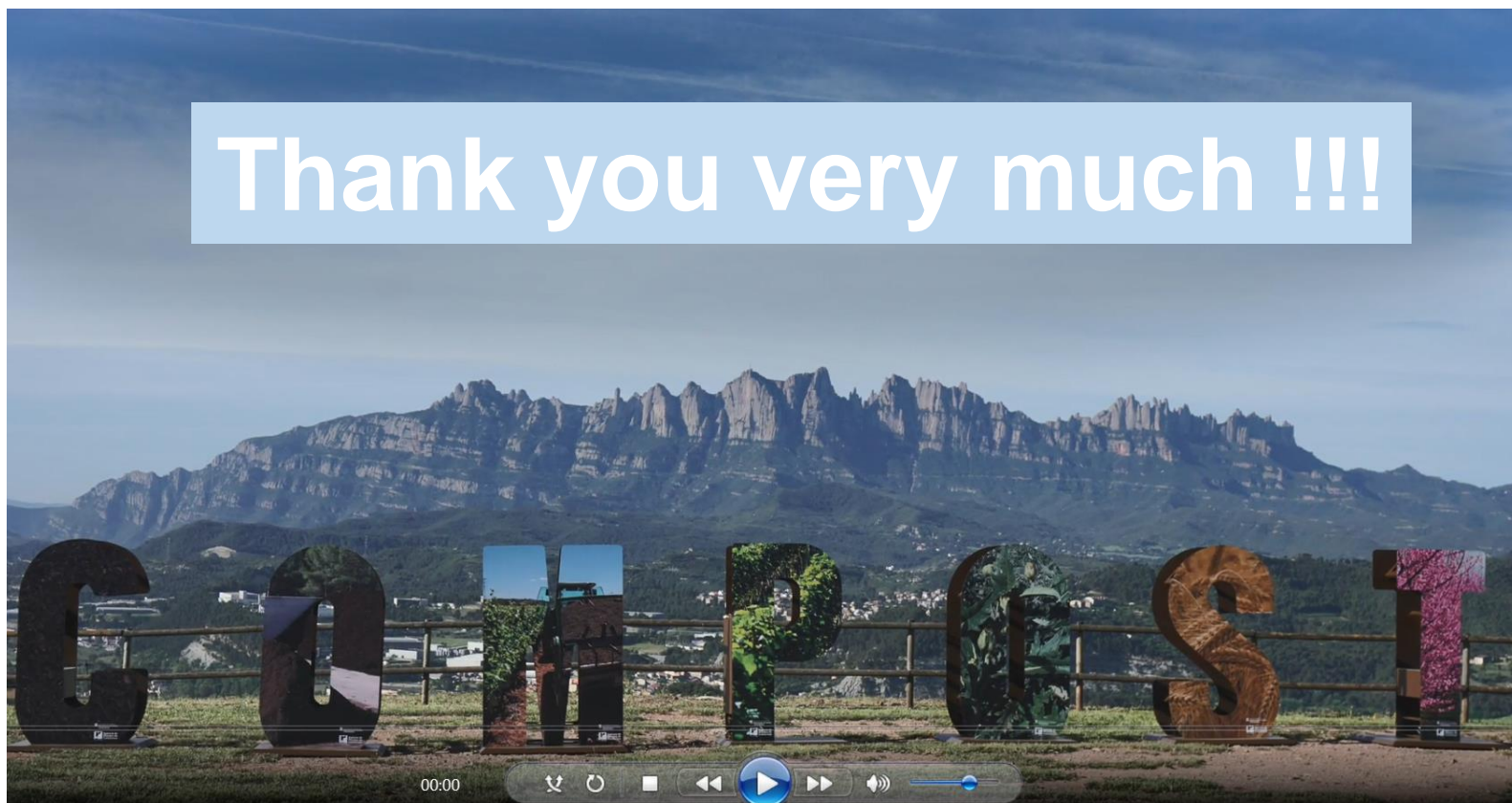
Increase in 10 years the biological treatment capacity by around 400,000 tons of biowaste, with a vision of decentralized management and km 0



Challenge-5

Facing the appearance of biodegradable / compostable materials & products (packaging or not) in the joint collection and treatment of biowaste





 <https://twitter.com/residuscat>

 <https://www.facebook.com/residuscat>

 https://www.instagram.com/residus_cat/

 <https://www.linkedin.com/company/agència-de-residus-de-catalunya>

 <https://www.youtube.com/user/residuscat/videos>

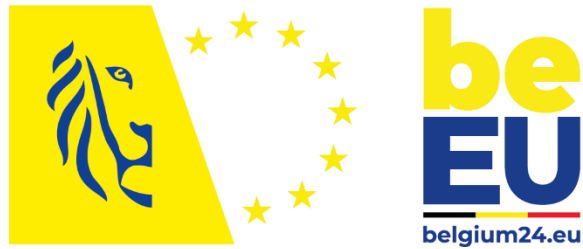
Mike Stinavage

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Gemma Nohales

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June 2024

Mike Stinavage & Gemma Nohales | ENT

D5.2 A policy brief including regulatory barriers

T5.1: Identifying and analysing policy and regulatory barriers for the production of high-quality compost and digestate from bio-waste

LIFE BIOBEST (2 min)

A large, thick green outline shape that is roughly triangular on the left and rounded on the right, containing the number "01" in white, bold, uppercase letters.

01

Guiding the mainstreaming of best biowaste recycling practices in Europe

2,5-year project, start date 1/1/23

CALL LIFE 2021-PREP-NATURA NATURE AND
BIODIVERSITY



Co-funded by
the European Union

LIFE Preparatory Projects - Projects addressing ad hoc
Legislative and Policy Priorities (PLP)

Preparing the basis for EU guidance and
standardization on closing the gap in the
**biological cycle to enrich soils with high quality
compost from collected organic waste in support
of nature and biodiversity**



ECN (European
Compost Network)



ZWE (Zero Waste
Europe)



ACR+

ACR+
(Association
of cities and
Regions)



Fundació
ENT



CIC (Italian
Composting
and Biogas
Association)



Objectives

- Identification and validation of the current Best Practices (BP) and management instruments
- Establish series of reference Key Performing Indicators (KPI)
- Stakeholder involvement and networking activities
- Consolidate and validate strategies and policies
- Study of proposed targets and requirements for bio-waste management
- Approach organic waste as a cross-cutting issue and a link to soil health

Outputs

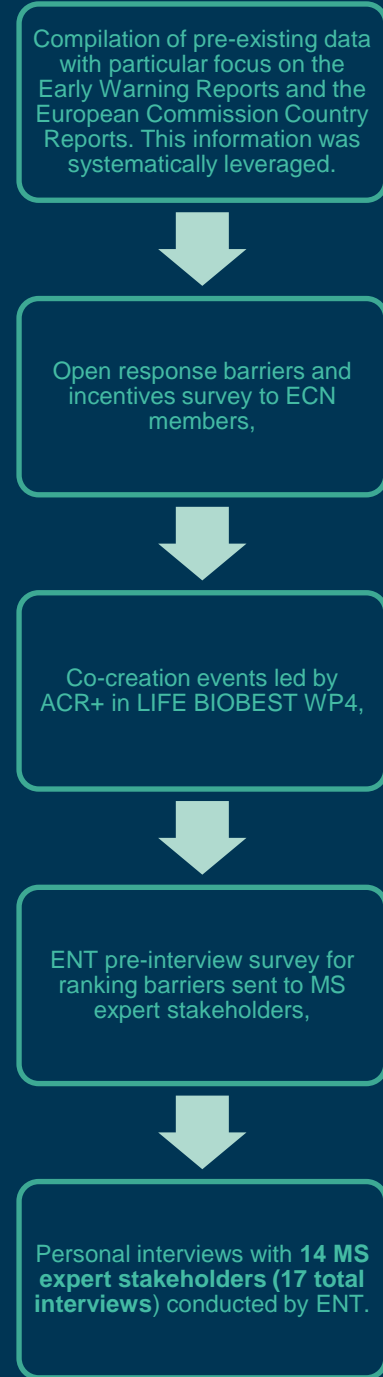
- Front-runner and best practices factsheets
- Guidelines on separate collection, governance and economic incentives, quality compost and digestate
- Policy brief on regulatory/policy barriers
- BIOBEST Decision Support Web Tool
- Standards for biowaste entering organic recycling processes
- Comprehensive EU guidance for regional and local entities

BIOBEST Policy Brief Methodology (5 min)

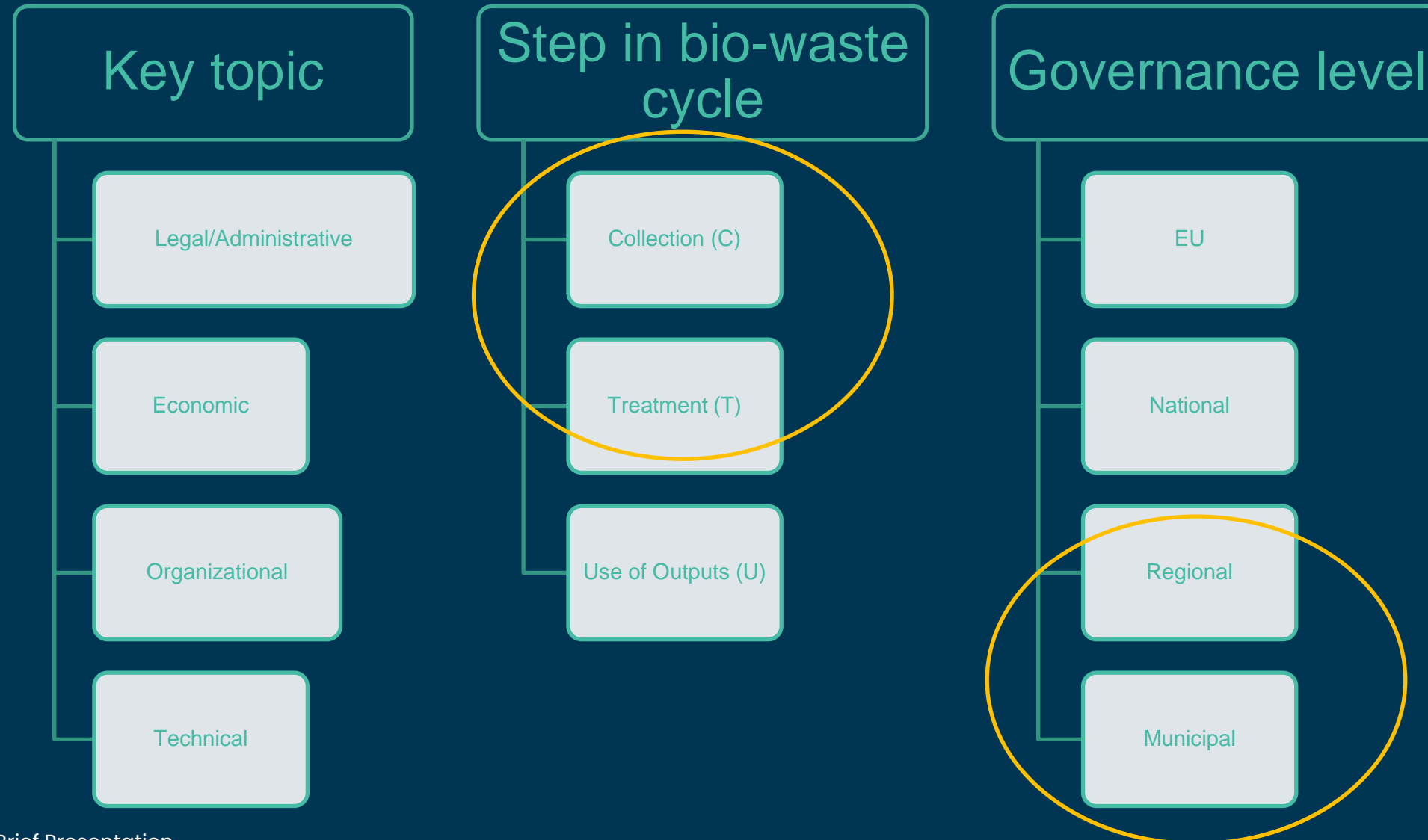
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02

BIOBEST Data Collection



Categorising Barriers



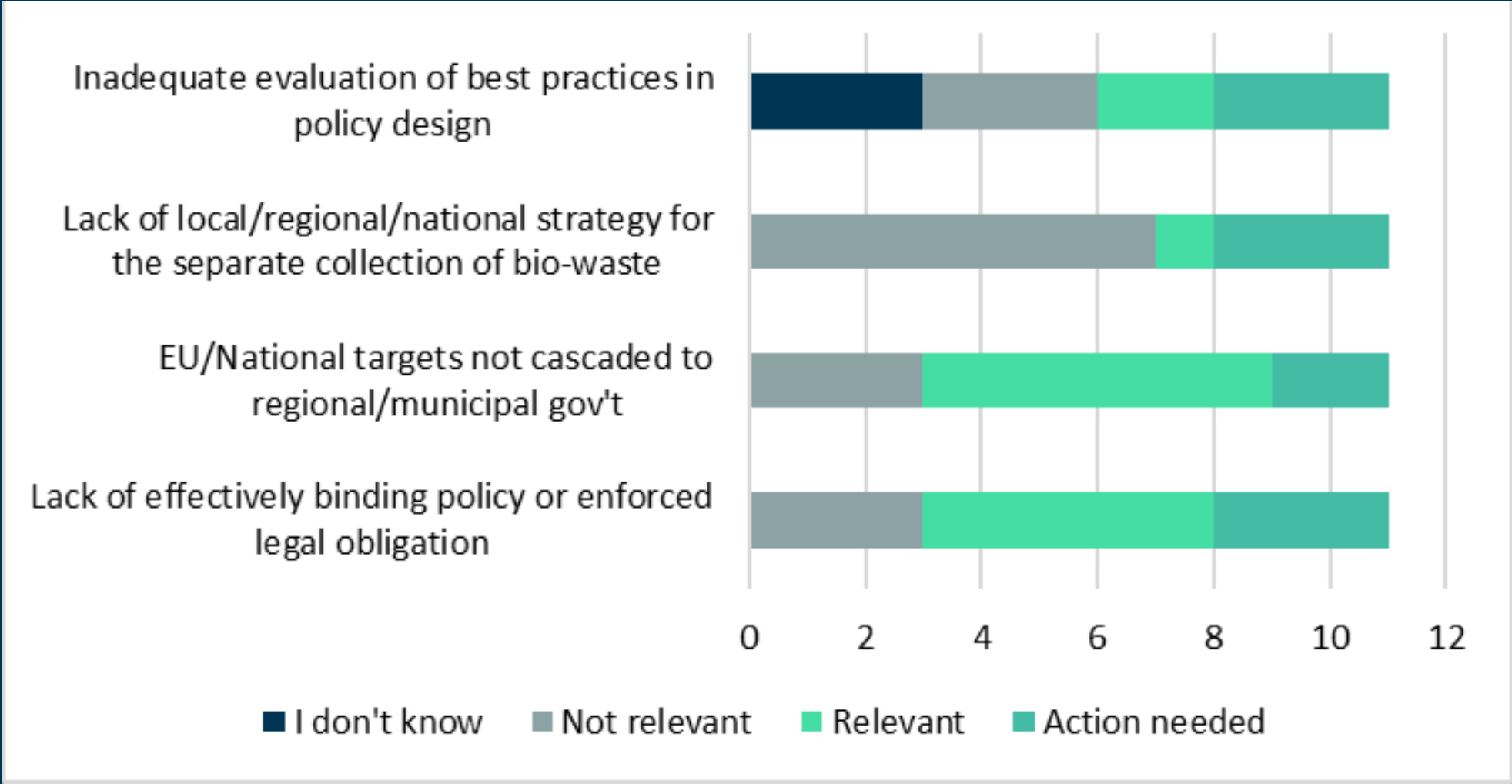
Barriers Survey Results

4 MS, 2 Regions, and 1 EU-level
(10-15 min)

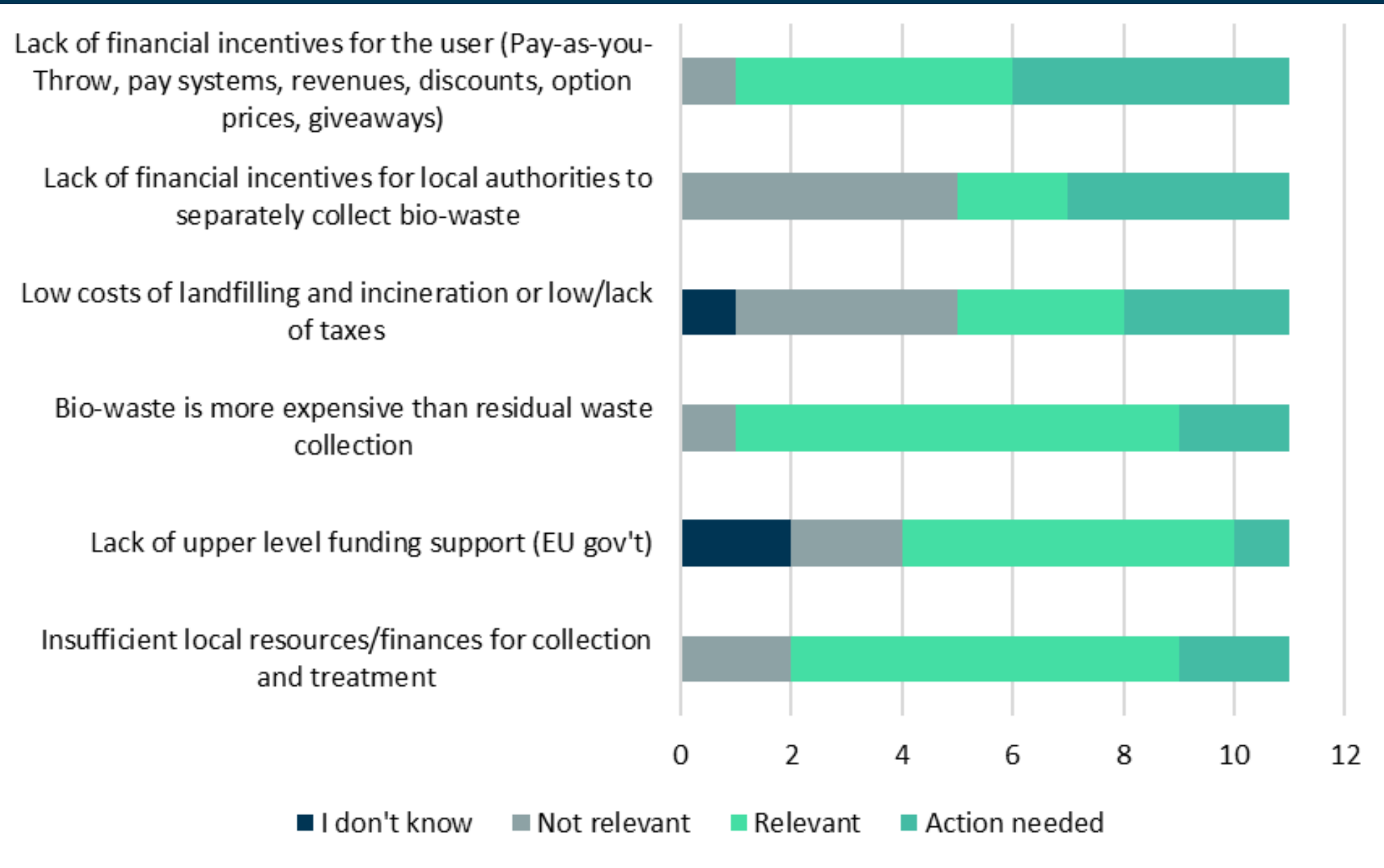


03

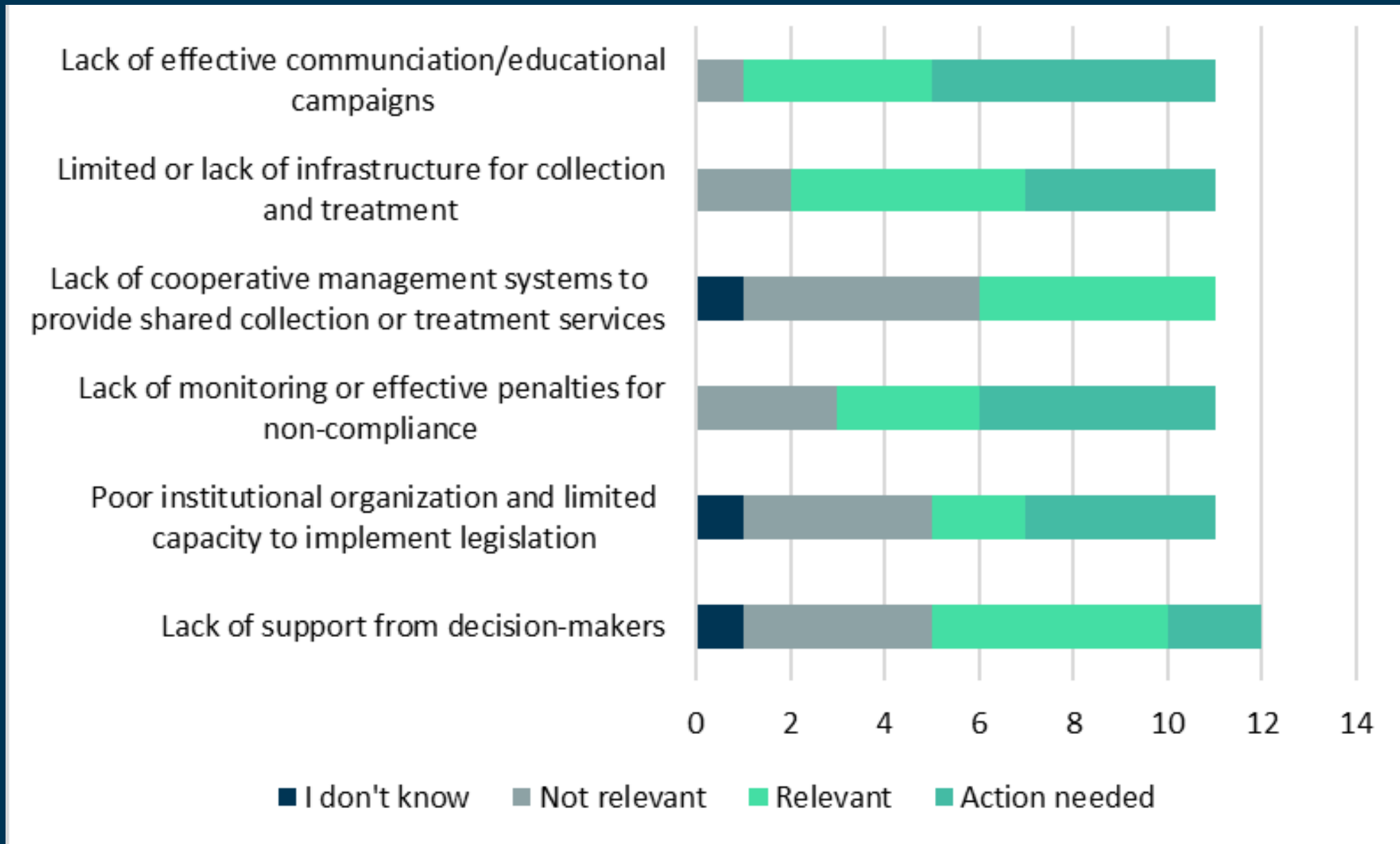
Legal/Administrative Barriers Results



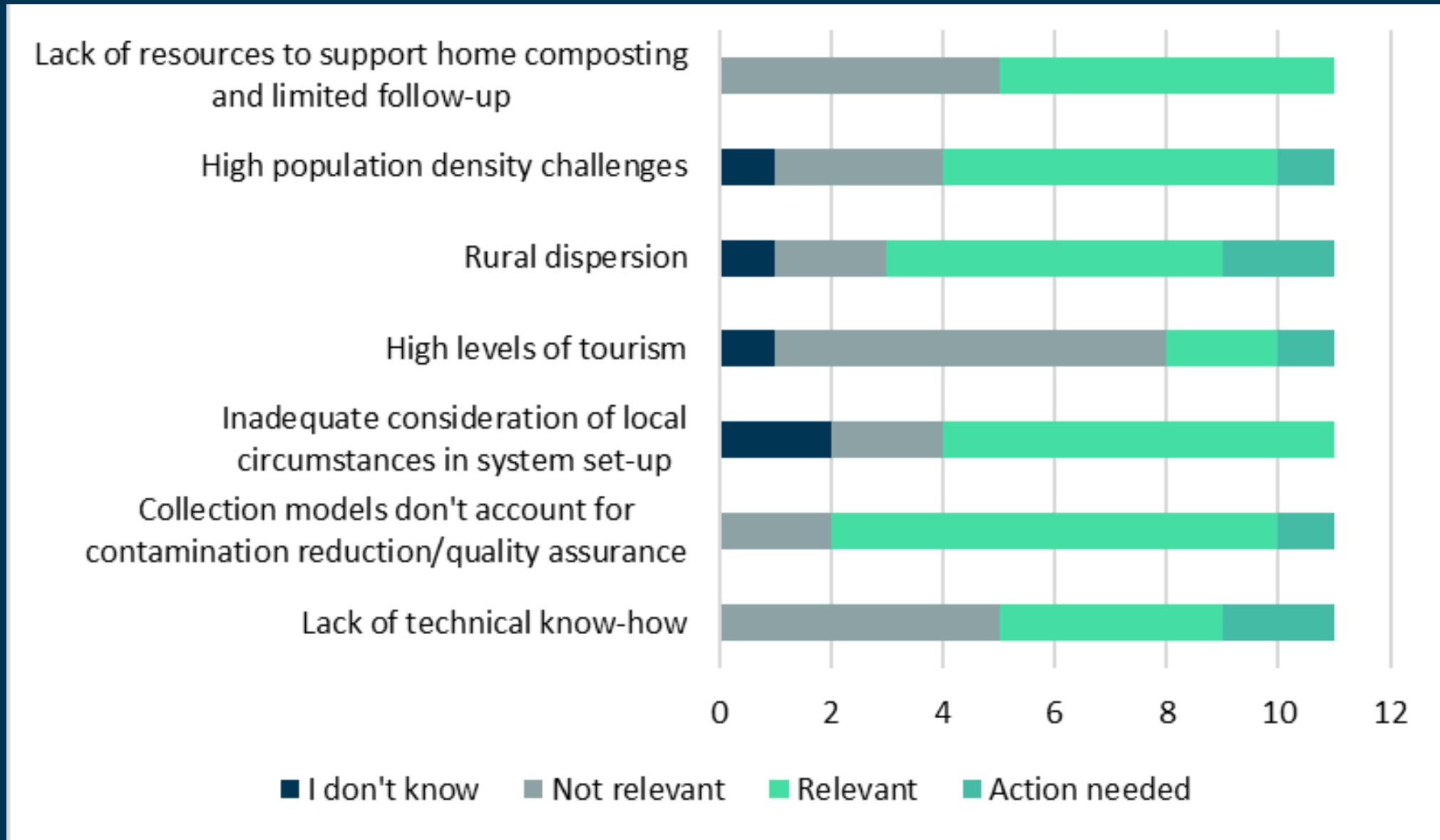
Economic Barriers Results



Organizational Barriers Results



Technical Barriers Results



BIOBEST Recommendations Survey (10-15 min)

04

LIFE BIOBEST Recommendations Survey - OVAM



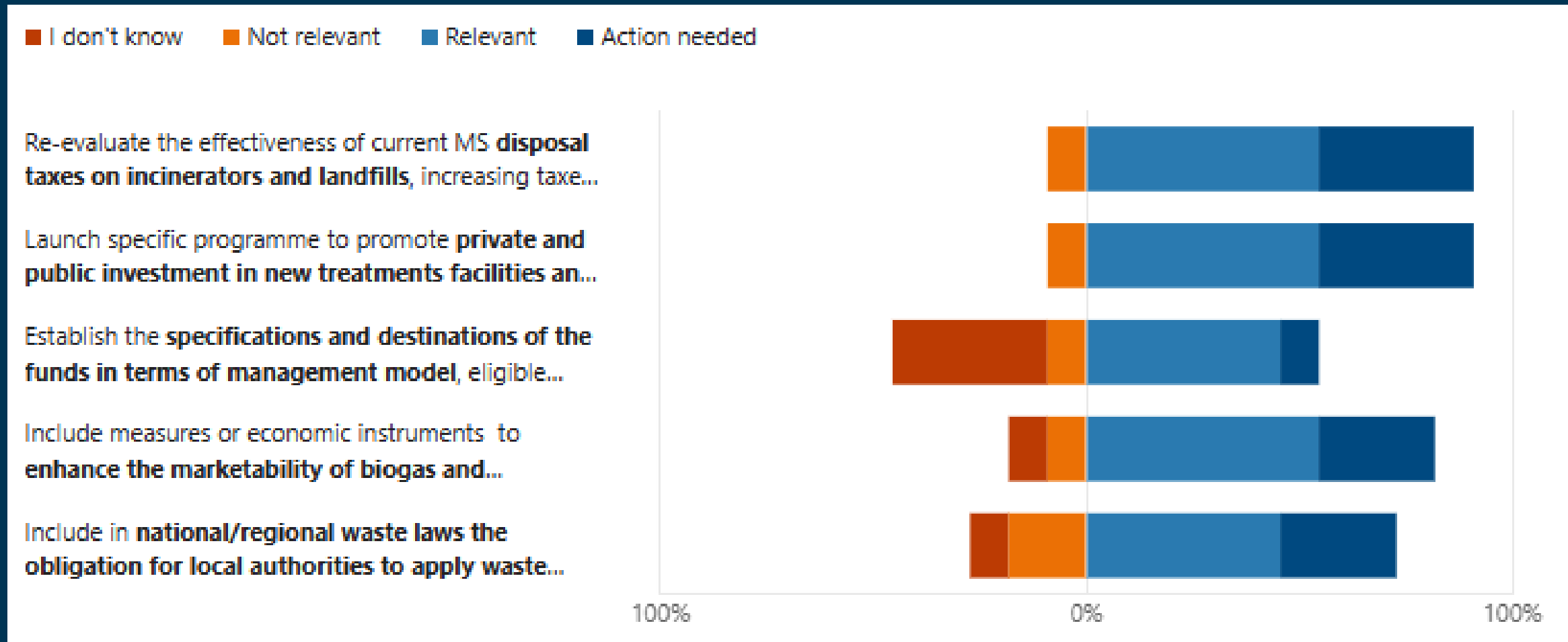
Conclusions & Live Results (10 min)

05

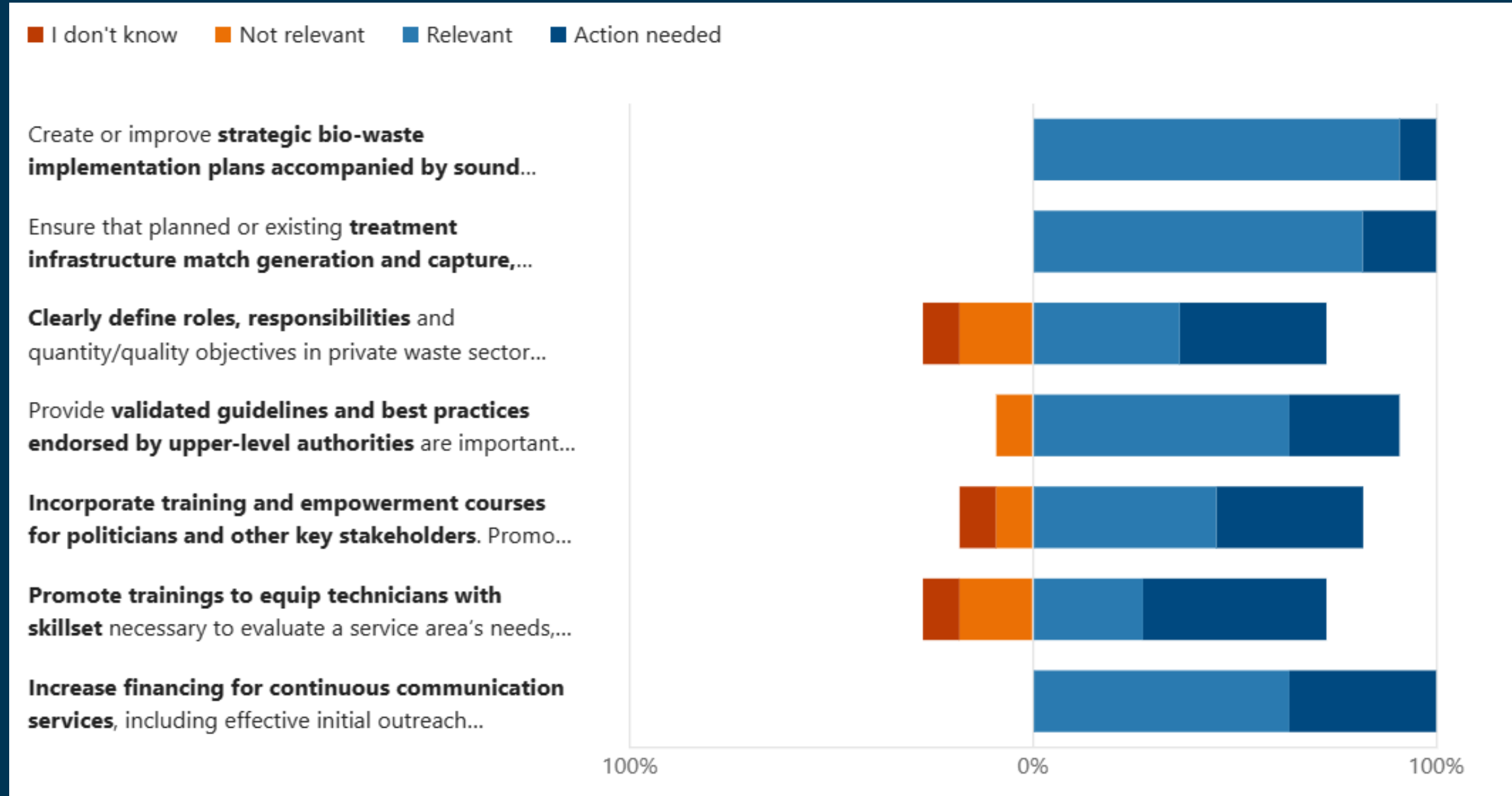
Live Results → Legal/Administrative Discussion



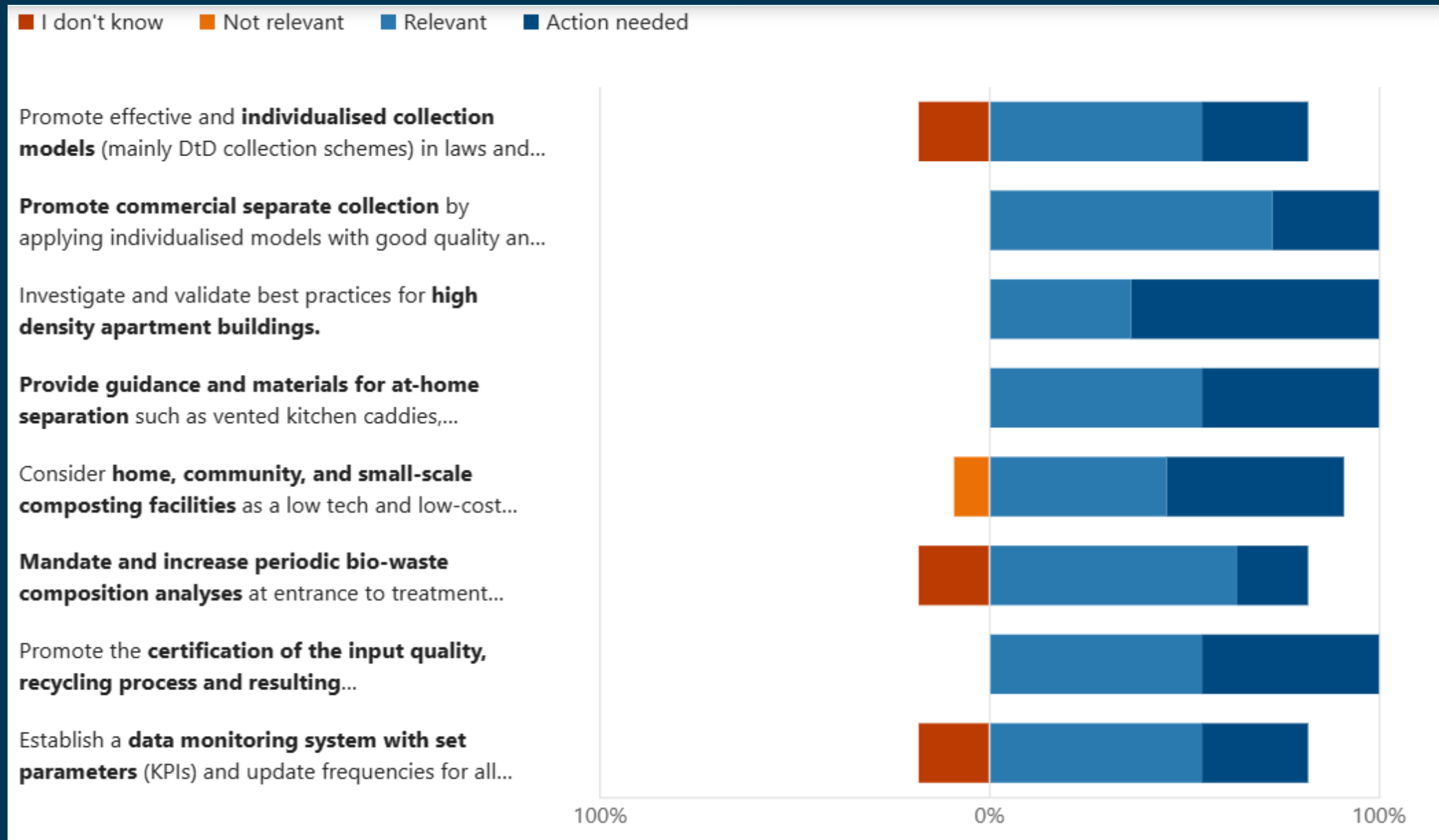
Live Results → Economic Discussion



Live Results → Organizational Discussion



Live Results → Technical Discussion



Priority Legal/Admin and Organizational Recommendations

L1	Cascade national recycling targets down to the municipal level with responsibility for waste collection systems and ensure that there are consequences for municipalities that fail to meet targets. National laws state the transfer of the EU objective to regions, thereby giving the capacity to regions to decide how to transfer the objective to the local level.	C & T
L2	Policy measures must include bio-waste benchmarks and targets for separate collection, quality for bio-waste collected (impurities), and for quantity of bio-waste in residual waste (maximum amount per inhabitant) to control the quantity not diverted. Treat the new regulations on bio-waste as reglementary mandates that are directly adopted once the EU norm is approved. <i>For quality targets refer to the forthcoming quality standards information in LIFE BIOBEST Deliverable 5.4.</i>	C & Q
L3	Include the obligation in the national/regional waste laws to update local norms based on the national/regional laws.	C & T
O.1	Create or improve strategic bio-waste implementation plans accompanied by sound financial strategies in order to streamline and homogenize performance. The plans must integrate BP and technical recommendations as well as include a subsection about facilities.	All
O.2	Ensure that planned or existing treatment infrastructure match generation and capture, guaranteeing the proximity principle . Evaluate and align the current capacity in both private and public facilities with long term planning to meet increasing capacity. Consider the adaptation of MBT facilities to treat separated bio-waste.	T
O.3	Provide validated guidelines and best practices endorsed by upper-level authorities such as the EU are important for disseminating know-how and ensuring the installed systems are the most efficient possible. <i>Forthcoming related guidelines in LIFE BIOBEST Deliverable 3.1.</i>	All
O.4	Promote trainings to equip technicians with skillset necessary to evaluate a service area's needs, recommend appropriate collection models and oversee their implementation, assess best treatment processes, track/monitor participation and progress towards objectives, etc.	All
O.5	Increase financing for continuous outreach services , including effective initial outreach campaigns. Use advanced methodology to understand behavior and maintain levels of participation. Increase direct messaging to bio-waste producers to reduce impurities. <i>Forthcoming related guidelines in LIFE BIOBEST Deliverable 3.4.</i>	C & Q

Priority Economic and Technical Recommendations

E.1	Re-evaluate the effectiveness of current MS disposal taxes on incinerators and landfills , increasing taxes to rebalance the economic viability of bio-waste management. <i>Forthcoming related guidelines in LIFE BIOBEST Deliverable 3.2.</i>	C & T
E.2	Launch specific programme to promote private and public investment in new treatments facilities and to increase treatment capacity . This can be related to climate change mitigation actions.	T
E.3	Establish the specifications and destinations of the funds in terms of management model, eligible materials and accompanying activities. One of the main criteria should be the project's capacity to increase quality and quantity bio-waste recycling.	All
E.4	Include in national/regional waste laws the obligation for local authorities to apply waste charges that cover the total cost of waste management services including complementary activities such as communication and monitoring activities, landfill closure and monitoring, etc. The law could include a complementary obligation to institute PAYT or variable payment schemes based on participation. <i>Forthcoming related guidelines in LIFE BIOBEST Deliverable 3.2.</i>	C & T
T.1	Promote effective and individualised collection models (mainly DtD collection schemes) in laws and implementation plans. <i>Forthcoming related guidelines in LIFE BIOBEST Deliverable 3.1.</i>	C
T.2	Promote commercial separate collection by applying individualised models with good quality and quantity results. Monitor the performance and destination of the activities using private bio-waste collection services to ensure good practices applications and law compliance.	C & Q
T.3	Provide guidance and materials for at-home separation such as vented kitchen caddies, decals, compostable bags, or curbside collection bins.	C & Q

The core lines of action to improve quantity and quality of bio-waste managed include:

Close the gaps in and advance the regulatory framework,

Promote and align economic incentives and funding,

Extend the network of expert stakeholders across all levels of governance,

Improve technical know-how and validation of BPs,

Increase communications, public education and awareness,

Implement efficient and individualised models (that identifies the user and allows controls of the collected material) and monitor performance.

Thank you!

[Policy Brief link](#)

Mike Stinavage & Gemma Nohales | ENT

mstinavage@ent.cat | gnohales@ent.cat |

LIFE BIOBEST

www.lifebiobest.com | hi@lifebiobest.eu | +32 333 1231234

Rue du Commerce 31, 1000 Brussels, Belgium



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