D5.6 - Webinar documents

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Jean-Benoit Bel, ACR+

Credits

Disclaimer

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Technical references

Grant Agreement N°	776745	**Acronym**	COLLECTORS
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Contents

COLLECTORS webinar

Introduction

Three web-based training sessions were organised by ACR+ at the end of the project to present both the tool and several relevant case studies, targeting mainly public authorities. These webinars highlighted some specific outputs, focusing on the operational aspects, and mixed findings from the project and concrete illustrations from actual case studies.

These webinars involved COLLECTORS partners, representatives of some of the case studies covered by the project, as well as external experts e.g. from other European projects.

Format

Webinars are meant to be short and to-the-point. They were designed to last about 1.5 hours, focusing on specific key-topics and a limited number of presentations. The general organisation of the webinar consisted in:

- A short introduction of the COLLECTORS project by ACR+;
- A specific topic highlighting one of the key findings of the project, and presented by the COLLECTORS partner that has the expertise to do so;
- One or two concrete illustrations from the case studies, focusing on the topic of the webinar;
- Another presentation from an external organisation;
- A discussion with the audience.

The webinar were hosted by ACR+ and promoted by the whole consortium.

Content

It was decided to devote each webinar to each waste fraction covered by the project, considering the fact that each waste fraction might attract different target audience. For each waste fraction, a specific topic will be defined to make the presentations and discussions more in-depth and interesting.

Paper and packaging waste - 30 April 2020

Topic: Improving the collection of paper and packaging waste: what is the impact on costs?

For this webinar, it is proposed to focus on the **economic aspect of PPW collection and sorting.** The idea is to take advantage of the COLLECTORS work on cost and benefit analyses of the case

The webinar showcased COLLECTORS' work performing cost and benefit analyses of several case studies to illustrate how improving the performance of PPW waste sorting impacts the cost-benefit balance of waste collection systems. The webinar addressed the following question: can the selective collection be improved without increasing neither the general cost of the collection system, nor the waste fee for citizens?

The agenda of the webinar could be as follows:

- The costs of PPW waste collection system: a cross-analysis of 5 European cities - Twan Van Leeuwen, PNO Consultants
- The case of Parma: introducing Pay-As-You-Throw (PAYT) while controlling the economic balance of waste collection - Gabriele Folli
- A presentation by the Life-RETHINKWASTE project focusing on PAYT and KAYT (Know-As-You-Throw), Michele Giavini, ARS Ambiente

The webinars gathered 55 attendees (out of 86 registrants). The presentations and recording are available here.

WEEE – 3 June 2020

Topic: "WEEE collection: good practices to allow quality recycling and re-use" now available

Around 10 million tonnes of WEEE is produced every year in the EU. A meagre 35% of electrical and electronic equipment wound up in official collection and recycling systems. The other discarded electronics are either recycled under non-compliant conditions, illegally traded, exported, or simply thrown in residual waste bins. WEEE contains many high-value and critical raw materials.

Through the webinar "WEEE collection: good practices to allow quality recycling and re-use" our experts highlighted the importance of improving the quantity and quality of collected WEEE to ensure its proper recycling from different perspectives, with an emphasis on the potential for reuse, and how to include the re-use organisation in the design of WEEE.

- The environmental impact of WEEE and benefits of recycling - Bernhard Steubing, LDE | Universiteit Leiden
- Best practices to improve the quantity and quality of collected WEEE, examples of COLLECTORS good practices - Lucía Herreras Martínez, WEEE Forum
- The experience of CYCLAD: cooperation between a municipality and PRO for reaching higher performances - Sébastien Partida, ecosystem
- The potential for re-use: how to improve the involvement of the re-use sector within municipal WCS - Mathieu Rama, Rreuse

The webinars gathered 92 attendees (out of 122 registrants). The presentations and recording are available here.

Construction and demolition waste – 26 June 2020

Topic: Circular approaches for the management of municipal construction and demolition waste

CDW is a large source of secondary raw materials, consisting roughly out of wood, masonry, drywall, roofing, plastics, and metals. It has a strong potential for recycling and re-use because of the high value of some of the materials (e.g. metals), and the large market for re-use and recycled materials.

The webinar highlighted the relevancy of properly managing specific CDW fractions in a circular economy perspective at municipal level.

- Construction and demolition waste: guidelines for local authorities - Paolo Marengo, ACR+
- Circular approach for CDW: COLLECTORS findings - Ive Vanderreydt, VITO
- The experience of Odense and Gamle Mursten for the local recovery of municipal CDW
- - Michael Dino Hansen, Odense & Claus Juul Nielsen, Gamle Mursten

The webinars gathered 30 attendees (out of 62 registrants). The presentations and recording are available here.

Presentation

The slides presented during the webinars are enclosed to this documents, on the following pages.

COLLECTORS

WASTE COLLECTION SYSTEMS ASSESSED AND GOOD PRACTICES IDENTIFIED

Twan van Leeuwen (PNO)

Webinar, 30 April 2020

This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 776745

The costs of PPW collection system: A cross-analysis of five European cities

Twan van Leeuwen, PNO Consultants

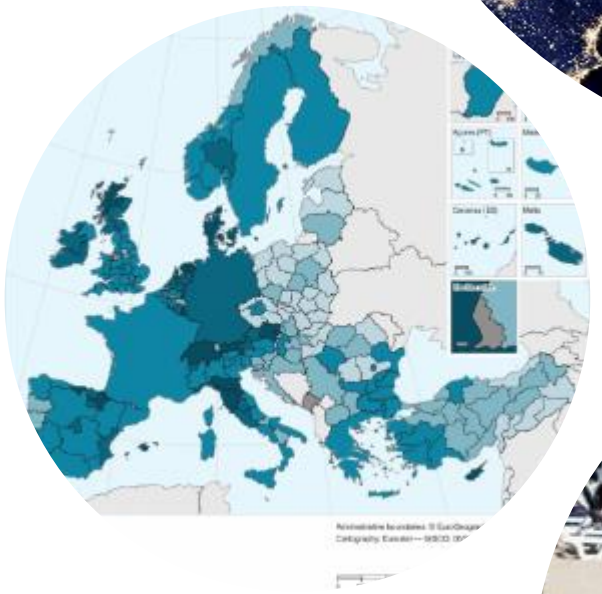
AGENDA

1. Short introduction on COLLECTORS
2. Five PPW cases
3. CBA methodology and scope
4. Shift in costs
5. Costs and benefits
6. Conclusions on good financial practices

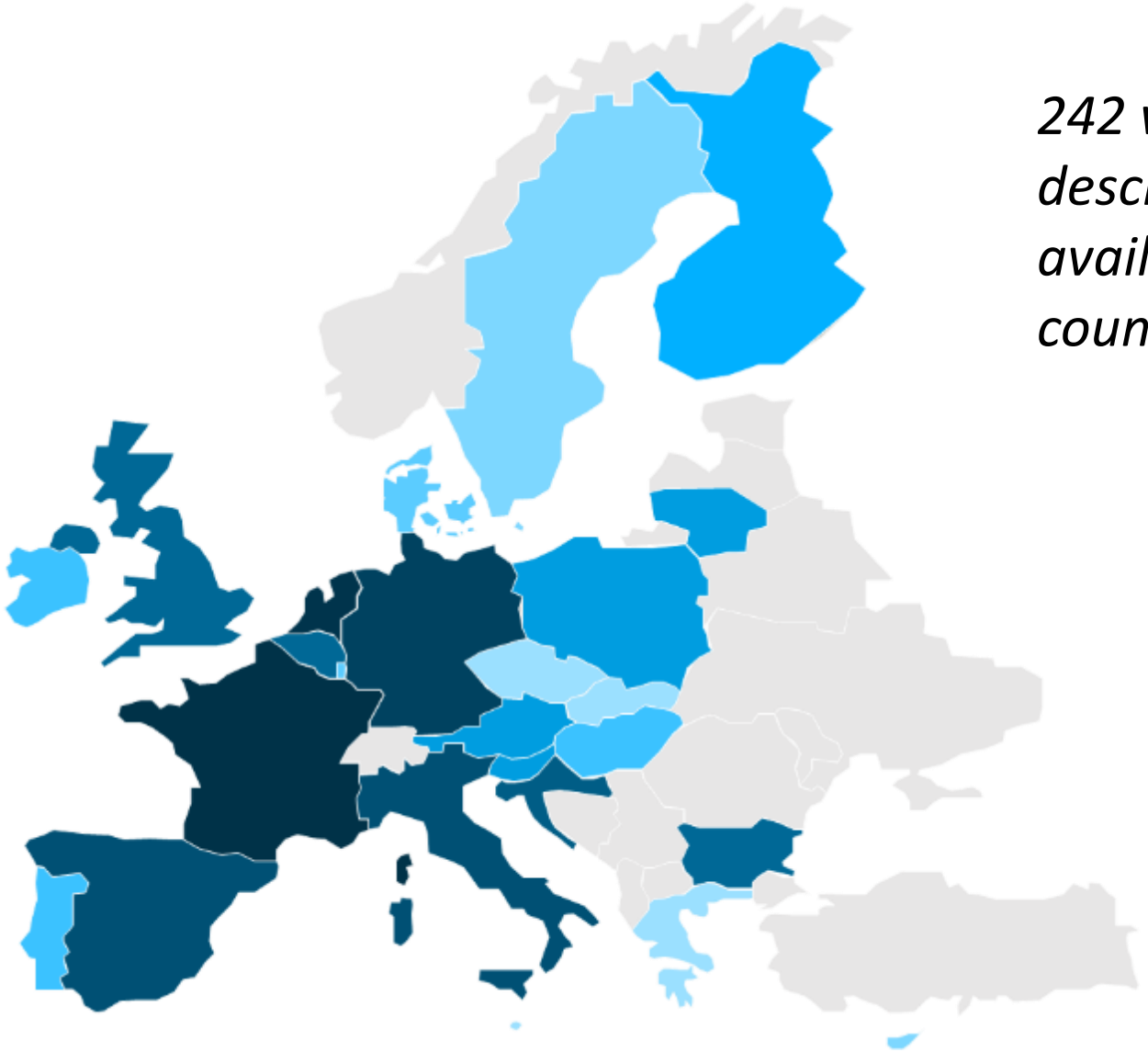
COLLECTORS INTRODUCTION

COLLECTORS objective

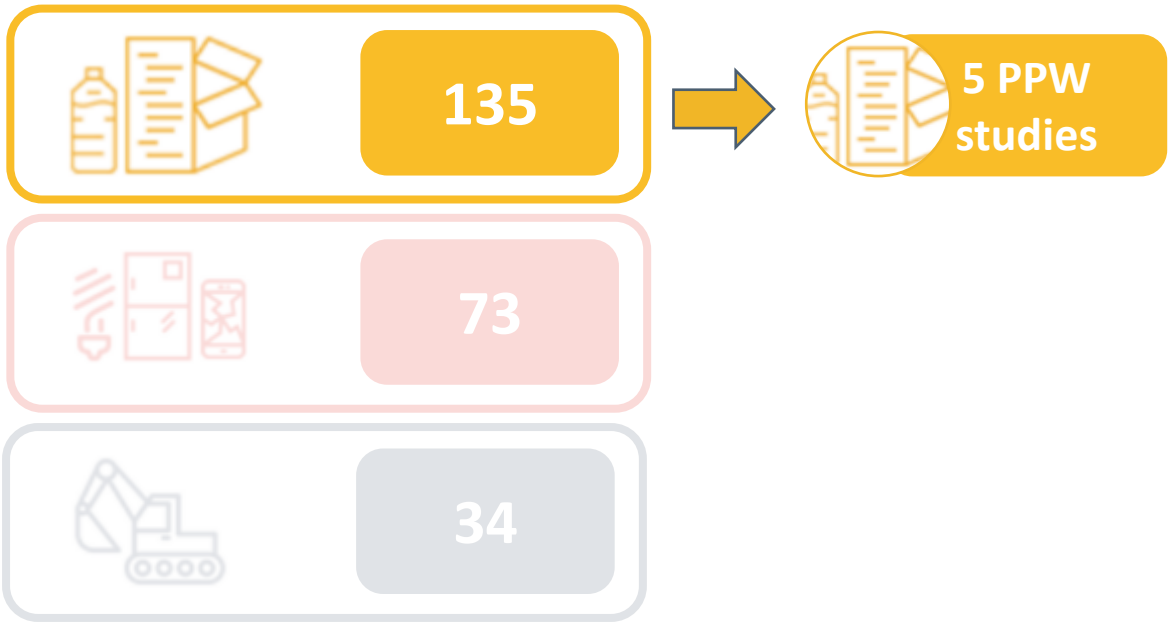
Identify good practices in waste collection and increase knowledge sharing; to ensure that good performing regions and cities can serve as examples for regions with similar local contexts



Inventory of collection in Europe

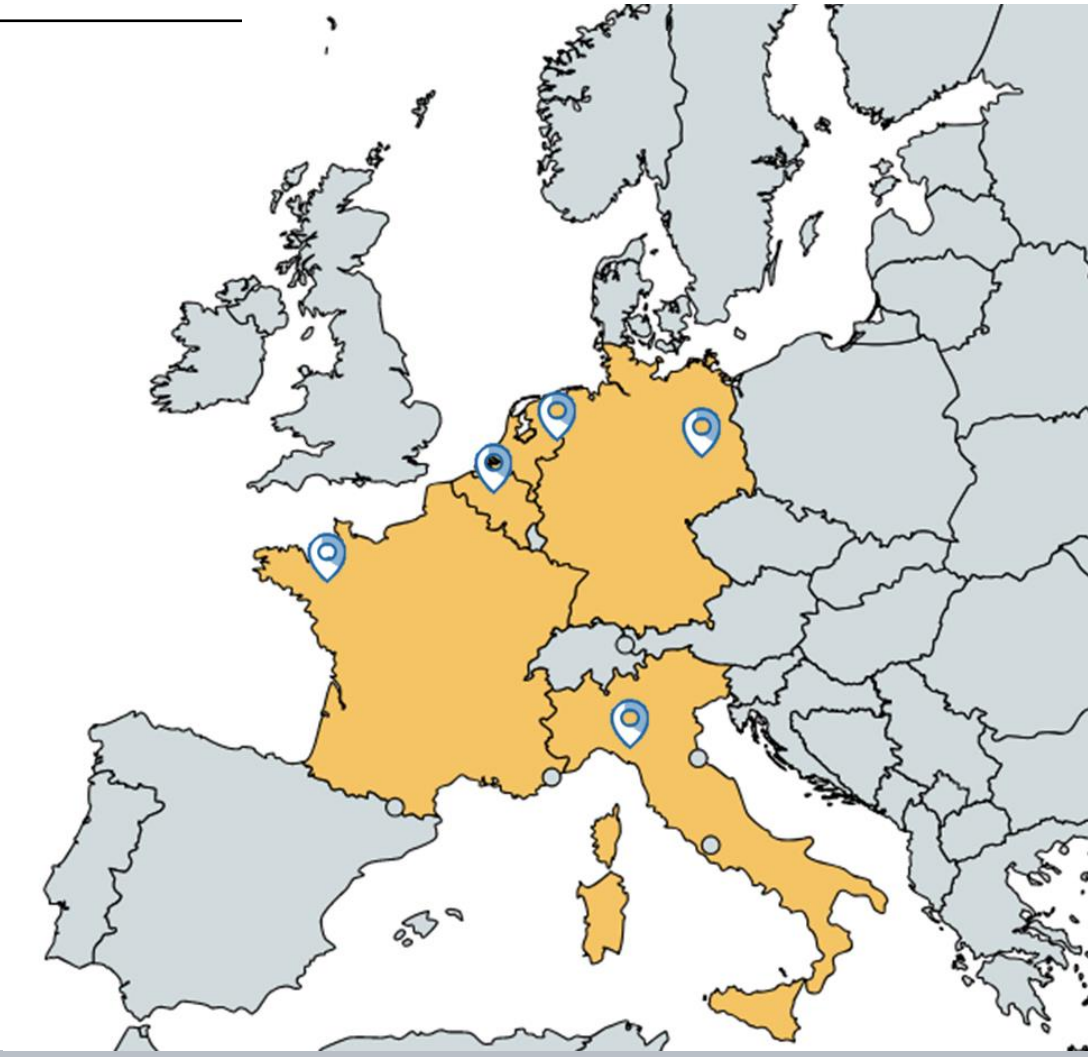


242 waste collection systems identified and described on ~30 parameters (depending on available information); covering 25 European countries



PPW cases

Cases	Population [inh]	Population density [inh/km²]
1. Tubbergen (NL)	21,142	144
2. Gent (BE)	256,262	1,641
3. Rennes (FR)	438,865	617
4. Berlin (DE)	3,537,100	3,965
5. Parma (IT)	196,475	754



Household packaging waste

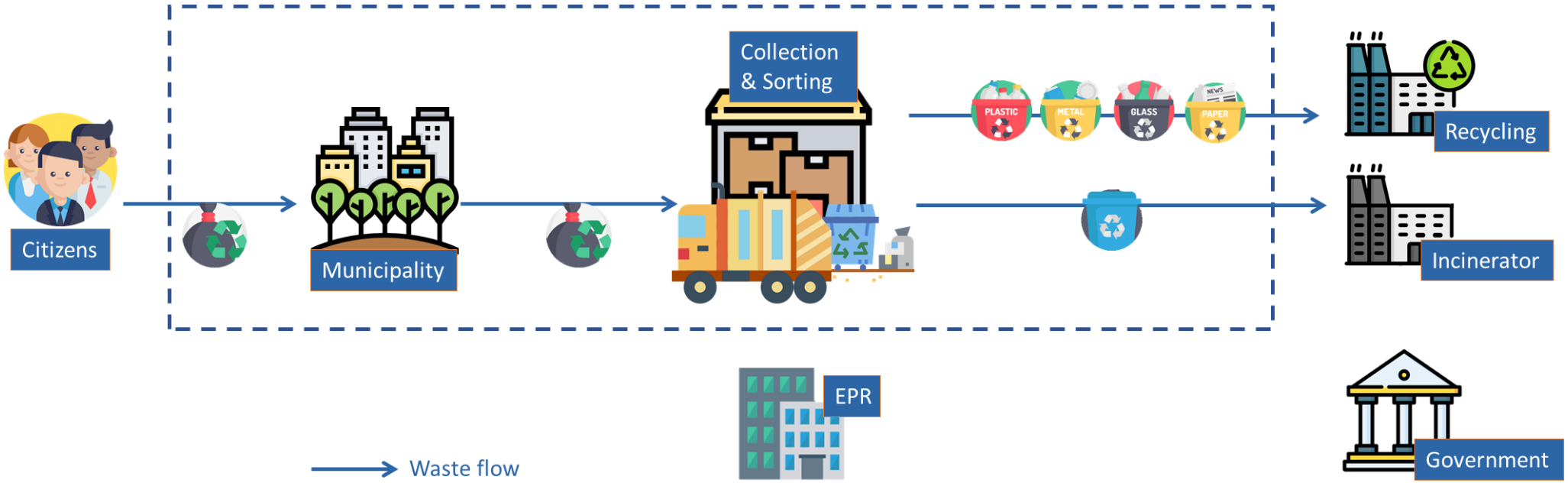
- Paper and cardboard
- Glass
- Plastics
- Metals
- Drinking cartons

Economic assessment

- *Identify relevant actors*
- *Identify financial and material flows*
- *Quantifying costs and benefits (CBA)*
- *Mapping financial incentives and levers*
- *From the municipality point of view*

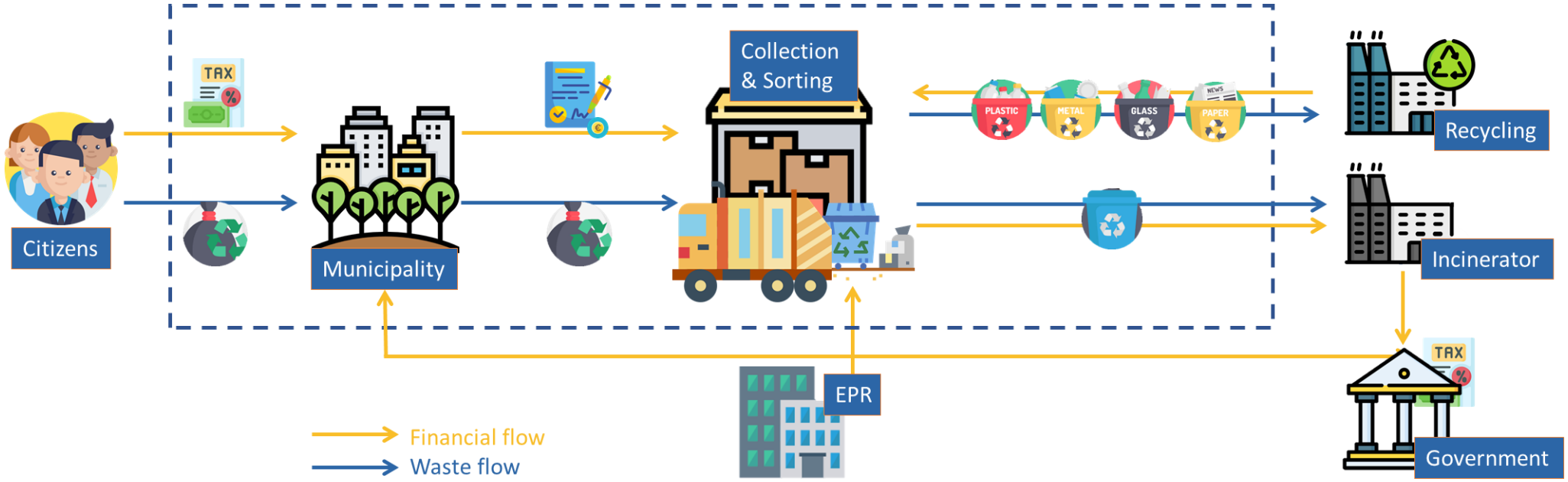
Methodology

Scope



Methodology

Scope



Methodology

Scope

Parameters

- Investment costs (infrastructure, bins, chips,..)
- Operational costs (collection, sorting, street cleaning, taxes)
- Revenues (sold materials, incineration revenues, EPR fees, tax savings, citizens waste fees)

Rationale

Assessment to see if good practices can be achieved by maintaining acceptable fees for citizens.

Shift of collection system

Achievements PPW

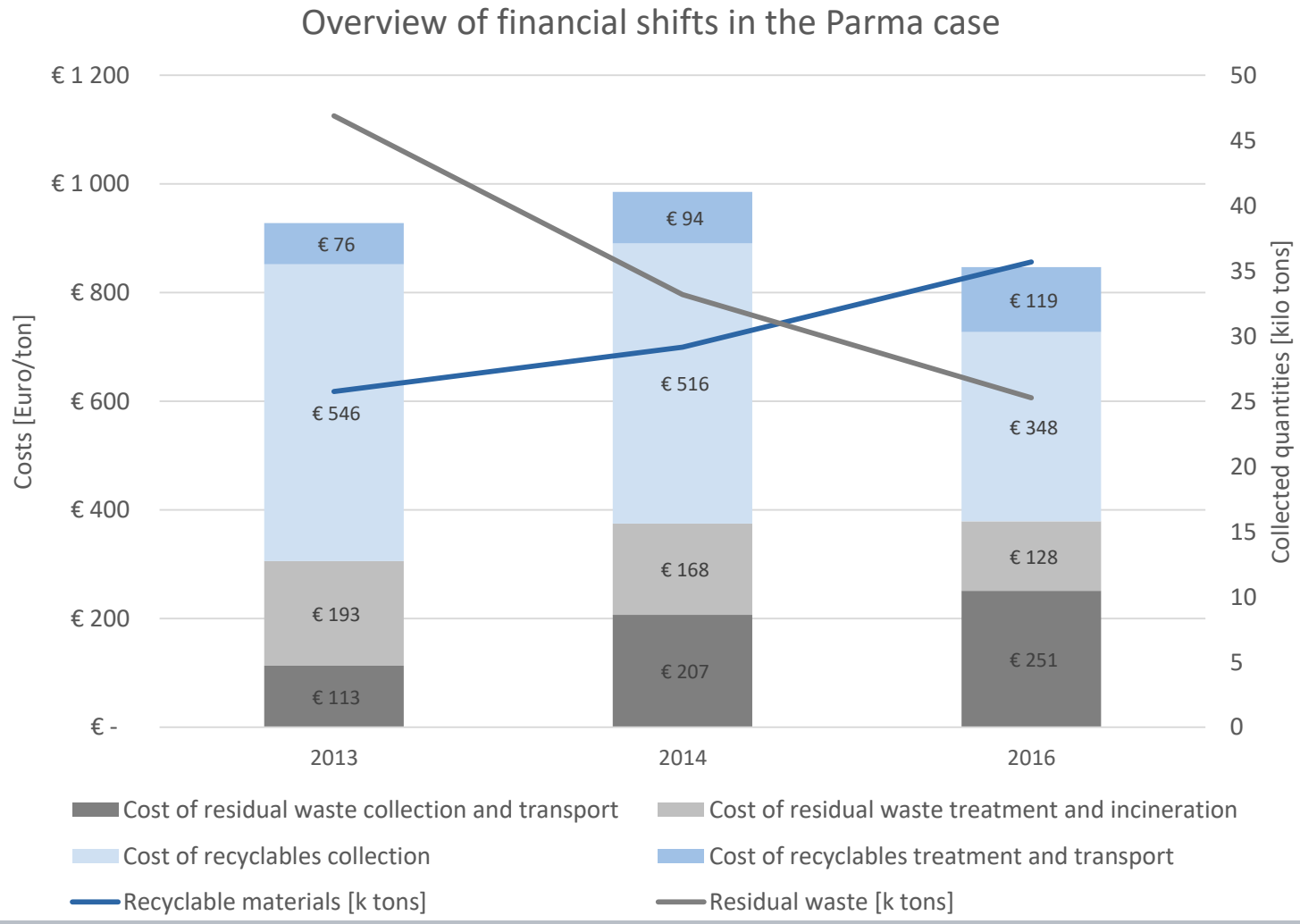
Mapped in detail the effect of shifting from comingled collection to separate collection

Findings:

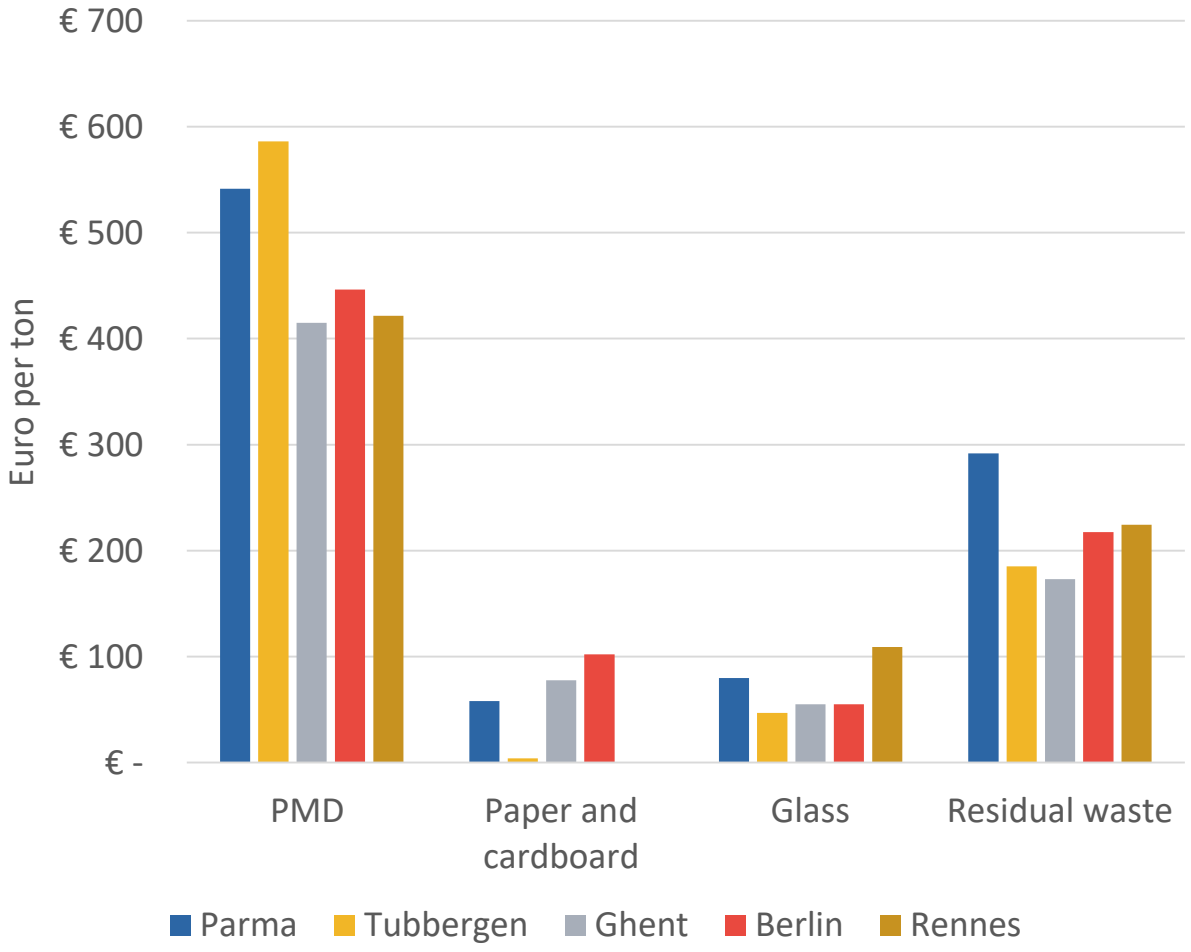
1. With **dropping volumes,** ***residual waste***
    1. collection cost increases
    2. treatment cost decreases

2. With **increasing volumes,** ***recyclables***
    1. collection cost decreases
    2. treatment cost increases

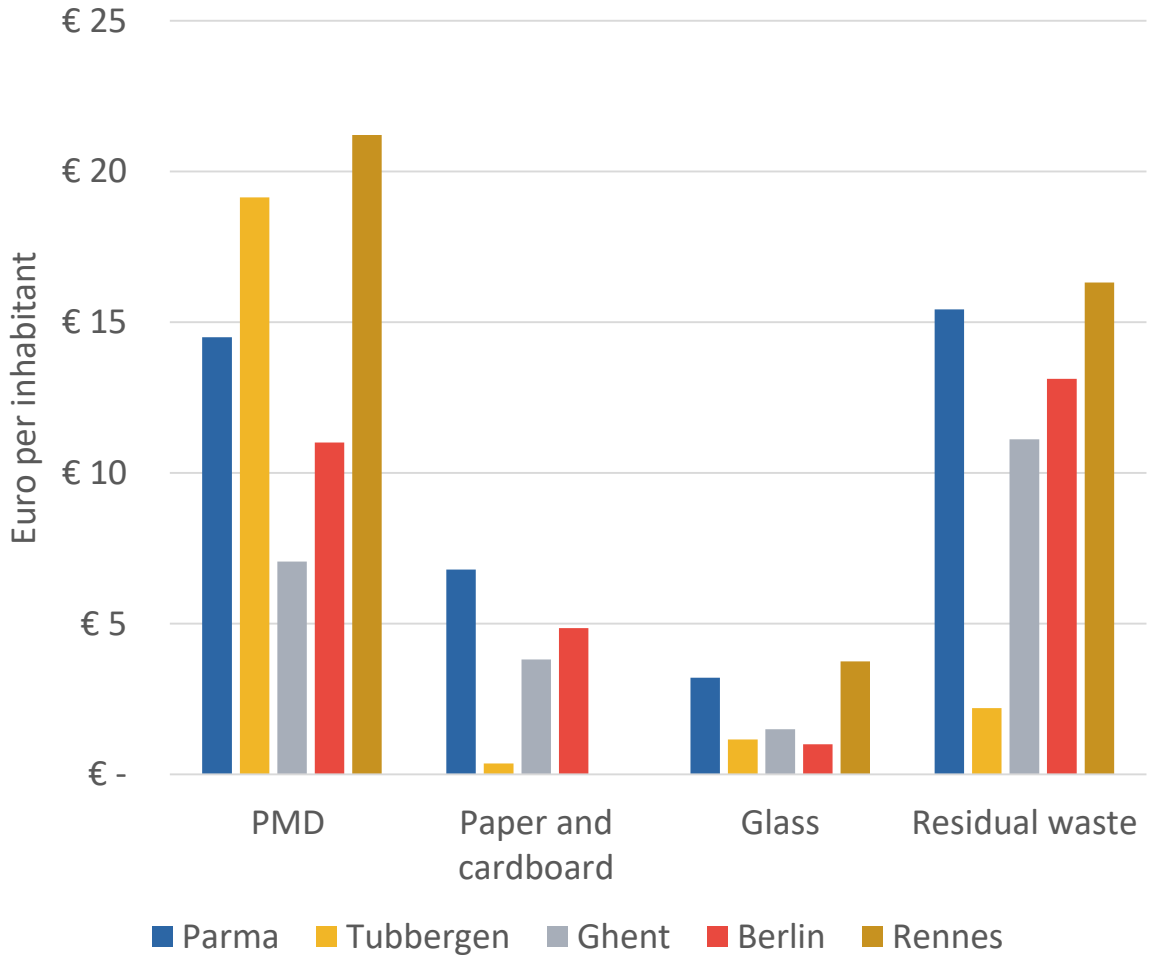
(in EUR/tonne)



Operational costs



Euro per tonne



Euro per inhabitant

Mapping of costs and benefits

Achievements:

Mapped in detail the relevant costs of the

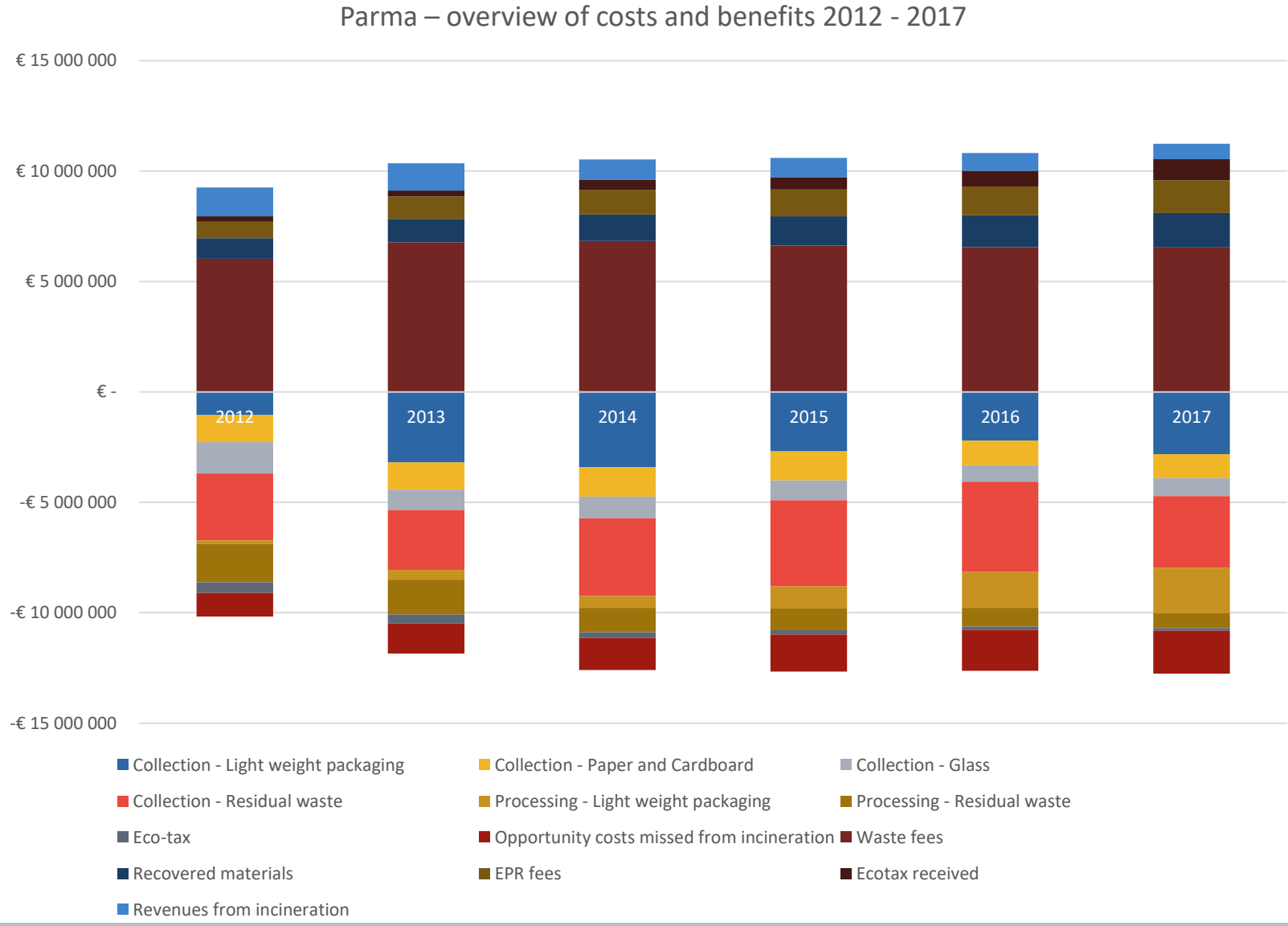
PPW collection system

Findings:

- Highest cost: residual waste collection
- Highest revenue: waste fees
- Costs have stabilized despite increasing recycling
- Revenues have increased

➔ Better recycling can be done without net increasing costs!

➔ With acceptable fees for citizens!

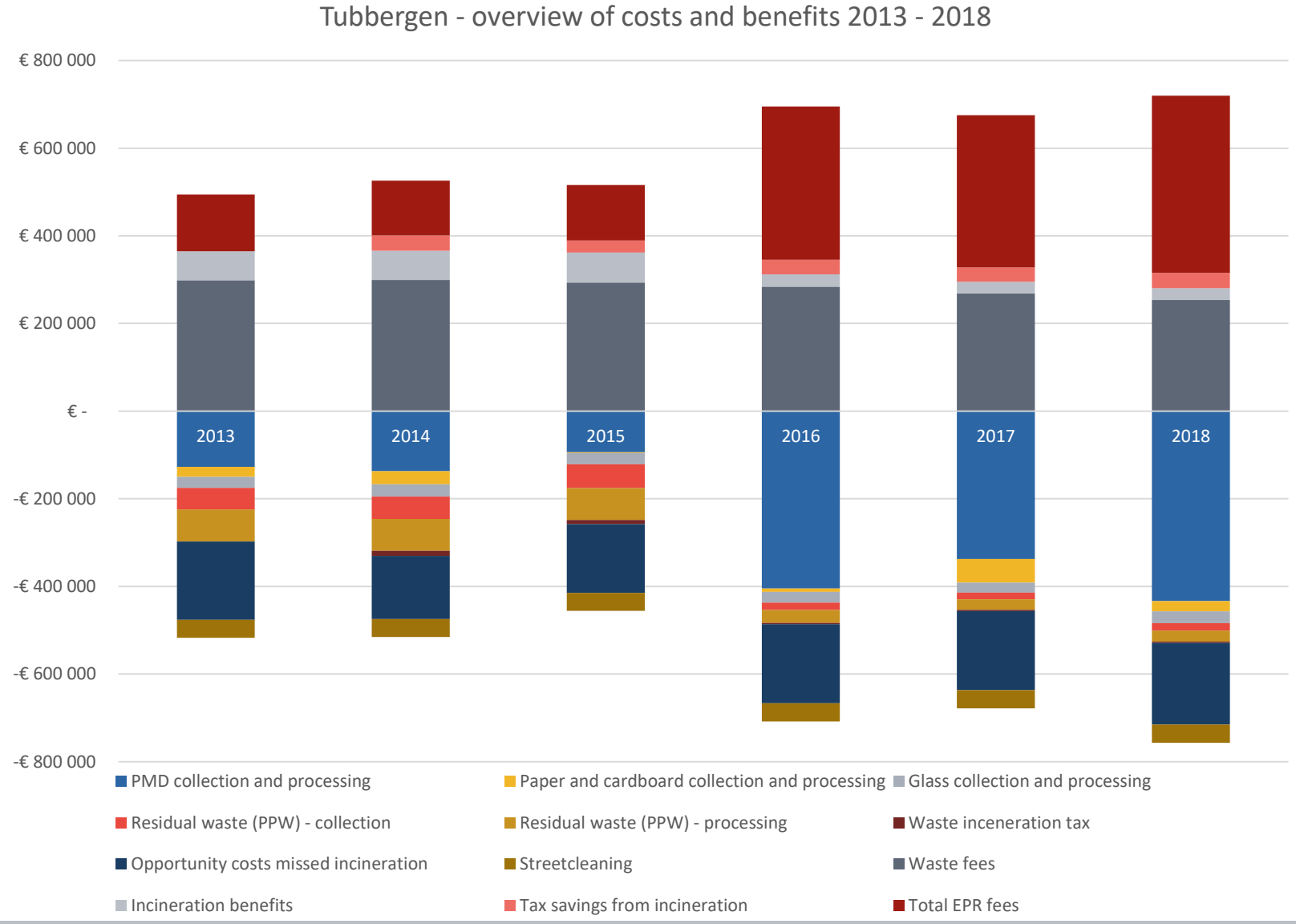


Mapping of costs and benefits

Findings:

- Highest cost: PMD collection
- Highest revenue: waste fees/EPR fee
- Both cost and revenues increase

Similar conclusions for all cases:
Better recycling can be done without net increasing costs and with maintaining acceptable fees for citizens.



Revenues

Case	Average waste fee [€/hh]	Waste fee part of total revenues [%]	Trend
Parma	243	54%	Steady
Ghent	61	23%	Steady
Berlin	126	38%	No data
Tubbergen	140	42%	Dropping
Rennes	133	57%	Dropping

Case	EPR fee/ of total revenues [%]
Parma	10 %
Ghent	22 %
Berlin	52 %
Tubbergen	40 %
Rennes	23 %

→ Collected quantities and qualities
→ Different responsibilities per EPR scheme

Shifts in revenues

Case	Waste fee [%]	Recovered materials [%]	EPR fees [%]	Incineration revenues [%]
Parma	56 → 49	18 → 26	8 → 12	16 → 6
Ghent	26 → 21	30 → 24	15 → 30	26 → 21
Berlin	-	-	47 → 52	14 → 10
Tubbergen	60 → 32	-	26 → 53	13 → 3
Rennes	58→ 55	19 → 18	19 → 25	-

% of total revenues

Financial good practices

	Parma	Ghent	Berlin	Tubbergen	Rennes
Landfill ban	✗	✓	✓	✓	✓
Landfill tax	✓	✓	✗	✓	✓
Incineration tax	✓	✓	✗	✓	✓
EPR scheme	✓	✓	✓	✓	✓

Questions

1. Would you assume that improving selective collection performances means increasing the cost borne by the municipality and the citizens?

With good practices in place, NO. An increasing share is covered by EPR fees, therefore paid by producers (and indirectly by consumers).

2. Are waste collection systems using PAYT more expensive than waste collection system not using it?

Based on the case studies, the overall operational cost seem to increase, however, the revenues increase accordingly.

OUR CONSORTIUM

Thank you!

Twan van Leeuwen
PNO Consultants
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www.collectors2020.eu

“The case of Parma introducing Pay-as-you-throw while controlling the economic balance of waste collection”

Gabriele Folli, former Deputy Mayor for Environment (2012-2017)
Municipality of Parma (Italy)

April 30th, 2020

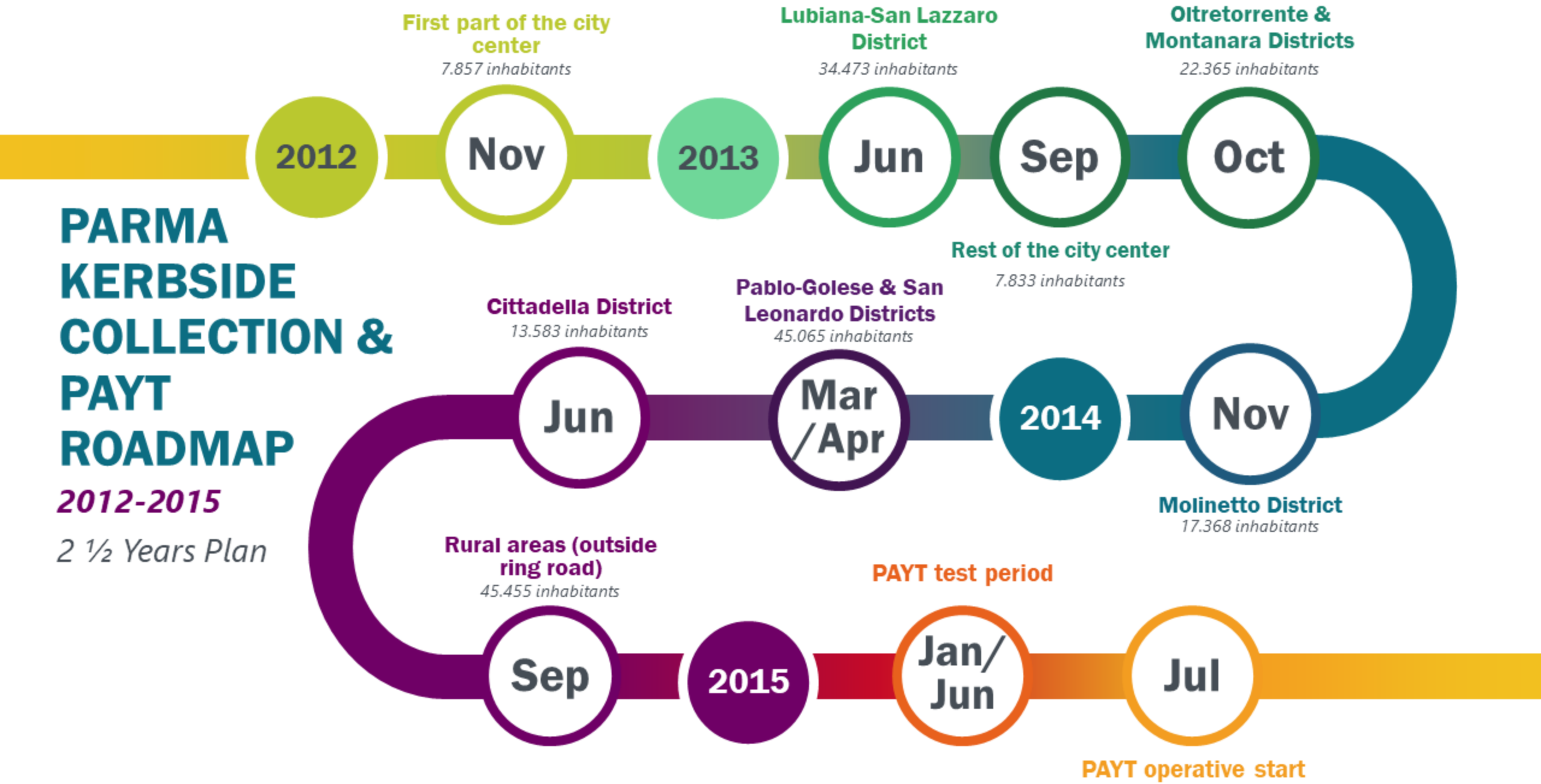
Parma – City general figures

- 200.000 inhabitants in 260 km^2 (769 inh/km^2)
  - 13% in the historical center (10.000 inh/km^2)
  - 65% in urban area (4.407 inh/km^2)
  - 22% in rural area (178 inh/km^2)
- 96.141 families, 12.337 business activities
- 15% of the population of different native language
- Important presence of University students coming from outside (66% on a total of 26.000 students)

PARMA KERBSIDE COLLECTION & PAYT ROADMAP

2012-2015

2 ½ Years Plan



2017 KPI: 81% separate collection rate - **106 kg**/ inh/year of residual waste - **103 kg**/ inh/year of bio-waste

Collection frequency (for households)

- Residual waste
  - 1 a week

    (2 in the city centre)

- Bio-waste
  - 2 a week

    (3 in the city centre)

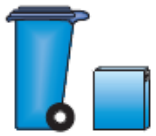
- Plastics, metals and tetra-pack
  - 1 a week

- Paper & cardboard
  - 1 a week

- Glass & Garden waste
  - With road containers

- Delivery between 19,30 and 21
- Collection starting from 21
- Calendar designed to concentrate in 2 days of the week all the collection streams

Collection frequency (for households)

 Rifiuto residuo indifferenziato	**LUNEDÌ** esporre dalle ore **19.30** alle ore **21.00**
 Plastica, barattolame e poliaccoppiati o cartoni per liquidi (tipo Tetra Pak)	**GIOVEDÌ** esporre dalle ore **19.30** alle ore **21.00**
 Organico	**LUNEDÌ e GIOVEDÌ** esporre dalle ore **19.30** alle ore **21.00**
 Carta	**GIOVEDÌ** esporre dalle ore **19.30** alle ore **21.00**
 Vetro	**STRADALE**

Great performances

- Total waste generated by households and business activities is 530 kgs/inh/year (vs an average of other capital cities in the region of 700 kgs/inh/year)

80%
separate collection rate in march 2017

Main streams of collection

Kg/inhabitant/year	2012	2013	2014	2015	2016	2017	Diff. 2017 vs 2012
Paper/Carton	68,61	69,09	73,70	73,67	74,36	72,60	+5,8%
Plastic/Metals + Glass *	64,54	66,78	79,97	87,32	89,88	93,98	+45,6%
Organic waste	52,67	62,69	90,50	99,11	103,00	102,52	+94,6%
Vegetal waste	55,55	59,50	62,22	82,92	77,00	72,29	+30,1%
Residual waste	248,62	220,87	143,52	117,43	108,00	105,92	-57,4%

* In 2012 we started to change method of collection of plastic, metals and glass that formerly were collected in one single flow

Parma vs other capital cities in the region

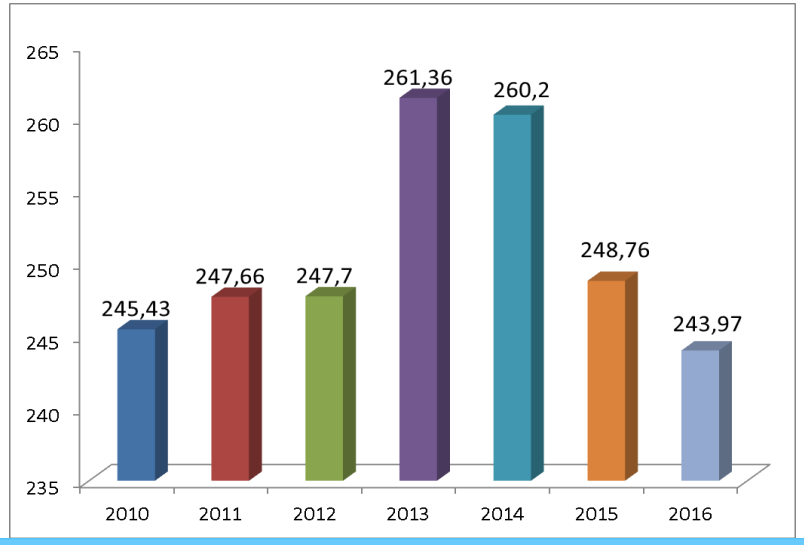
Capital cities in Emilia Romagna	Inhabitants	% separate collection	Residual waste (kg/inh/yr)	Bio-waste (kg/inh/yr)	Total urban waste (kg/inh/yr)
Parma	194.934	81%	105,92	102,52	552,11
Reggio Emilia	172.139	67%	221,00	52,41	660,11
Cesena	97.234	64%	250,56	80,50	691,96
Ferrara	132.921	63%	250,94	54,78	683,45
Modena	185.268	62%	259,43	35,55	691,46
Rimini	150.007	64%	260,62	129,39	733,76
Forli	118.263	62%	272,20	49,24	716,82
Bologna	389.261	48%	296,01	54,90	571,82
Piacenza	103.262	57%	317,10	45,30	745,67
Ravenna	159.522	56%	337,98	37,30	771,90

* Source: ARPA report 2017

- Parma is the only city in the region that has introduced kerbside collection and pay-a-you-throw system

Comparing the waste bill between capital cities in Emilia-Romagna

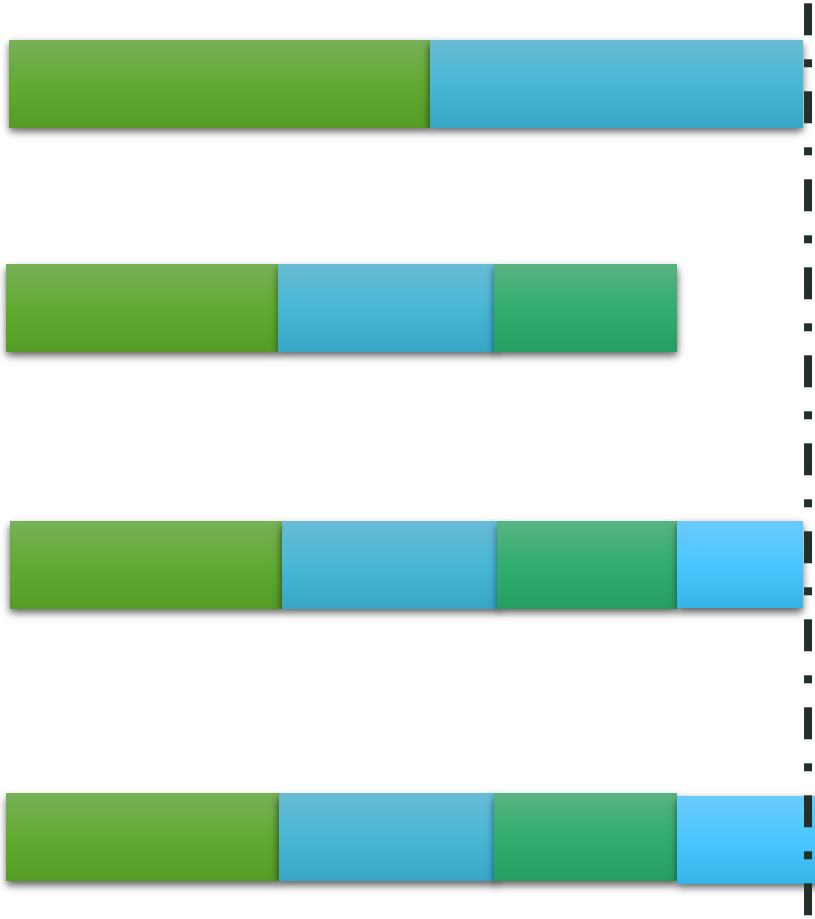
- Considering the bill for 1 apartment of 100 sqm with 3 people residents
- Parma the second lower waste bill in the region



Waste bill evolution during PAYT application in Parma

CITY	TARI 2017	TARI 2016	Diff % 2017/2016
Ravenna	€ 242	€ 239	1,30%
Parma *	€ 244	€ 244	0,00%
Cesena	€ 276	€ 263	4,90%
Piacenza	€ 276	€ 276	0,00%
Rimini	€ 279	€ 277	0,70%
Forlì	€ 284	€ 279	1,80%
Bologna	€ 286	€ 286	0,00%
Modena	€ 293	€ 288	1,70%
Reggio E.	€ 303	€ 295	2,70%
Ferrara	€ 325	€ 325	0,00%

Comparing standard waste bill vs PAYT
Ex. flat of 3 persons 100 sqm on the base 2016

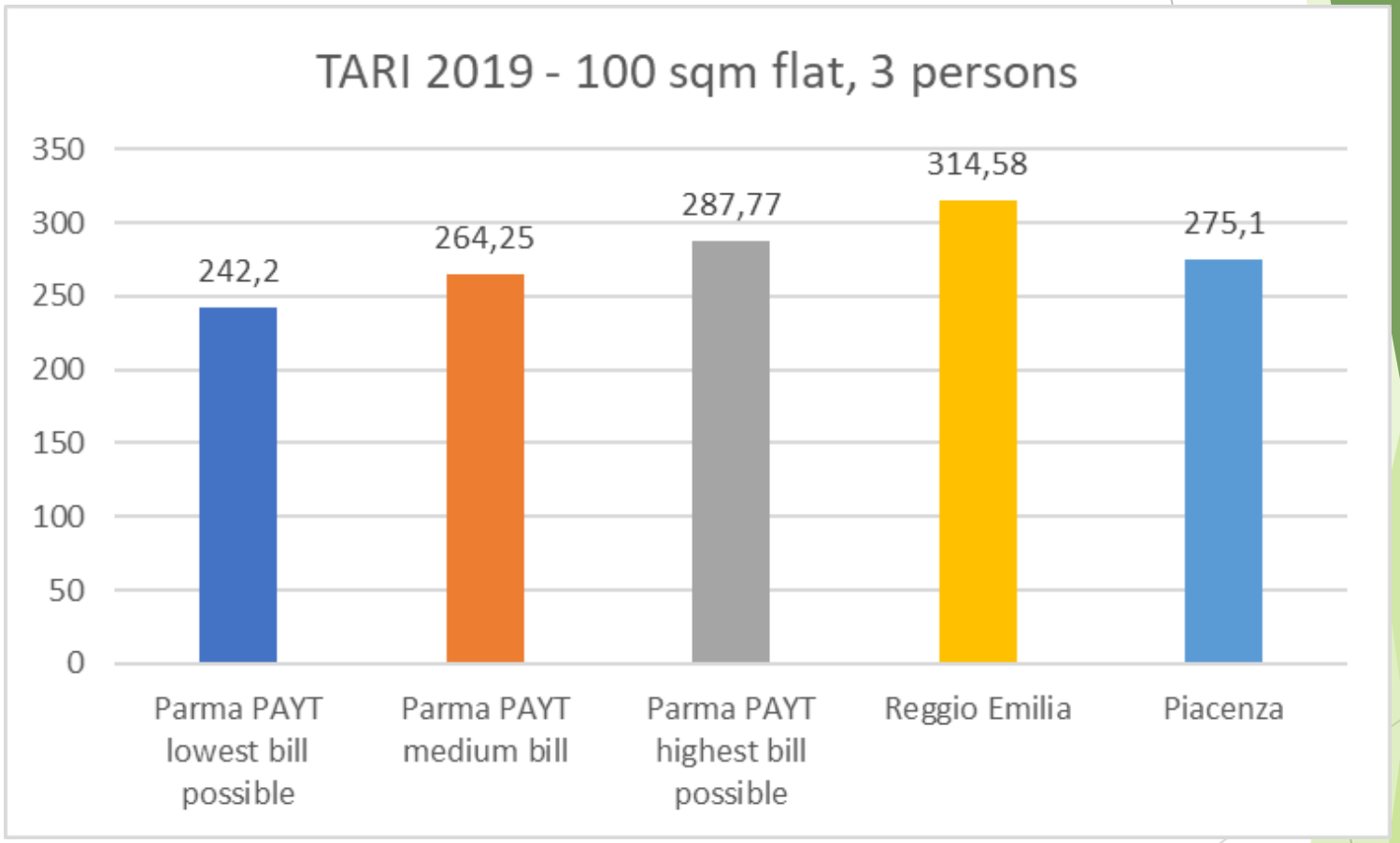


Standard	**Euro 262** fixed bill
PAYT Max reduction	**Euro 244** with 24 bin collection included
PAYT Balance point	**Euro 262** with 36 bin collection included
PAYT Max reachable cost	**Euro 285** with 52 bin collection included

FIXED PART | VARIABLE PART | BIN COLLECTIONS INCLUDED | BIN COLLECTIONS EXTRA

Waste Bill 2019 – Comparison between 3 cities having same Waste Management Company but with different collection schemes

- Almost 80% of the waste bills issued in 2016 benefit of the lowest bill (households within 24 residual waste bin collection per year)

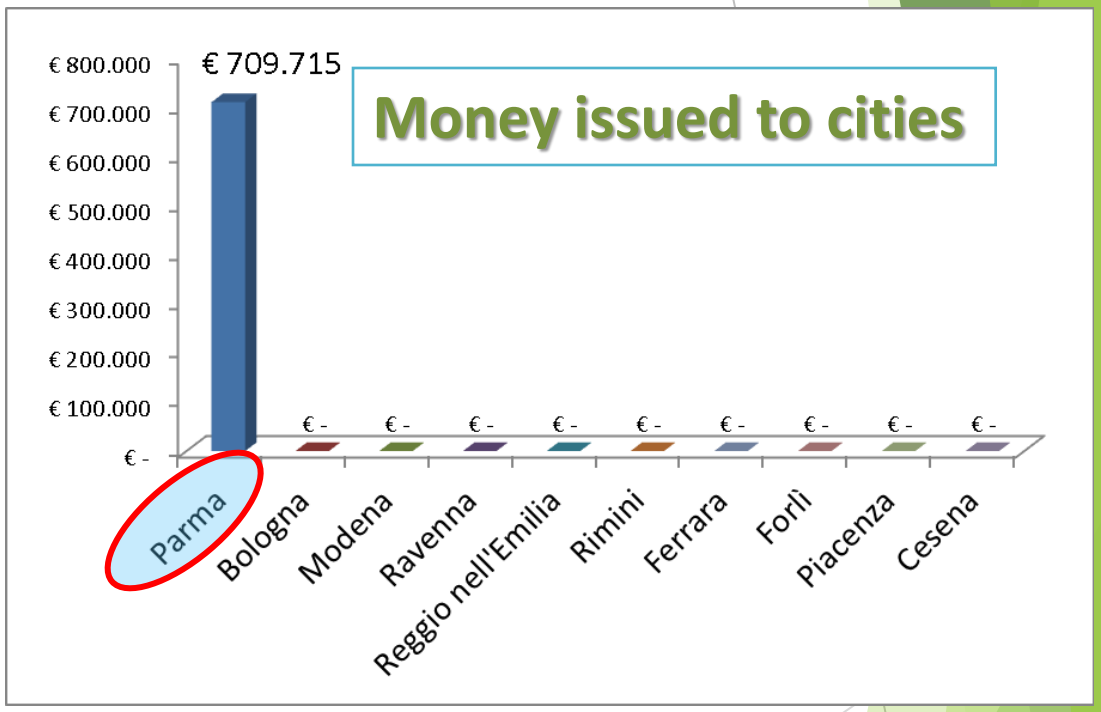


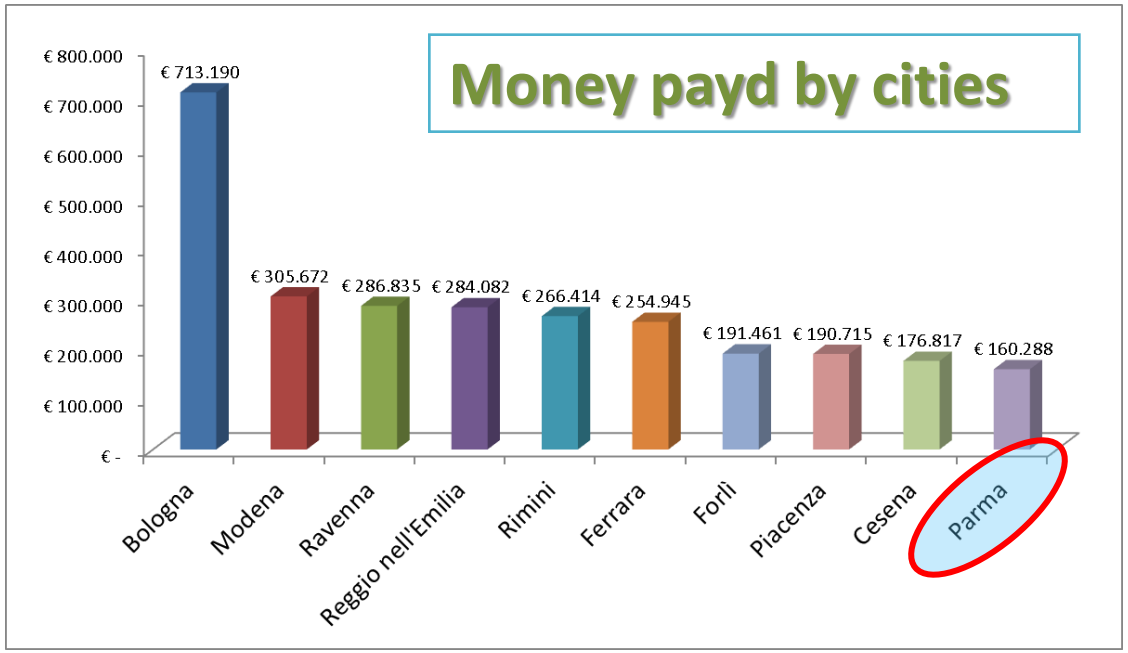
- Same waste management company (Iren) and similar dimensions and urban features
- Only Parma had PAYT and kerbside collection on the whole area

Source: https://www.irenambiente.it/calcola-la-tari

New regional law to support virtuous behaviours and put cities in competion

- New regional law issued in 2015
- Every city pay a **tax for each kg** of residual waste produced
- This money goes **to form a fund** that is revolved to cities that each year reach residual waste reduction goals





More value to recycled materials by separating 1 flow in 2 separate streams

Waste type	Before 2012	Incomes (Euro/ton)
Glass, plastics and metals (collected together in 1 stream)		17

Waste type	After 2012	Incomes (Euro/ton)
Plastics and metals		106
Glass	 	33

More incomes after separating streams

- In 2012 plastic, glass and metal packaging were collected in one single stream
- Quality was poor and the income in Euro/ton was less than 17 Euro/ton
- We divided the collection in 2 separated streams:
  - Plastic/metal
  - Glass
- Quality and incomes were improved:

- 33 Euro/ton for glass
- 106 Euro/ton for plastic/metal

+800.000 Euro

Incomes from the EPR Conai consortium (+340%)

		2012		2014		2015	
Euro/ton		Q.ty (ton)	Total incomes (Euro)	Q.ty (ton)	Total incomes (Euro)	Q.ty (ton)	Total incomes (Euro)
16,91	**VPB** glass, plastics, metals	12.563	212.488	4.759	80.486		-
32,76	**GLASS**		-	5.953	195.021	8.808	288.547
105,71	**PB** plastics, metals		-	4.614	487.785	6.912	730.669
			212.488		**763.291**		**1.019.216**

Overall economical effects

	2013	2014	Delta
Residual waste collection and transport	5.300.099	6.868.191	1.568.092
Residual waste treatment and incineration	9.050.214	5.563.844	- 3.486.370
Recyclable materials collection	14.063.648	15.049.744	986.096
Recyclable materials treatment and transport	1.957.782	2.752.128	794.346
Incomes from recyclable materials (Conai)	- 805.295	- 1.340.000	- 534.705
Street cleaning and other services	5.908.646	6.127.451	218.805
Total	35.475.094	35.021.358	- 453.736

-3,5 millions € Incineration costs

Thanks for your attention

Gabriele Folli

former Deputy Mayor for Environment

(2012-2017) Comune di Parma

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KAYT-Know As You Throw
vs
PAYT-Pay As You Throw

Michele Giavini

ARS ambiente srl

LIFE RethinkWaste project

The REthinkWASTE project has received funding from the LIFE Programme of the European Union under grant agreement n° 18 GIE/IT/000156

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RethinkWaste

- 2019-2022
- Leader: ETRA (Veneto, Italia)
- 4 pilot areas (5000 inhabitants)
  - ETRA
  - Varese
  - Sant Just Desvern
  - Bitetto
- Governance partners
  - ARPAV Ag. Reg. Protez. Ambientale Veneto
  - Agència de Residus de Catalunya
  - ATO 2 Ancona
- Technical partners
  - ARS ambiente
  - LCA consultants 2.0
- Dissemination partners
  - IFEL Istututo per la Finanza Economia Locale
  - ACR +

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PAYT, KAYT, ReThinkWaste: the rationale behind

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EU - revised waste framework directive

- The revised Directive foresees PAYT as an effective instrument to reach high recycling targets

(7) Member States should put in place adequate incentives for the application of the waste hierarchy, in particular, by means of financial, ***economic and regulatory*** incentives aimed at achieving the waste prevention and recycling objectives of this Directive, such as landfill and incineration charges, pay as you throw schemes, extended producer responsibility schemes, ***facilitation of food donation*** and incentives for local authorities. ***In order to***

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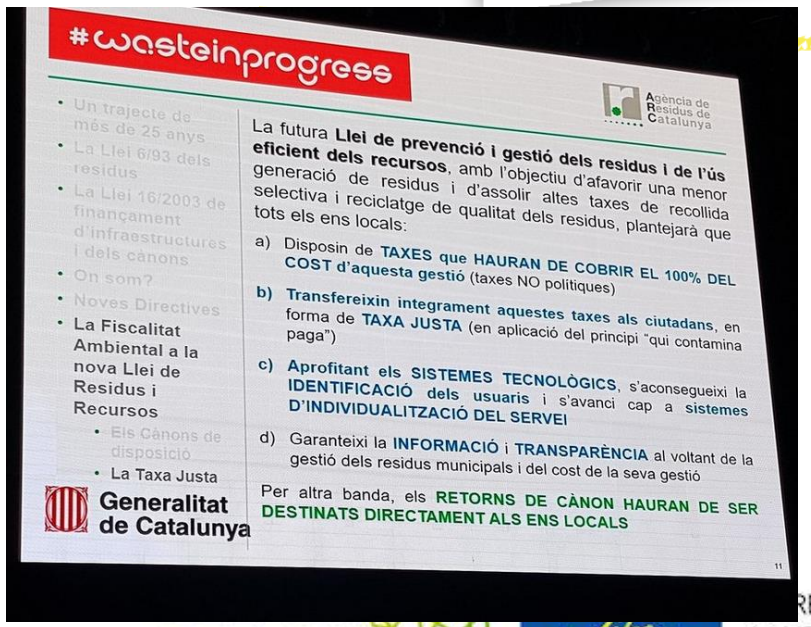
The REthinkWASTE project has received funding from the LIFE Programme of the European Union under grant agreement n° 18 GIE/IT/000156

PAYT gaining momentum

- **France**: target to deploy PAYT in 15 million people in 2020 and 25 millions in 2025 fixed by the Loi de Transition Energétique

- **Catalonia**: willingness to introduce transition to PAYT for all municipalities in the new Waste Framework Law



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PAYT gaining momentum

26

- **Portugal**: national regulation authority approving the possibility to implement PAYT

- **Italy**: Decree establishing criteria for PAYT as a tariff
  - Average: 1 congress on PAYT every week

GUIAS TÉCNICOS

IMPLEMENTAÇÃO DE SISTEMAS PAY-AS-YOU-THROW (PAYT)

Manuel Piedade

Patrícia Limbert

Joaquim Ramos

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CON IL PATROCINIO DI:
A CURA DI:
operate
CONVEGNO
06
OTTOBRE
2017
LA TARIFFA PUNTUALE
Uno strumento verso i Rifiuti Zero
Il quadro legislativo e regolamentare, le modalità applica
le nuove modalità di raccolta e misurazione dei servizi
Sala Conferenze Circolo Sannitico
Piazza Gabriele Pepe, 30 - Campobasso


Regione Emilia-Romagna
Agenzia
VERSO LA TARIFFA PUNTUALE:
STRUMENTI E OPPORTUNITA'
20 Novembre 2017 ore 14:30 – 17:30
Sala Poggioli, Terza Torre, Regione Emilia-Romagna
Viale della Fiera 8, Bologna


Ciclo rifiuti urbani
12/7/2018
11:00 - 13:00
Come costruire la tariffazione puntuale per i rifiuti urbani: dalla misurazione delle quantità alla commisurazione del prelievo
ISCRIZIONI APERTE


SOFTline
Riciclario
ECOMONDO
RIMINI FIERA, 2018
1
Tariffa puntuale 2.0: la sfida.
2
Giovedì
08.11.2018
14:00 / 18:00
Sala Mimosa, Pad B6


SEMINARIO
TARIFFA PUNTUALE DEI RIFIUTI
P.A.Y.T. ITALIA
DALLA TEORIA ALLA PRATICA
MARTEDÌ
26 MAGGIO
ORE 9:30
SALA PAESAGGIO / REGIONE PUGLIA, ASSESSORATO ALLA QUALITÀ DELL'AMBIENTE
V.le delle Magnolie 6/9 - MODUGNO (BA)
MERCOLEDÌ
27 MAGG
ORE 9:30
SALA A
A cura di
operate.it
Patrocinato da


TARIFFAZIONE PUNTUALE DEI RIFIUTI
Applicazione nei Comuni e prospettive di sviluppo
11 / 12 DICEMBRE 2018
NOCI (BA), CHIOSTRO DI S. DOMENICO
Incontr


Dal riconoscimento dell'uten
alla tariffazione puntuale del
rifiuto urbano
La gestione della frazione
organica, il compostaggio
domestico e di comunità
Aosta – 30 maggio 2017
Sala Cogne – Pépinière d'entreprises - Aosta
Via Lavoratori Vittime del Col du Mont, 24

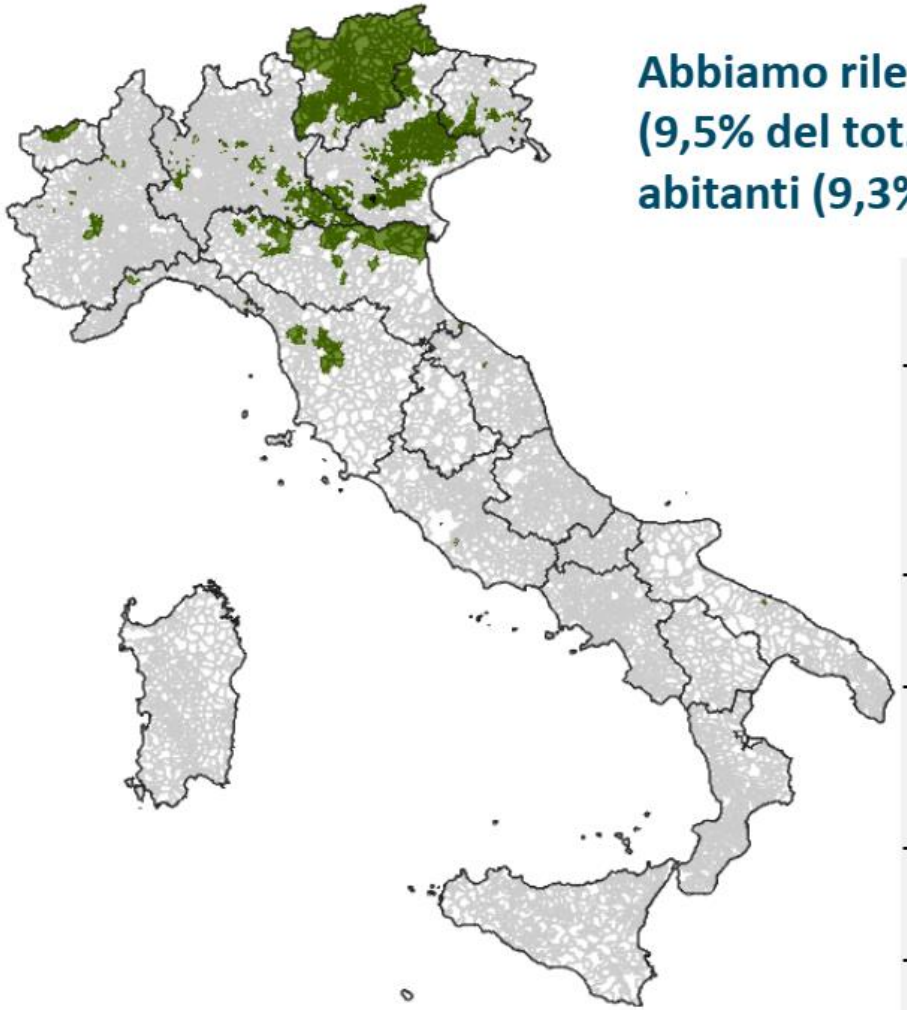

Tari e tariffa puntuale:
Evoluzione Normativa e modelli di applicazione sostenibile
SALA CONFERENZE - CONFINDUSTRIA LECCO E SONDRIO
Via Caprera, n. 4
Lecco
MERCOLEDÌ 4 LUGLIO
ORE 9.00 - 13.00


Tariffa Puntuale
e smart city
l'innovazione tecnologica a supporto della PA per il
raggiungimento dell'equità fiscale.
Giovedì 9/11/2017
ore 14:00 - 16:10
Sala Cedro Hall Ovest


CAMERA DI
COMMERCIO
MILANO
LA TARIFFA PUNTUALE
NEL SISTEMA DI GESTIONE
DEI RIFIUTI
Il seminario nazionale
Giovedì, 25 Febbraio 2016
Palazzo Turati - Sala Conferenze
via Meravigli 9/b, Milano

- PAYT
- 5,6 milioni
  755 Comuni
  (9% tot)

Quanti sono i Comuni italiani in TP nel 2018?



Abbiamo rilevato 755 Comuni che applicano la TP (9,5% del tot.), per una pop. tot. di 5.593.766 abitanti (9,3% del tot.)

Forte concentrazione territoriale della TP:

- nessun Comune con TP attiva rilevato in Umbria e in 6 regioni del Sud (Abruzzo, Molise, Campania, Basilicata, Calabria e Sardegna)
- **Nord-Est: 594 Comuni in TP, con quasi 4 mil. di ab. (42% dei Comuni, 34% della pop. tot.)**
- Nord-Ovest: 139 Comuni in TP, per circa 1.150.000 abitanti (4,6% dei Comuni e 7,1% della pop. tot.)
- Centro: 20 Comuni (18 in Toscana, 1 nel Lazio e 1 nelle Marche, per circa 400.000 ab. tot.)
- Mezzogiorno e Isole: solo 2 Comuni con TP attiva (1 in Puglia e 1 in Sicilia)

Rilevazione ISPRA 2017 (Rapporto Rifiuti Urbani 2018): 341 Comuni in TP, pop. tot. 2.520.117 ab.

Source IFEL, guideline on PAYT 2019
https://www.fondazioneifel.it/documenti-e-pubblicazioni/item/9907-guida-alla-tariffazione-puntuale-dei-rifiuti-urbani

under grant agreement n° 18 GIE/IT/000156

Italy, schemes with «identification», without PAYT: ≈20-30 million people

40/120 liters buckets/bins with chip

Bags with chip

Locked containers with chamber system

Standard bags with numeric / barcode

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Big (and lost?) data

- 5,6 M people: data used for PAYT
- 20-25 M people: data «lost»

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PAYT – issues to be addressed

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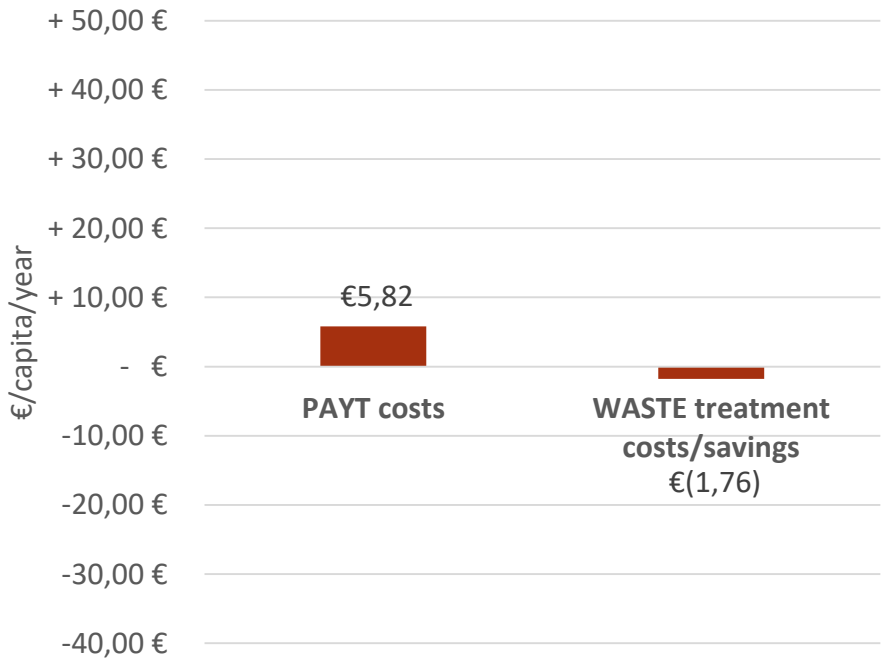
Case study Seveso, project H2020 Waste4Think

- Economics

PAYT – related costs

5.82 ↑ €/capita/ year

1.76 ↓ €/capita/ year



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Moving towards Life Cycle Thinking

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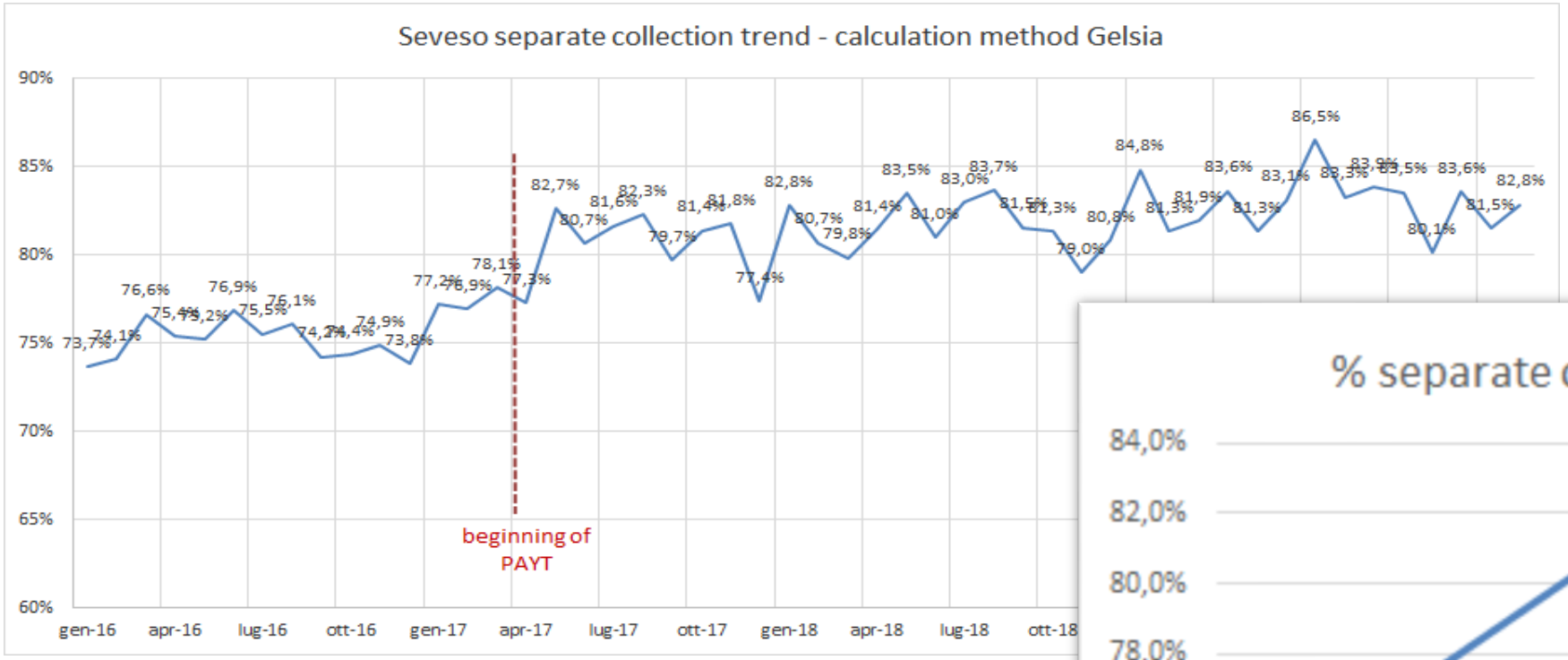
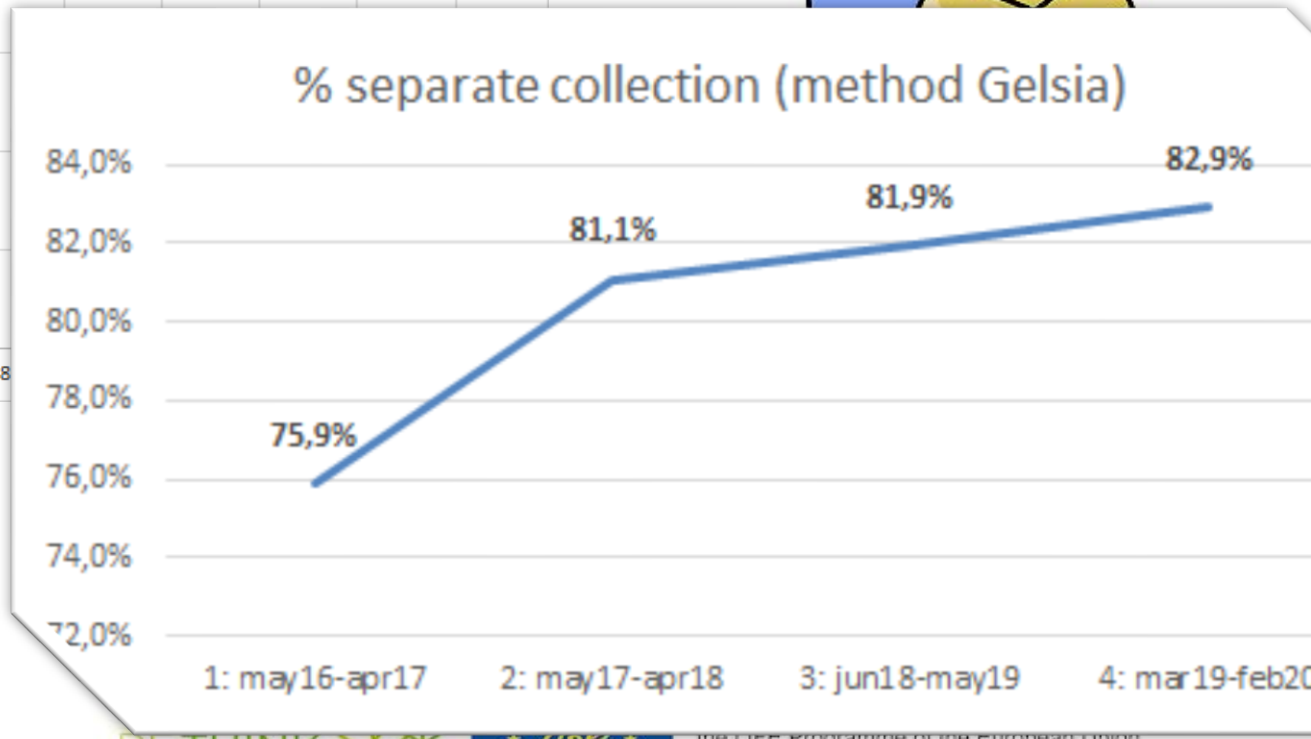
Seveso, PAYT - Separate collection





the LIFE Programme of the European Union
under grant agreement n° 18 GIE/IT/000156

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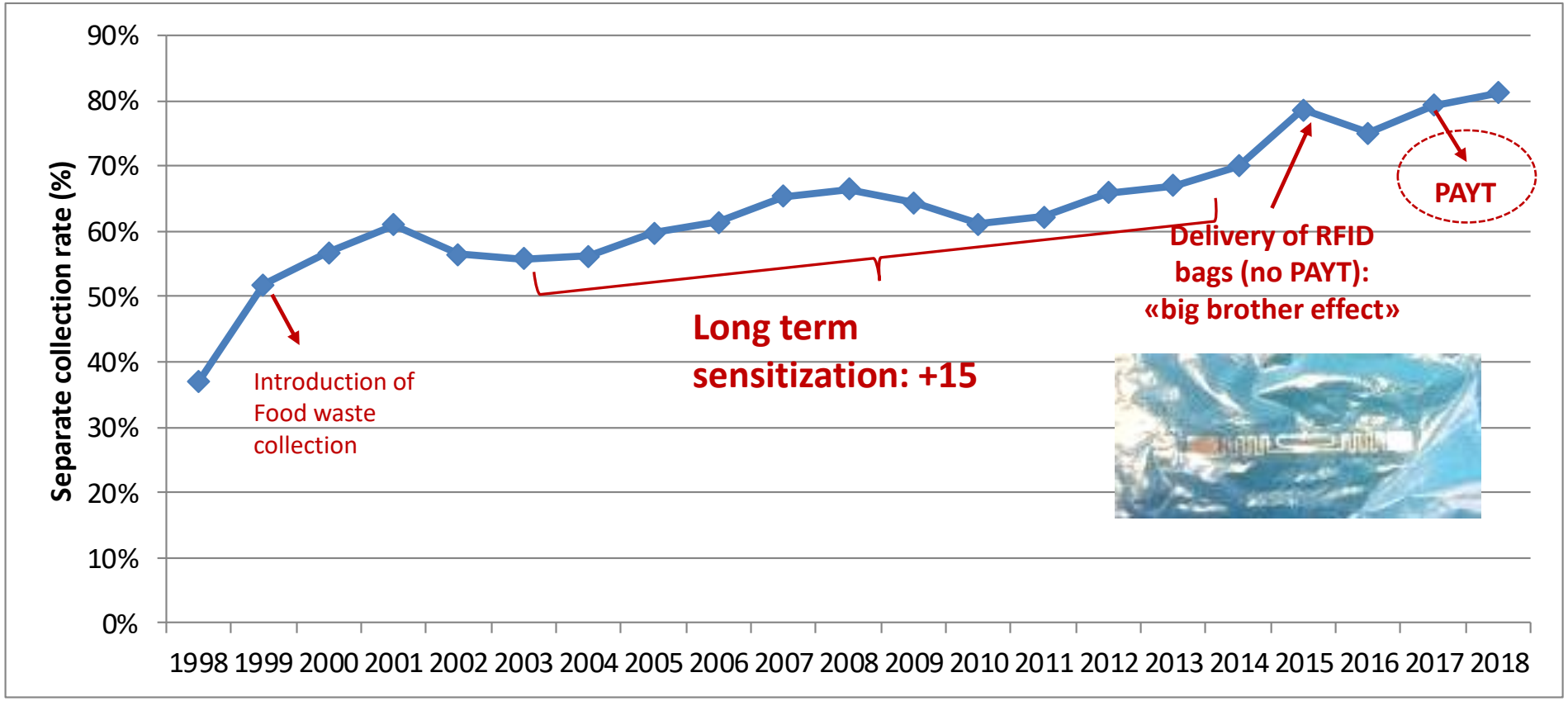
Before implementing PAYT: EFFECT OF long term sensitization. Seveso, Waste4Think



WASTE 4think Moving towards Life Cycle Thinking

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RETHINK WASTE

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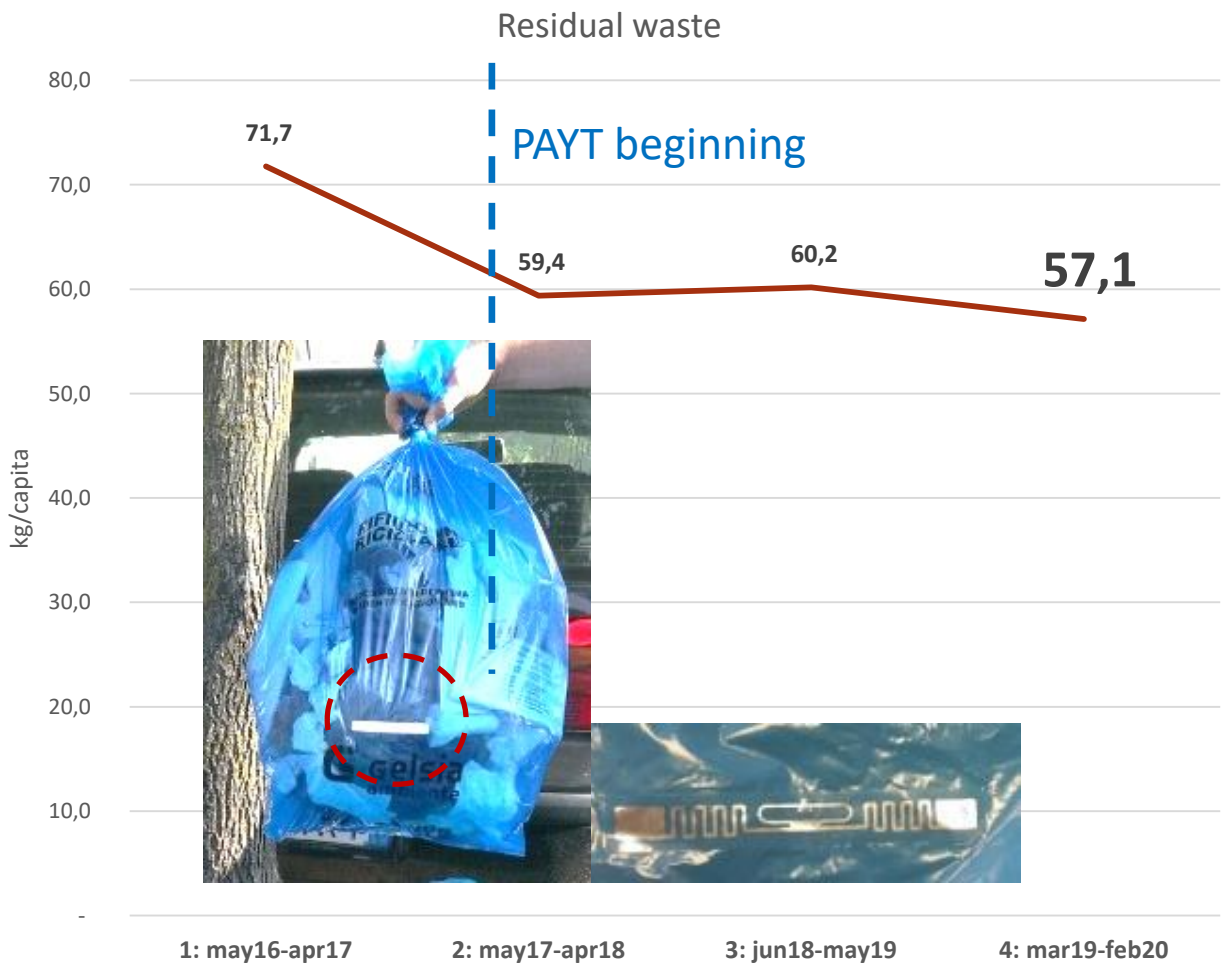
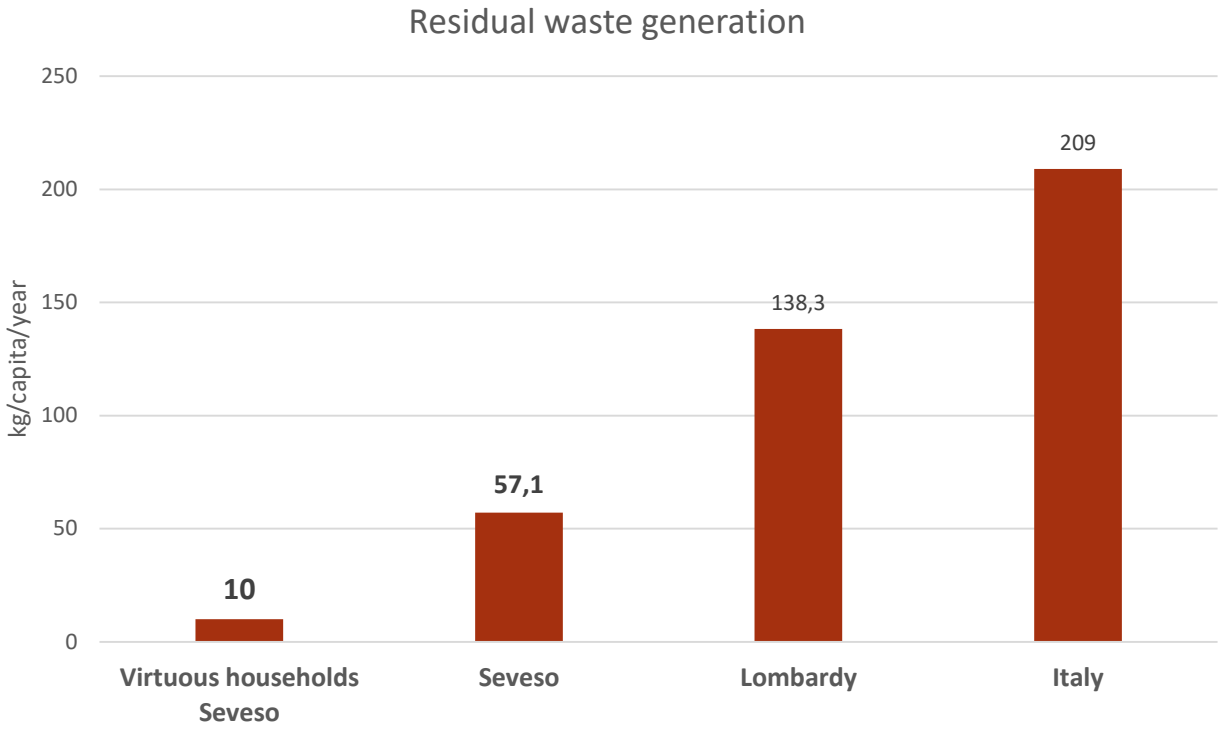
Seveso: residual waste generation





- Virtuous households Seveso: 10 kg/capita
- Seveso: 57.1
- Average Lombardy: 138.3
- Average Italy: 209

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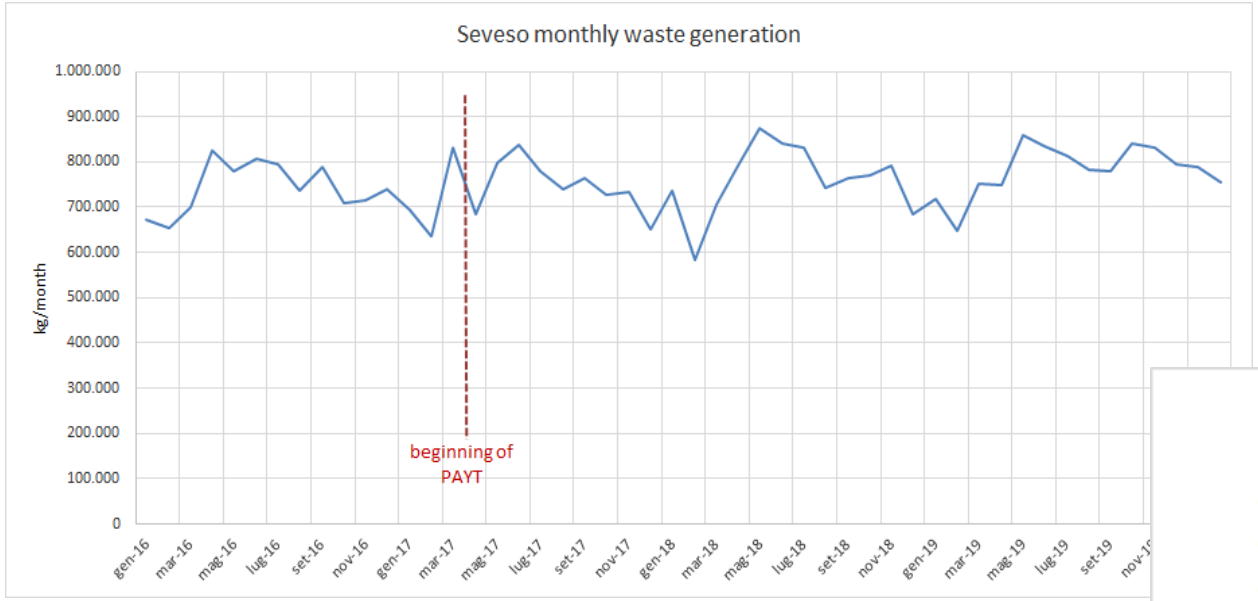
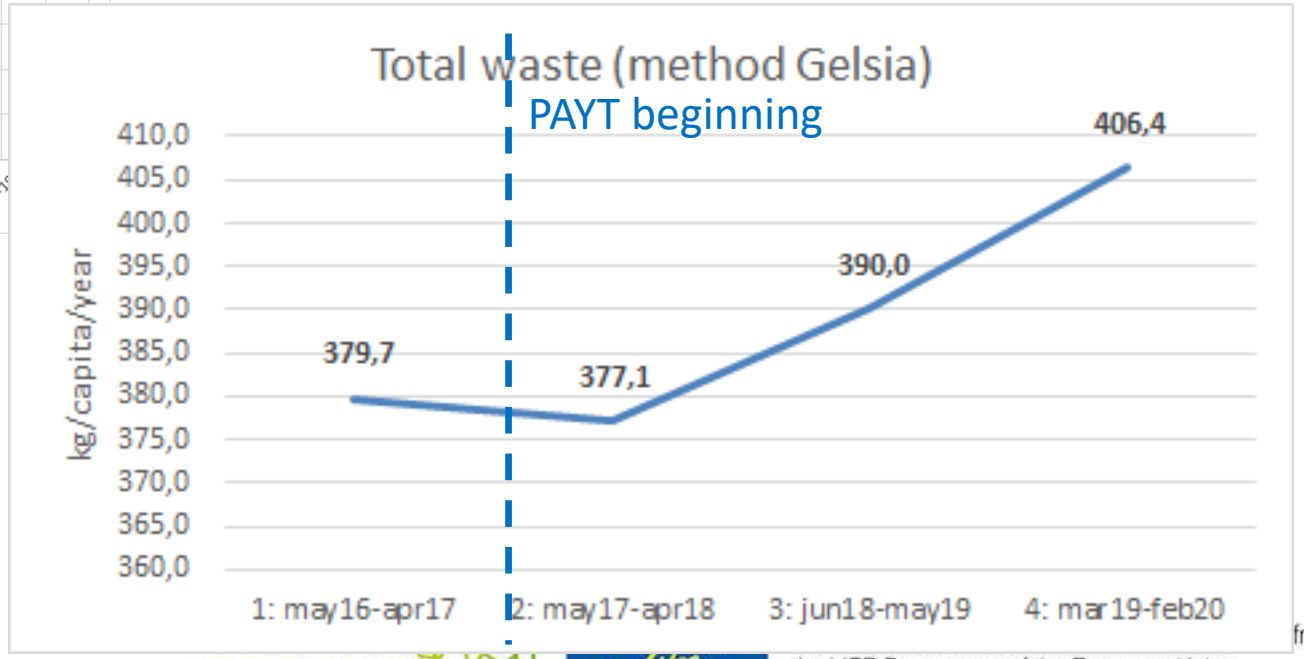
Waste generation



Immediately after the introduction of PAYT there was a **slight decrease** (-0.7%) which actually is in line with the average waste variation in surrounding municipalities in Lombardy (-0.9%) . Year 2018 compared to 2017 for Lombardy show an average increase in overall waste generation data **(Lombardy +2.6%; Seveso +2.75%).** we still don't have official data from Lombardy about the whole 2019, but early findings from the regional environmental agency point out a stable situation.
In Seveso, period 4 of charts below show an **increase of +4.2%** with respect to period 3.



from the LIFE Programme of the European Union under grant agreement n° 18 GIE/IT/000156

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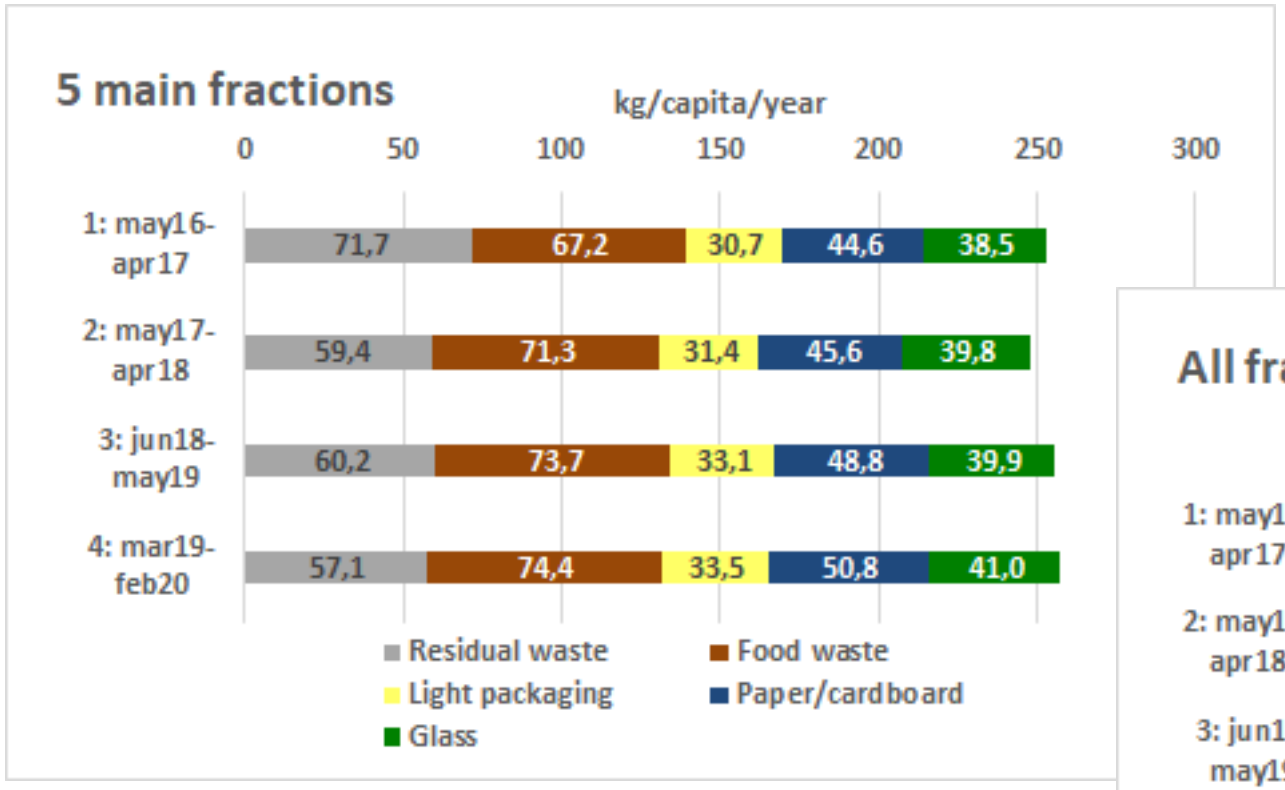
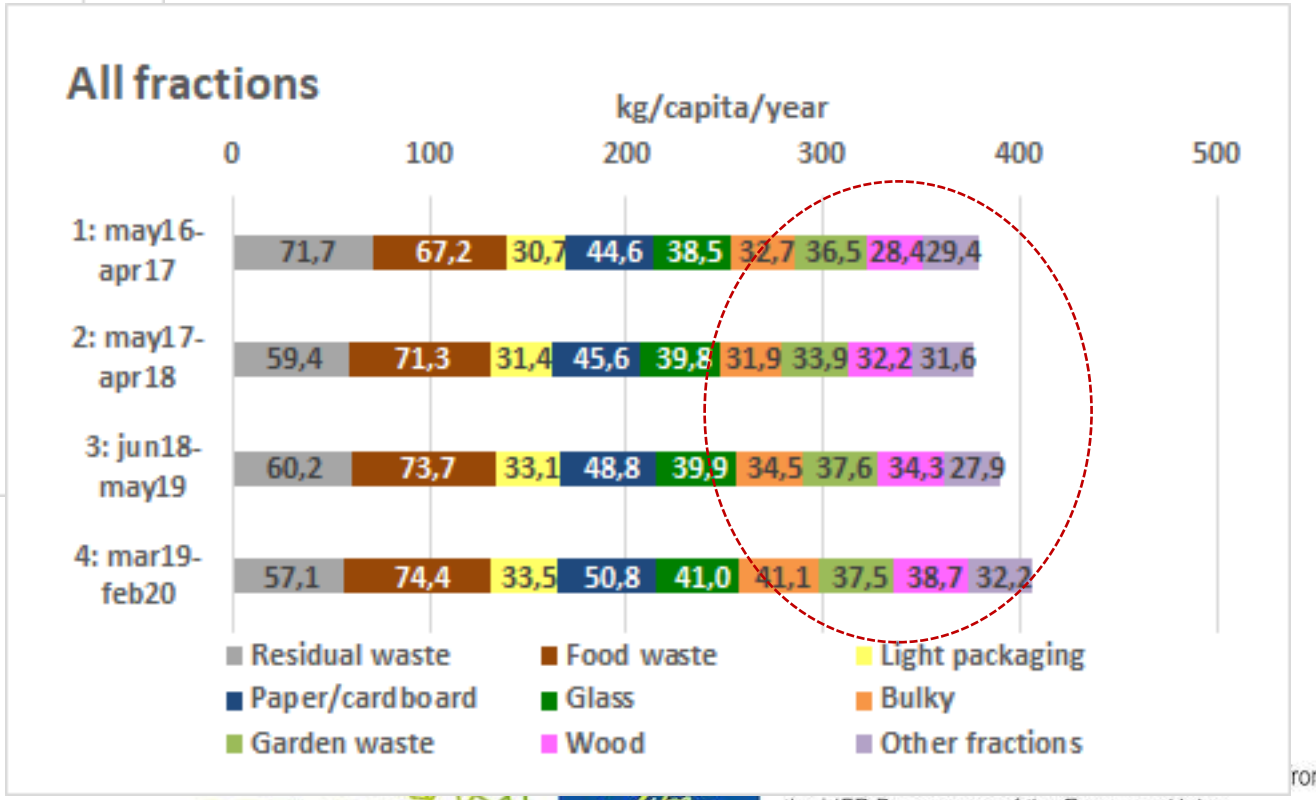
Detail - fractions



Interestingly enough, considering only the **5 main fraction** (residual waste, food waste, light packaging, paper/cardboard and glass) **the increase have been just +0.5%.**
Looking at the carts below, we can see that the fractions that have primarily driven the increase of overall waste generation are **bulky waste, garden waste, and wood**



rom the LIFE Programme of the European Union under grant agreement n° 18 GIE/IT/000156

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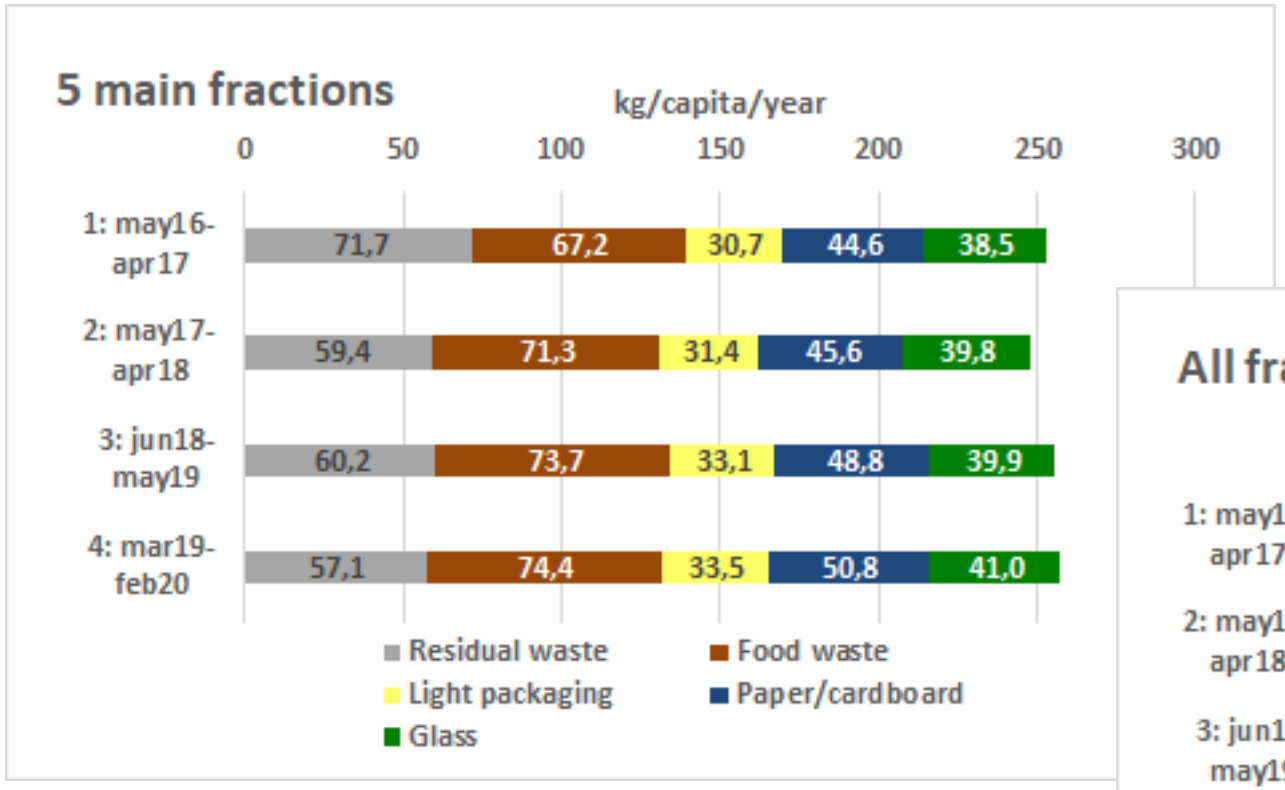
Detail - fractions



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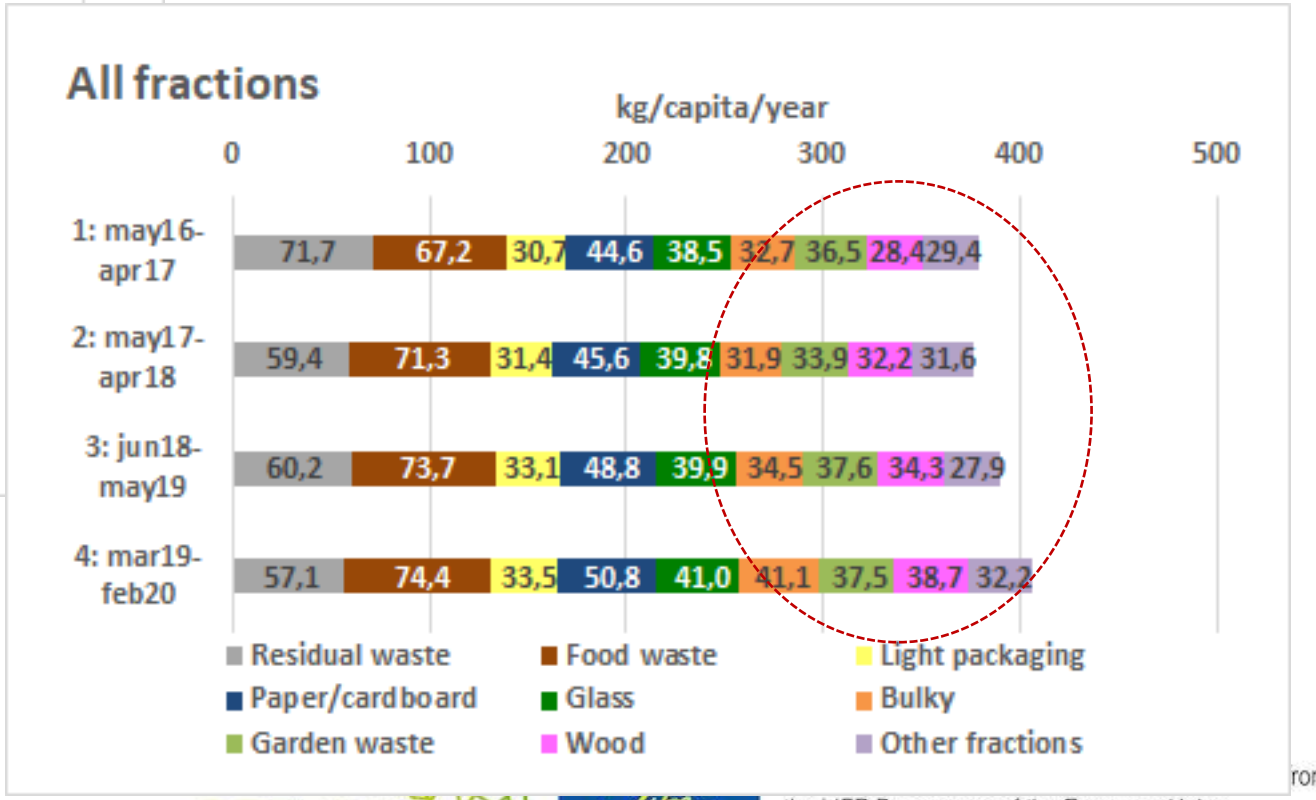

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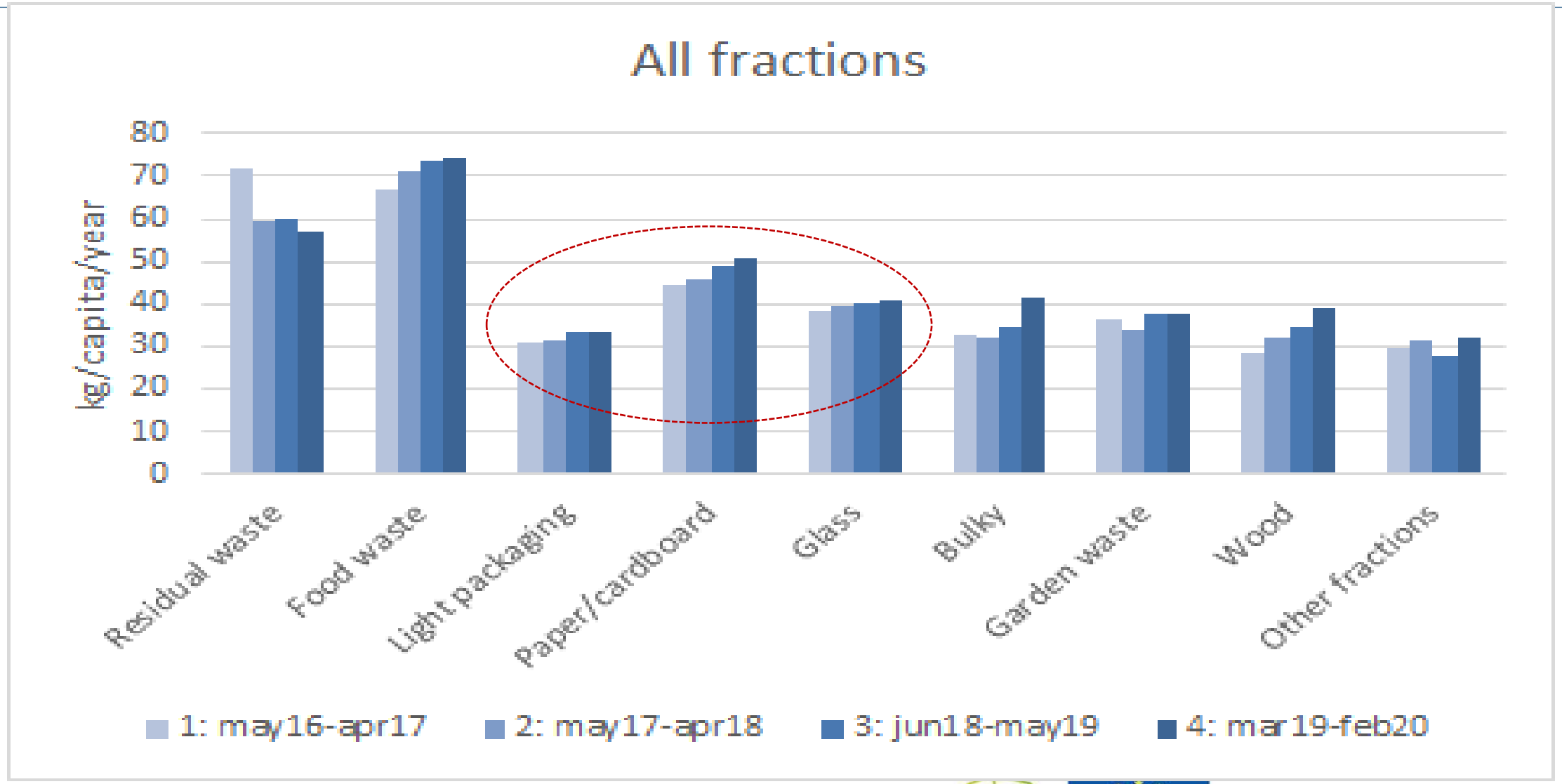

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Waste generation – considerations (D1.7)

- So we can conclude that :
- ● PAYT didn’t affect much behaviour on waste prevention of common packaging fractions on the whole city, as the only charged fraction was **residual waste**; however, specific campaigns performed in the framework of Waste4Think had an important effect in limited contexts such as ecoevents or virtuous households (speak later)
- ● Apart from small packaging waste, waste prevention campaigns for the future should address also fractions that are typically delivered to the recycling area: **bulky waste, wood and WEEE**, but also garden waste should be addressed pushing for instance for more home composting.

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PAYT or KAYT = KNOW AS YOU THROW

New innovative concept complimentary to PAYT

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PAYT, delicate balance

Quality of recyclables

Incentive effect

Fairness

Possible cheats

Recycling vs. prevention

Littering

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Littering

has received funding from the LIFE Programme of the European Union under grant agreement n° 18 GIE/IT/000156

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Quality of recyclables

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under grant agreement n° 18 GIE/IT/000156

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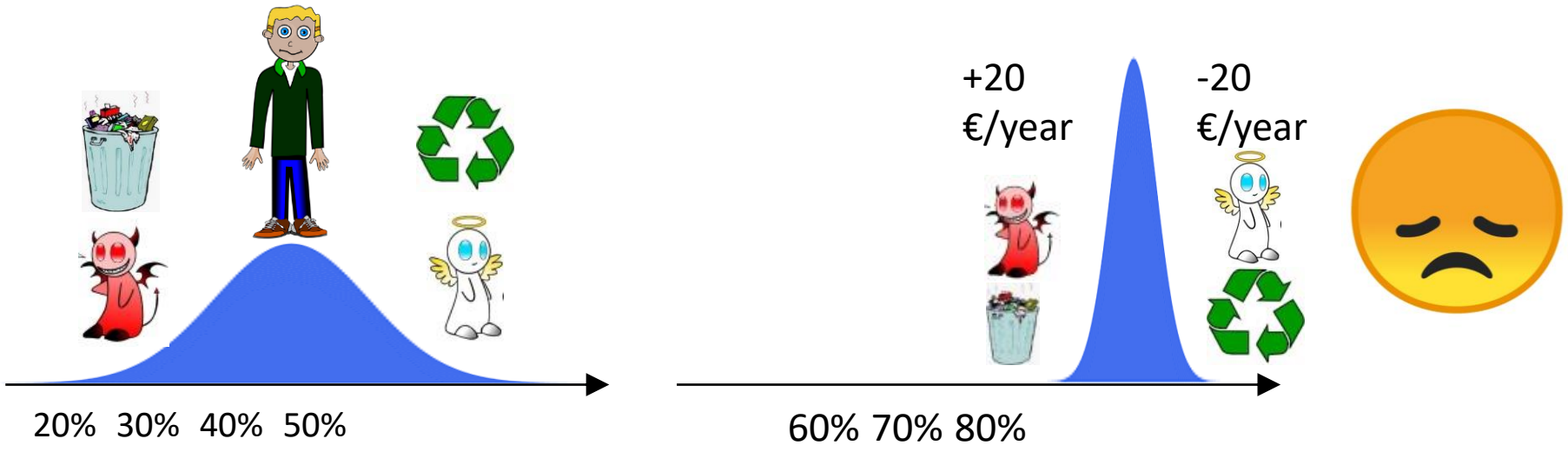
PAYT and Perception of the costs

Incentive effect



Evolution stage:

Advanced stage (with PAYT):

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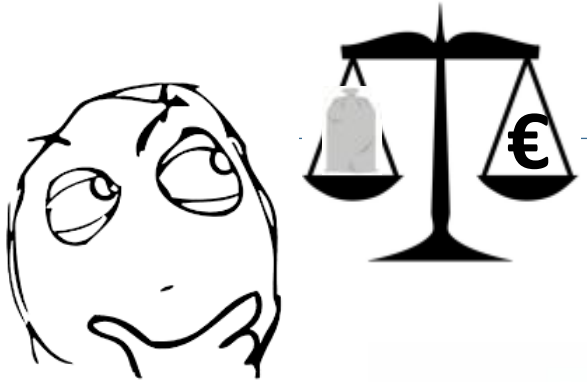
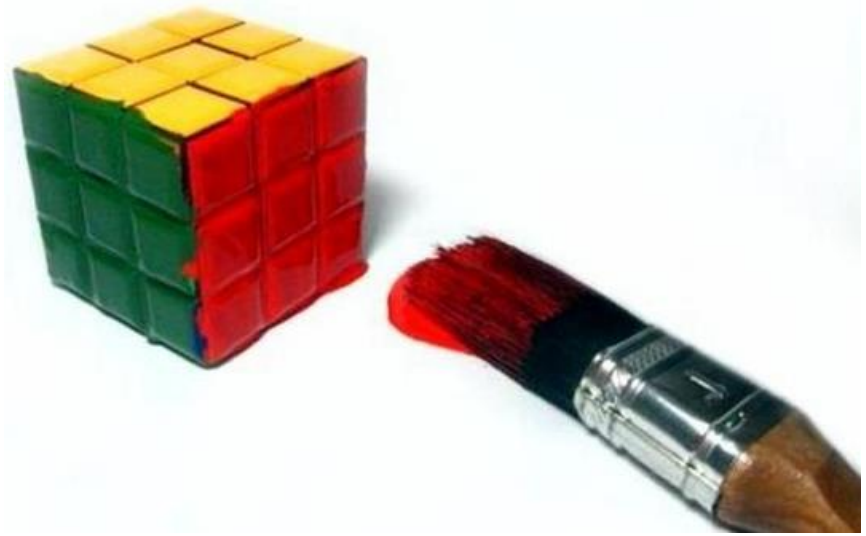
Low perception of PAYT

- Low perception of fairness if:
- It’s possible to cheat the system
  - E.g. reward schemes on recyclables, without exact measurement
- There’s still a high fixed part of the tax not related to waste generation
- Some PAYT schemes make no distinction between families with 1…5 members
- Collective bins for buildings





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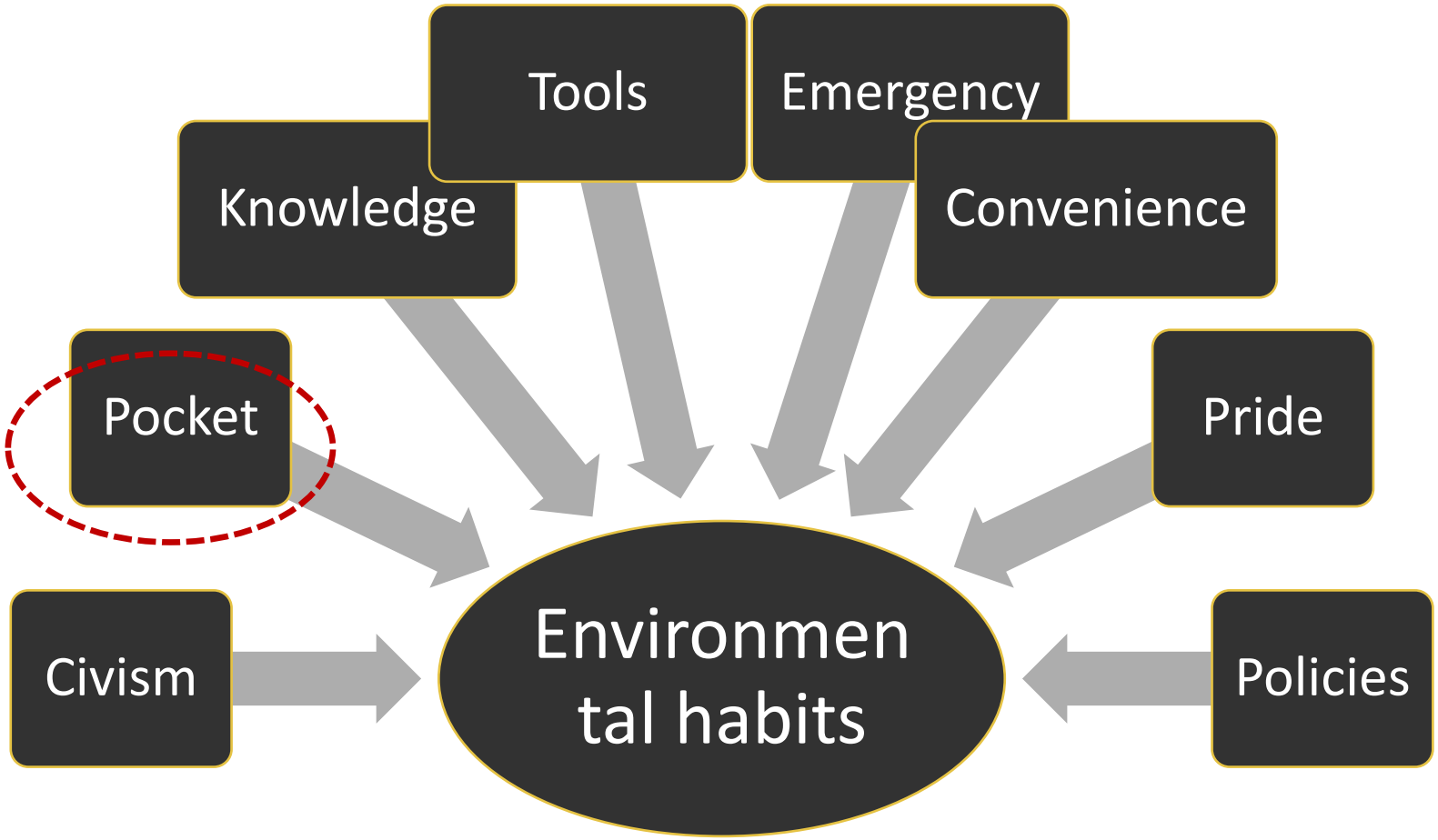
PAYT, one of the (many) tools



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KAYT = Know as you throw

(M. Giavini, 2017 + JRC BEMP report)

- PAYT usually provides info **once per year (invoice)**
  - **Many don’t realize**
- KAYT = Give individual, detailed, frequent feedbacks
  - Citizens feel **monitored** and improve their habits accordingly
  - real time data access
  - Specific and **individual sensitization campaigns**
  - Don’t give only negative feedbacks

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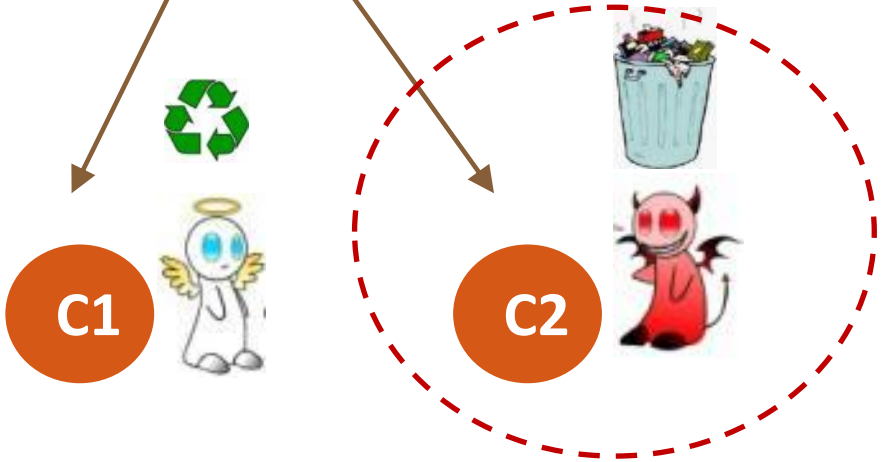
PAYT or KAYT = KNOW AS YOU THROW

A

B

C



C1

C2

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KAYT» + «big brother»: results

- Cremona: baseline **72%** separate collection
- «Control», 3 months: use of standard bags. Random individual controls.
- Result: **88%** separate collection.

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KAYT and «bad guys» The idea of ReThinkWaste

App, web: typically used just by people with an already high awareness level.

KAYT: Give constant information to the «bad guys». **LIFE RethinkWaste: use of WhatsApp as key media**

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LIFE RethinkWaste: WhatsApp platform

ETRA

St Just

Bitetto

Varese

Whatsapp API

SMS

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Waste checking and automated feedback via WhatsApp

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Use case: Varese

- We collect mobile numbers of volunteers (letter from the municipality)
- Opting in, immediate discount
- 12 months trial with:
  - Pictures of waste outside your building, sent back via whatsapp to users with comments
  - Meetings in buildings to explain better separation
    - Those participating to meetings will get more bonuses
  - Separation rate improvement estimated for each building

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KAYT messaging costs

- Street trainers / monitoring
- Messaging fees
  - WhatsApp API: high monthly fee, limits to templates
  - Telegram: free, more interactive, less users
  - SMS: old stile, some elderly users? no pictures
- Rewarding / prizes to have citizens opt-in

LIFE Rethinkwaste goal: check if one-shot 12 months costs ensure long lasting results

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WhatsApp Business API

- An official mobile phone number is dedicated to the project
- From the platform, only TEMPLATES , pre-approved by WhatsApp, are allowed to be sent to users
  - If the user answers, then a «window» of 24 hours is open to interact with any kind of message
- Users can always write messages to the platform asking for info
  - Upon receipt of a message, the 24 windows opens
  - Possibility to set up autoreplies

RETHINK WASTE
the LIFE Programme of the European Union
under grant agreement n° 18 GIE/IT/000156

WhatsApp HSM: Highly Structrured Messages

- **5 key things about HSM**. They are
- **Proactive & Reusable** (common notifications business may want to sent to users automatically)
- **Highly Structured** (the name doesn't lie, they have to comply with very strict structure guidelines)
- **Subject to Approval** (before they go live, the templates need to be submitted to and pre-approved by WhatsApp team)
- **Subject to User Opt-In** (although there is no limit to the number of HSM you can send at once, you can only send them to users who previously agreed to be contacted)
- **Personalized Through Variables** (template messages, although automated, allow for a level of personalization using simple variables)
- **(Optionally) Multi-Lingual** (the templates allow you to pre-design the same message in multiple languages to connect with users in different countries)

https://landbot.io/blog/create-whatsapp-message-templates/

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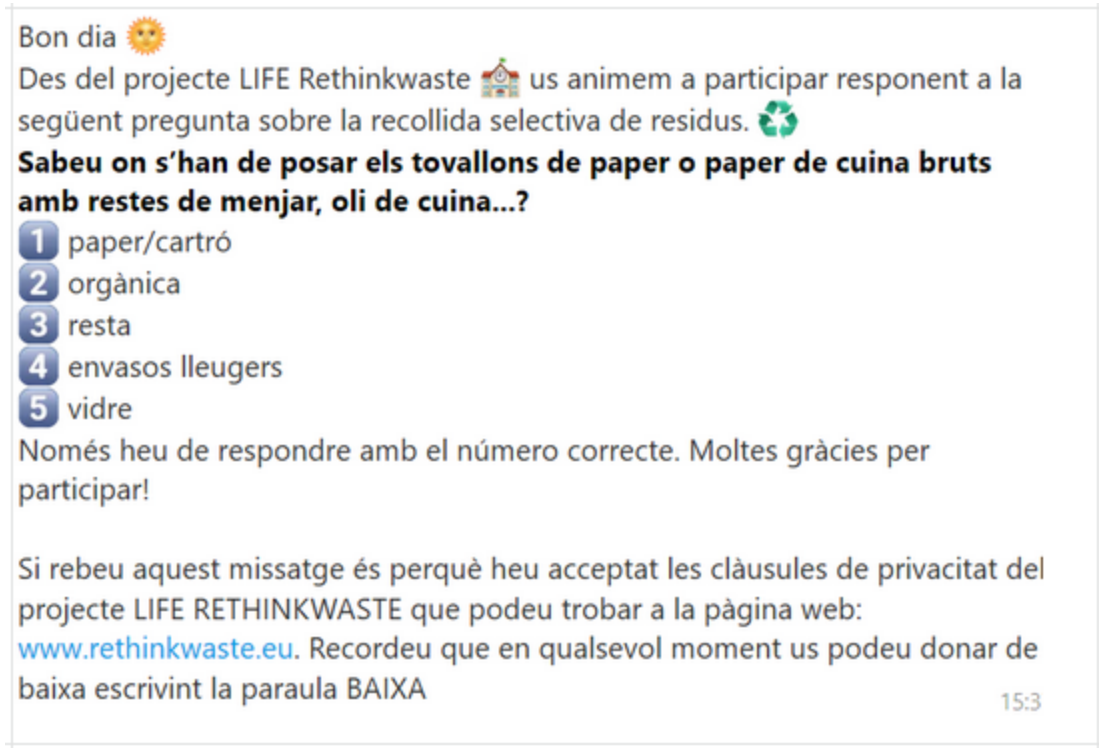
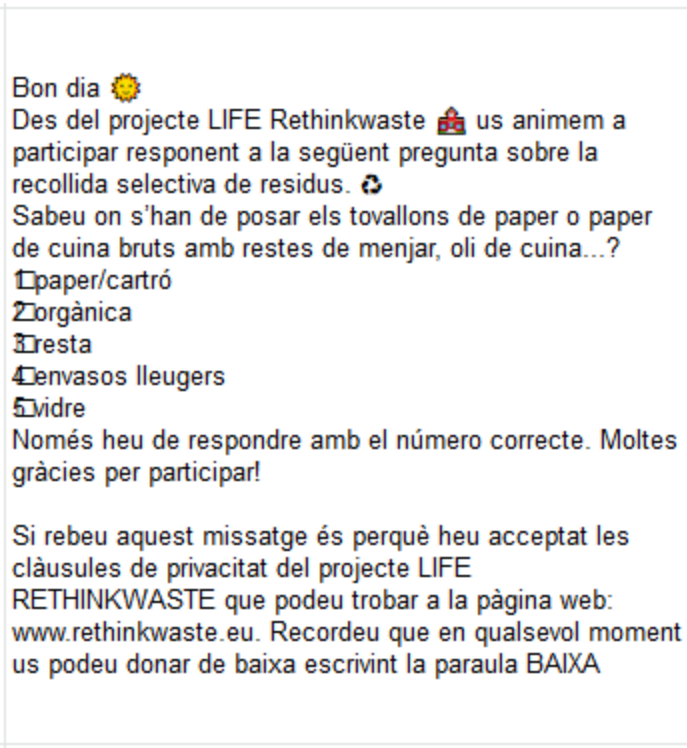
WhatsApp HSM: it's very tricky….





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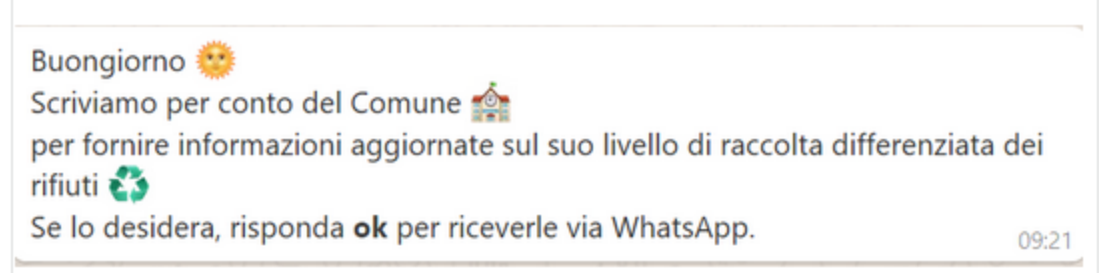

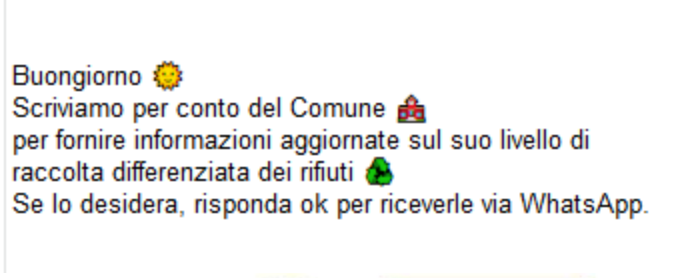

APPROVED

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WhatsApp HSM: it’s very tricky….

Bon dia{{1}} El teu codi d'usuari és {{2}}. _Pots donar-te de baixa escrivint BAIXA_	APPROVED
Buenos días{{1}} Tu código de usuario es {{2}}. _Puedes darte de baja escribiendo BAJA_	APPROVED
Buongiorno{{1}} Il tuo codice utente è {{2}}. _Puoi disiscriverti scrivendo CANCELLAMI_	APPROVED
Good morning{{1}} Your user code is {{2}}. _You can opt out writing UNSUBSCRIBE_	APPROVED

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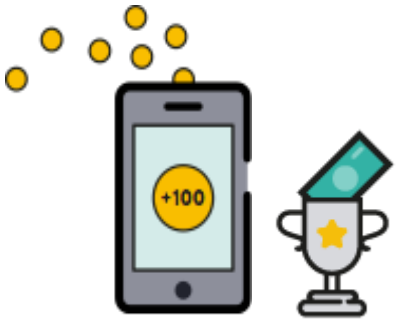
ReThinkWaste: Rewarding system for citizens

Subscribe yourself to the project, by signing GDPR or sending a SMS/whatsapp

Code: aj6t

Receive the confirmation and a unique code for identification



Participate and gain points!

Retire your voucher by the eco-coach

Use your voucher at the shops network

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How to gain points

Subscribe and gain «entry» points

Speak with eco-coaches in the garbage room

Answer some questions about waste in your WhatsApp

Become yourself a coach

Invite friends of the same neighborhood

Partecipate to informative events about waste

Participate and win block scale contest

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KAYT: the case of Bergamo

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Bergamo

- 120,000 inhabitants
- Door to door
- Separate collection ≈ 65-70%
- Citizens are used to have yearly individual delivery of standard bags (transparent) for residual waste
- Willingness to introduce PAYT in the future
- Approved in 2019 a pioneer project based on KAYT
  - Beginning mid 2020
  - Based on the use of a standard bag with unique code
  - Vending machines with KAYT element: **display**

L'ECO DI BERGAMO
SABATO 16 MARZO 2019

Rifiuti, sacchi con codici a barre «Così differenziata più incisiva»

La novità. Da ottobre, per identificare i cittadini che li hanno riempiti Ciagà: nelle città che li usano raccolta incentivata di 2-3 punti percentuali

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Bergamo

- Innovative Know As You Throw through **vending machines** delivering individual bags with barcode
- When getting a roll of bag, the users will get information on a large screen about their **individual performance** compared to the city average of the same group of users.

http://www.arsambiente.it/a-bergamo-introdotto-il-sistema-kayt/

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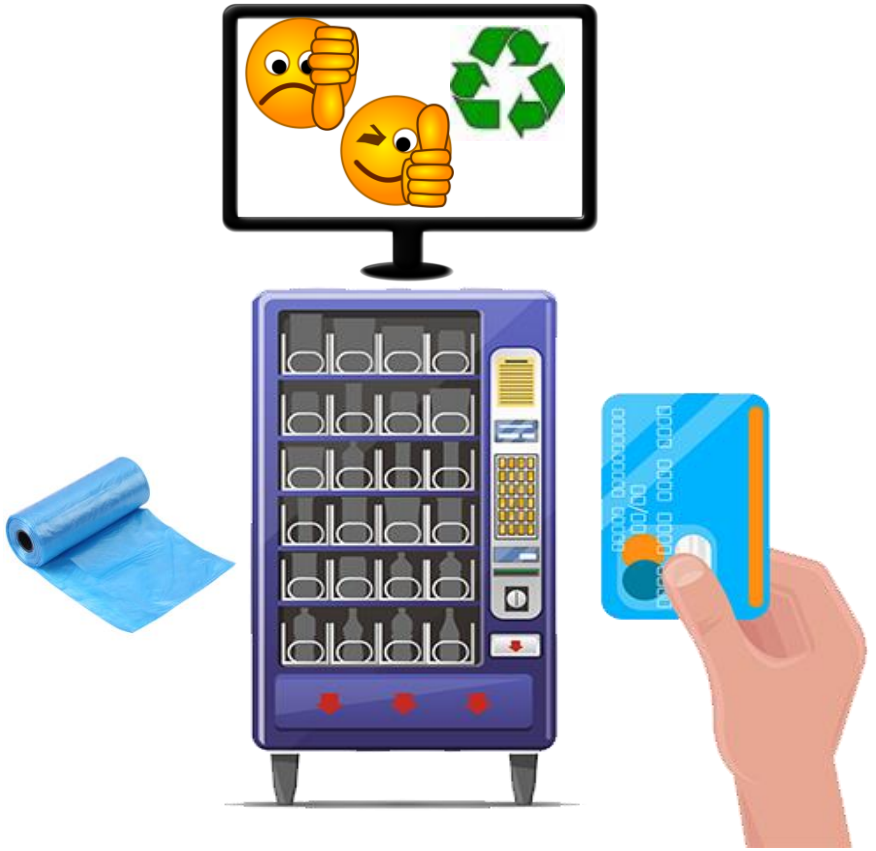
Vending machines

- Machines will have a 7-10" bright display
- Access through social security card
- Users will be presented KAYT information before getting the roll of bags
- The standard roll will have just 10 bags of 40 liters
  - This is to ensure frequent access to vending machines receiving informative messages – e.g. 2-3 times/year



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KAYT in Bergamo: draft example - display

https://gare.a2a.eu/documents-api/documents/?accesscode=f7c892f6-53b0-4443-889f-5bcf07cb3400

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CONCLUSION

- PAYT is a key instrument widely promoted in EU, interest is raising
  - The **effectivenes** of the schemes and its **perception** is related to many boundary conditions that have to be carefully evaluated before implementing it
  - **The quality of recyclable fractions** shall be the focus of any collection /payment schemes for the future EU recycling targets
- Having a high baseline, citizens' perception of PAYT as a "fair tax" was actually limited.
  - Mathematical limit: not possible to further increase the price of residual waste (risk of littering)
  - Charging other fractions to increase the variable part (light packaging, food waste) requires additional costs and higher effort from citizens on prevention
  - Invest in communication and feedbacks ("Know As You Throw")
- Economics: Technology and implementation costs may be higher than overall benefits, if high baseline
- Use of **big data for information (KAYT) / nudging** is key and may allow to achieve good results together with / as an alternative to PAYT

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Thanks

Michele Giavini

giavini@arsambiente.it

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The environmental impact of WEEE management and benefits of recycling

COLLECTORS: WASTE COLLECTION SYSTEMS ASSESSED AND GOOD PRACTICES IDENTIFIED

Webinar May 2020

Bernhard Steubing (LDE)

Environmental analysis for WEEE

Cases

- Pembrokeshire (UK)
- Helsinki (FI)
- Genoa (IT)
- Cyclad (FR)
- Vienna (AT)

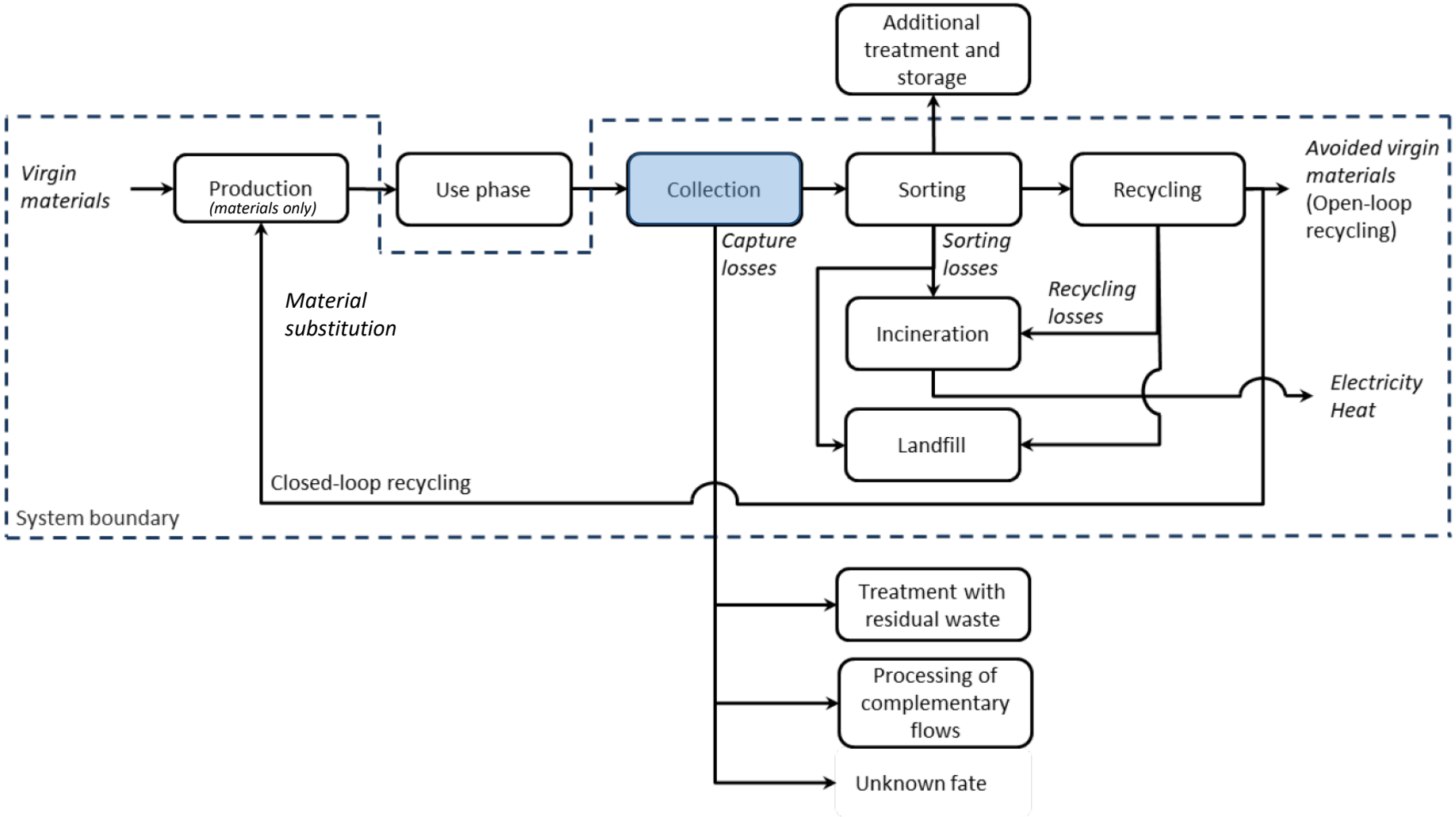
Small WEEE collection (consumers):

- Lamps
- Small household appliances
- Small IT

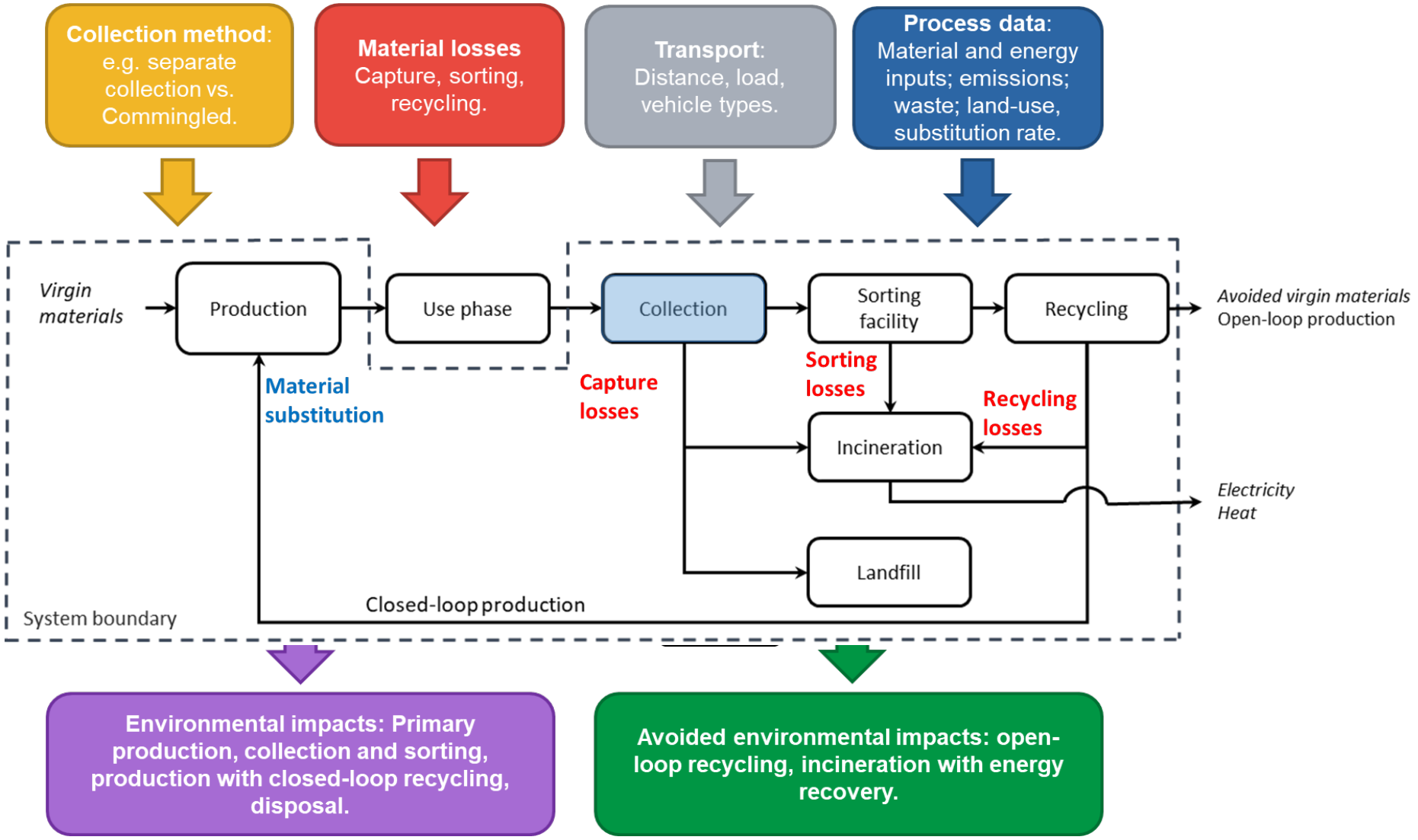
Environmental assessment

- Material flow analysis (MFA)
- Quantifying environmental impacts (LCA)

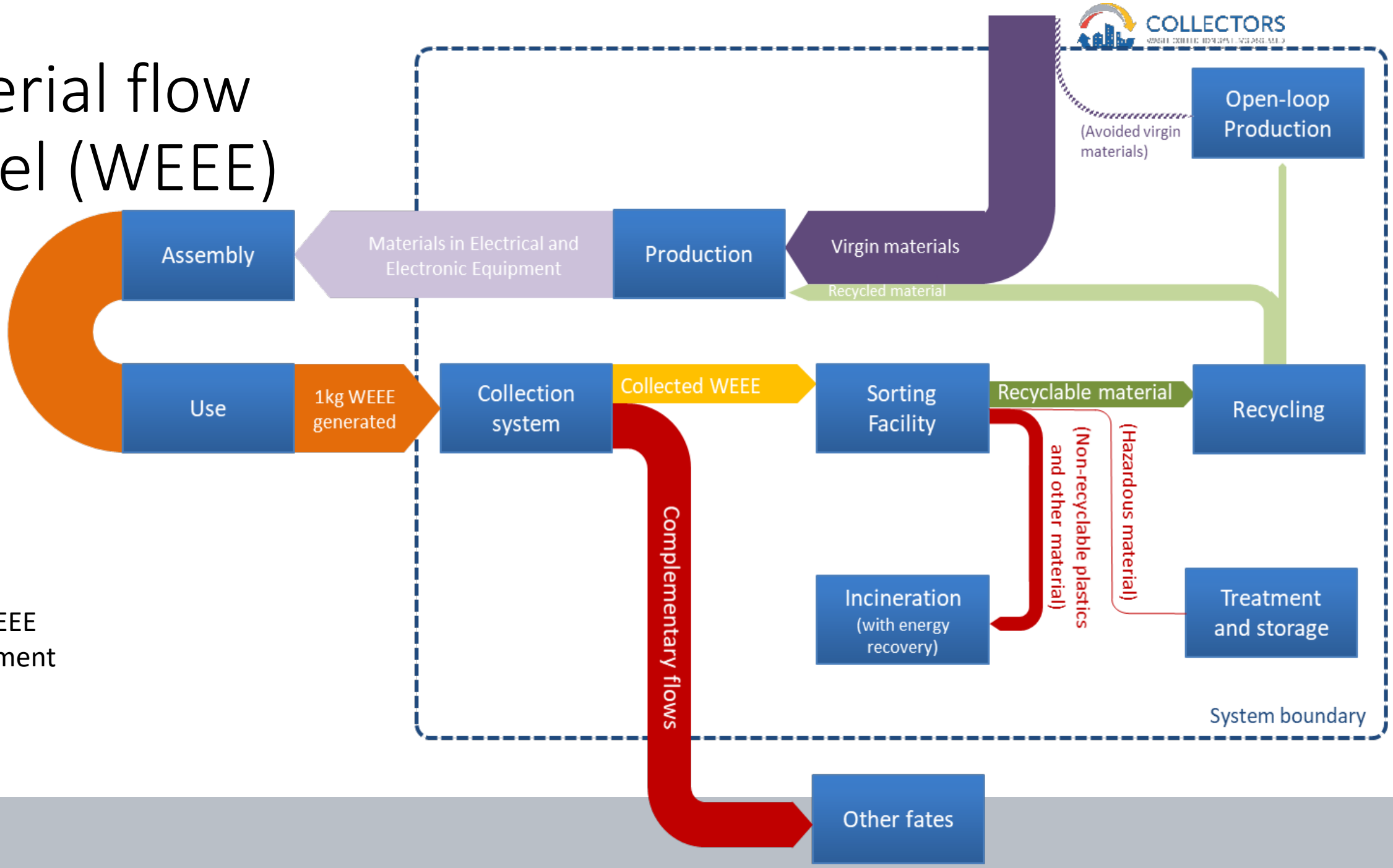
System boundaries



Data sources and model outputs

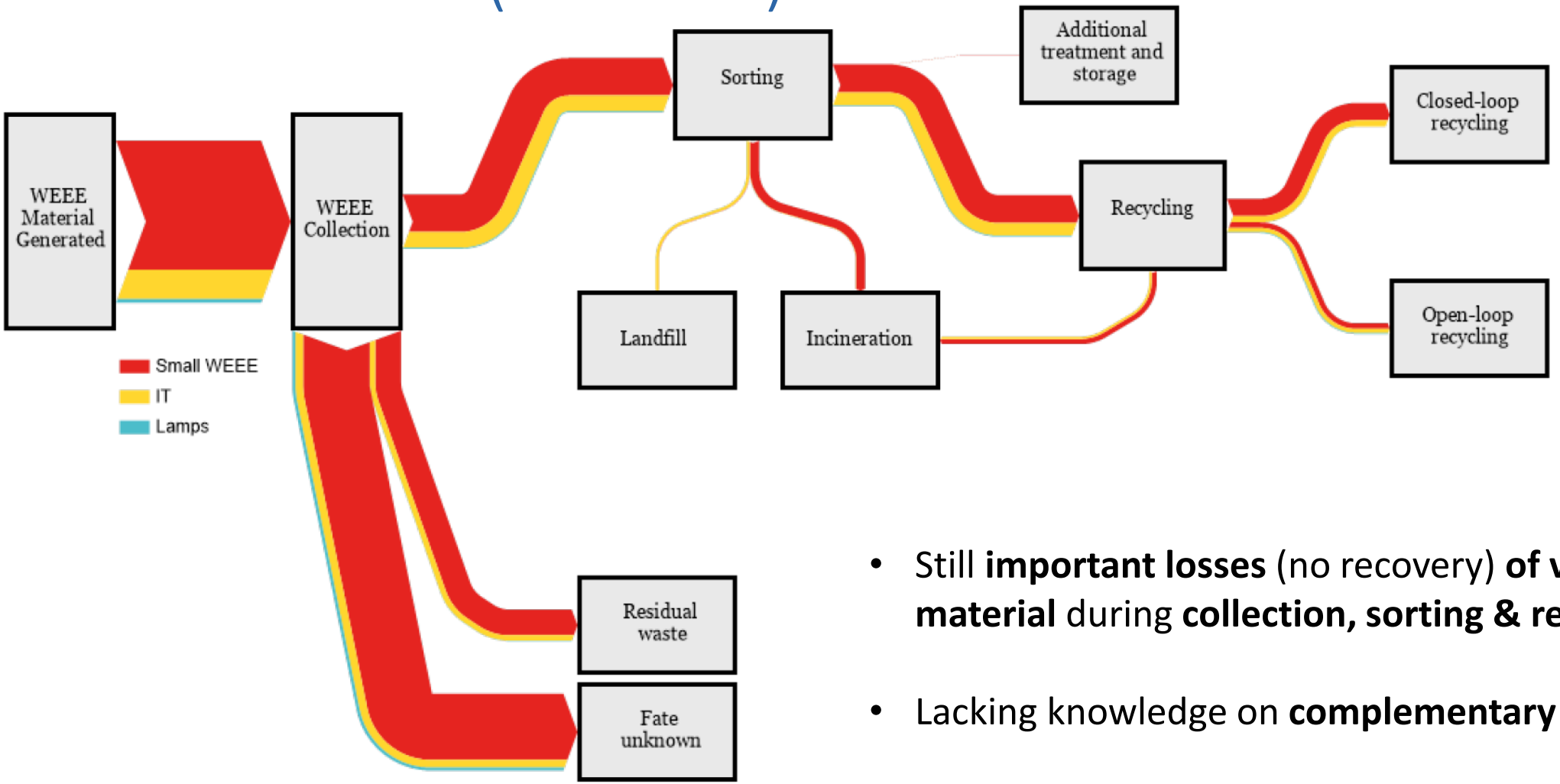


Material flow model (WEEE)



- Small WEEE
- IT equipment
- lamps

Material flows (Helsinki)



- Still **important losses** (no recovery) **of valuable material** during **collection, sorting & recycling**
- Lacking knowledge on **complementary flows**

Impacts and sensitivity of capture rate (Helsinki)

Collection and sorting:

- have low direct impact
- yield indirect environmental benefits

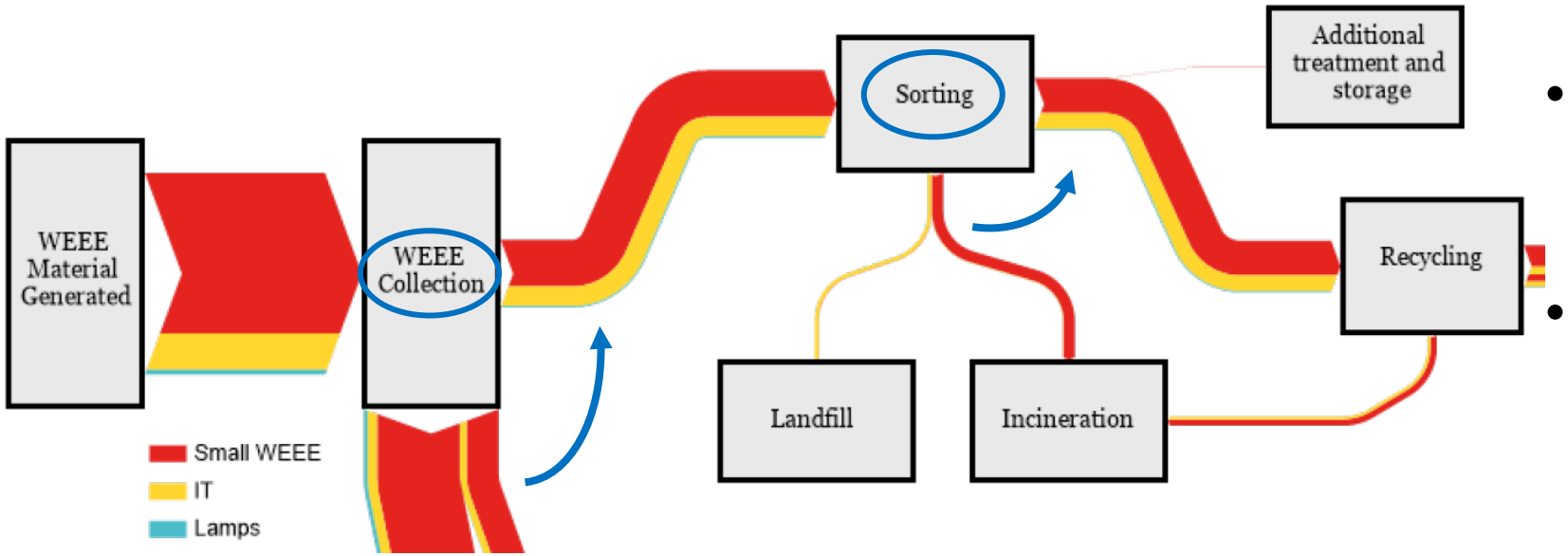
Improving capture rate can lead to significant environmental benefits

Factors limiting environmental benefits:

- Downstream recovery efficiency
- Impacts generated during recovery

Role of complementary flows unclear (real environmental impact probably higher)

Sensitivity analysis



Change in **climate change impacts** per kg when **losses are reduced by 10%** in each step (Helsinki):

Parameter	small WEEE	IT	Lamps
Capture loss	-1.19%	-0.61%	-2.25%
Sorting loss	-2.33%	-1.70%	-1.57%
Gross total	**-3.76%**	**-2.48%**	**-3.97%**

- Identification of «bottlenecks» along the recovery chain
- Joint improvements yield higher benefits than the sum of the individual improvements
- ➔ i.e. collection, sorting, recycling, substitution efficiencies should be improved *jointly* – life cycle perspective

Conclusions

- Collection phase has *low direct*, but *high indirect* environmental relevance

➔ Losses during collection, sorting, and recycling should be further minimized

- Increasing re-use can yield high environmental benefits

Limitations

- Only material inputs to EEE production considered (not production processes)
- Complementary flows (e.g. storage or exports):
  - Have environmental consequences, but these are difficult to quantify
  - Need to be further studied and reduced where they are detrimental

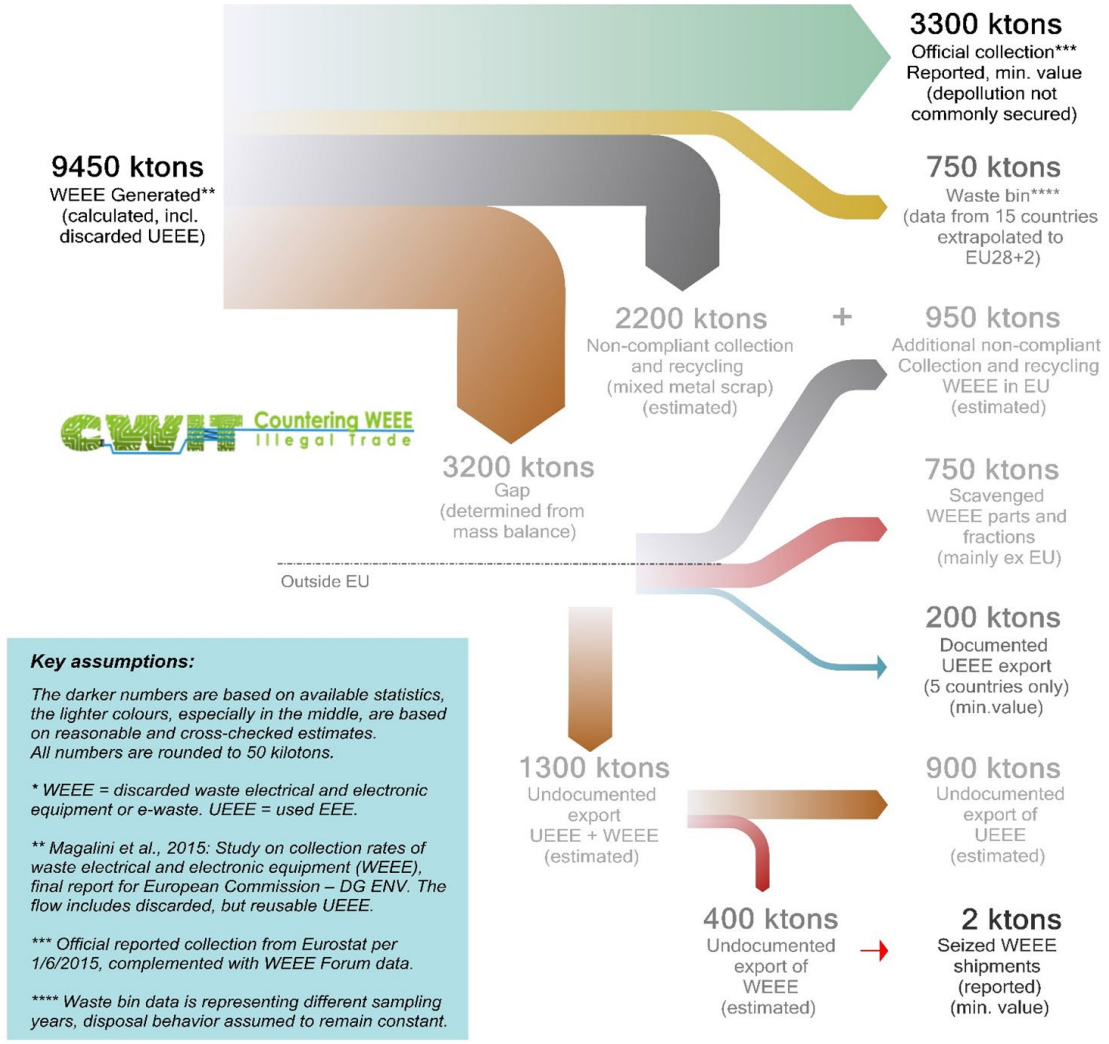
Best practices to improve the quantity and quality of collected WEEE

Examples of COLLECTORS good practices

Virtual session (03-06-2020)

Lucía Herreras Martínez
WEEE Forum

This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 776745



Key assumptions:

The darker numbers are based on available statistics, the lighter colours, especially in the middle, are based on reasonable and cross-checked estimates.
All numbers are rounded to 50 kilotons.

** WEEE = discarded waste electrical and electronic equipment or e-waste. UEEE = used EEE.*

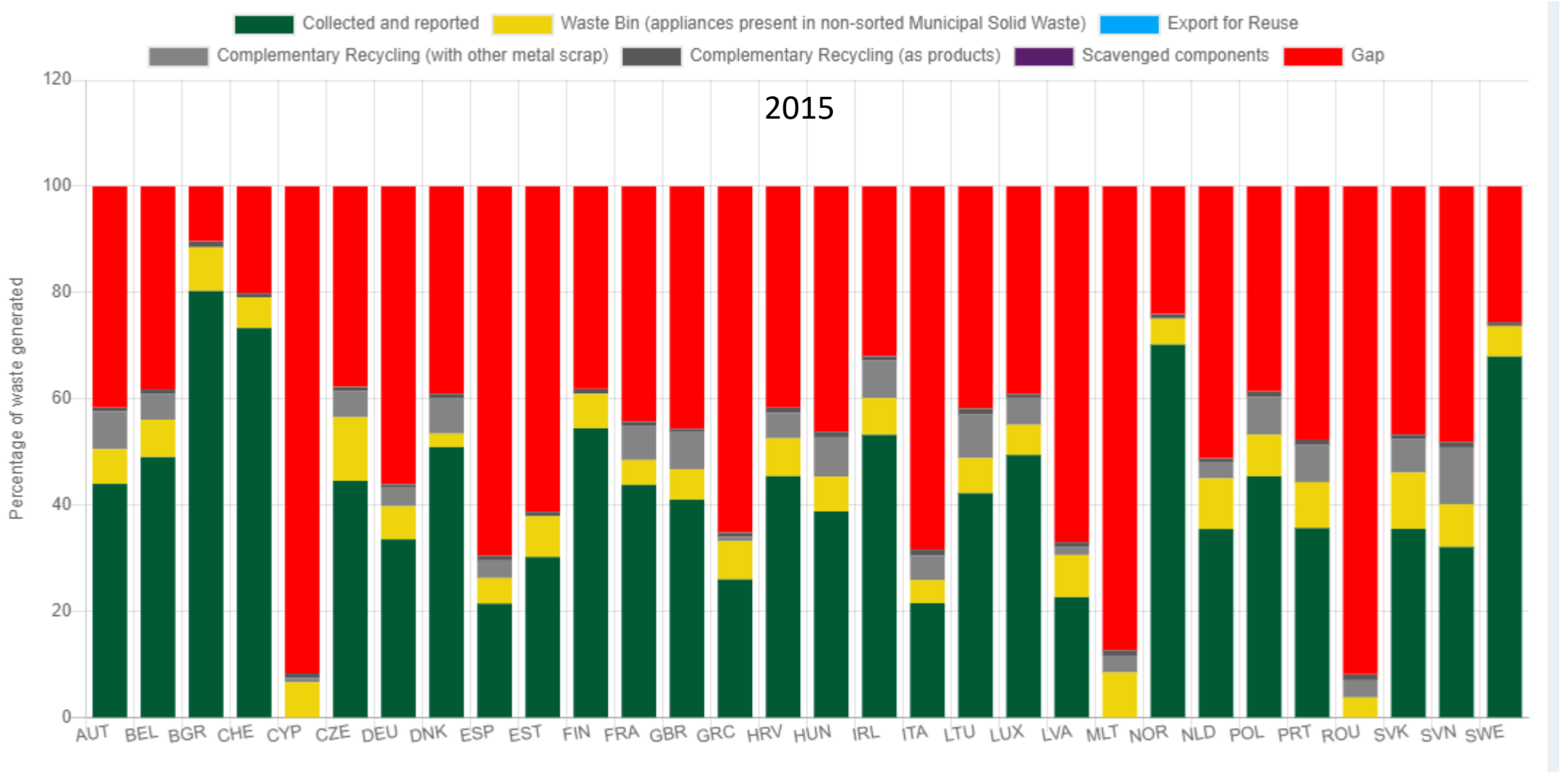
*** Magalini et al., 2015: Study on collection rates of waste electrical and electronic equipment (WEEE), final report for European Commission – DG ENV. The flow includes discarded, but reusable UEEE.*

**** Official reported collection from Eurostat per 1/6/2015, complemented with WEEE Forum data.*

***** Waste bin data is representing different sampling years, disposal behavior assumed to remain constant.*

The WEEE flows in EU

- Only a **share** of WEEE is currently **traced** (Collected and Treated)
- A **share** of WEEE is currently treated (in EU) but **mislabelled** (mainly metal scrap)
- A substantial "**knowledge-GAP**" is still **calling for actions** along the monitoring and enforcement chain.

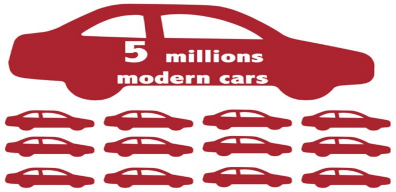

Collected and reported
Waste Bin (appliances present in non-sorted Municipal Solid Waste)
Export for Reuse
Complementary Recycling (with other metal scrap)
Complementary Recycling (as products)
Scavenged components
Gap
2015
Percentage of waste generated
120
100
80
60
40
20
0
AUT BEL BGR CHE CYP CZE DEU DNK ESP EST FIN FRA GBR GRC HRV HUN IRL ITA LTU LUX LVA MLT NOR NLD POL PRT ROU SVK SVN SWE

Where is the unreported WEEE?

- WEEE in mixed residual waste
- WEEE hoarded, passed on
- WEEE Collected with scrap and WEEE scavenged
- Improve quantity of WEEE collected
- Exports

Some consequences:

- Loss of valuable materials
- Grey economy
- Unreported WEEE flows
- Environmental damage due to improper treatment
- Collection targets are not reached



84,000 tonnes of fridge compressors are stolen before collection, equal to the CO_2 equivalent of 5 million modern passenger car on the road... Annually!

WEEE in mixed residual waste

WEEE hoarded, passed on

- Run attitudinal surveys (investigate motivations for users).
- Communication campaigns for end users to raise awareness (e.g. schools, shopping malls)
- Collection points more easily accessible and more visible.
- Increase the number of collection points.
- Training at collection points
- Assess the possibility of running law enforcement campaigns for end users (tackle fly tipping and improper curbside disposal).

Improve quantity of WEEE collected

WEEE Collected with scrap and WEEE scavenged

Exports

- Improve security at collection points.
- Introduce a ban on cash transactions.
- Promote collection and reporting of separated WEEE to all actors handling WEEE
- Training at collection points (to staff and users)
- Targeted enforcement, train enforcement (inspection and customs)
- Create international WEEE networks
- Local monitoring and benchmarking (use of indicators)

Improve quantity of WEEE collected

Improve quantity of WEEE collected

- Reporting obligations for all actors collecting WEEE.
- Proactive role for all actors having access to WEEE (e.g. municipalities, retail, scrap etc.)
- Use an unequivocal description of WEEE for reporting that allows traceability and data comparability.
- Monitor and quantify complementary flows (national monitoring campaign)
- Enhance role of reverse logistics

Coordination body

National WEEE networks

Improve quality of WEEE collected

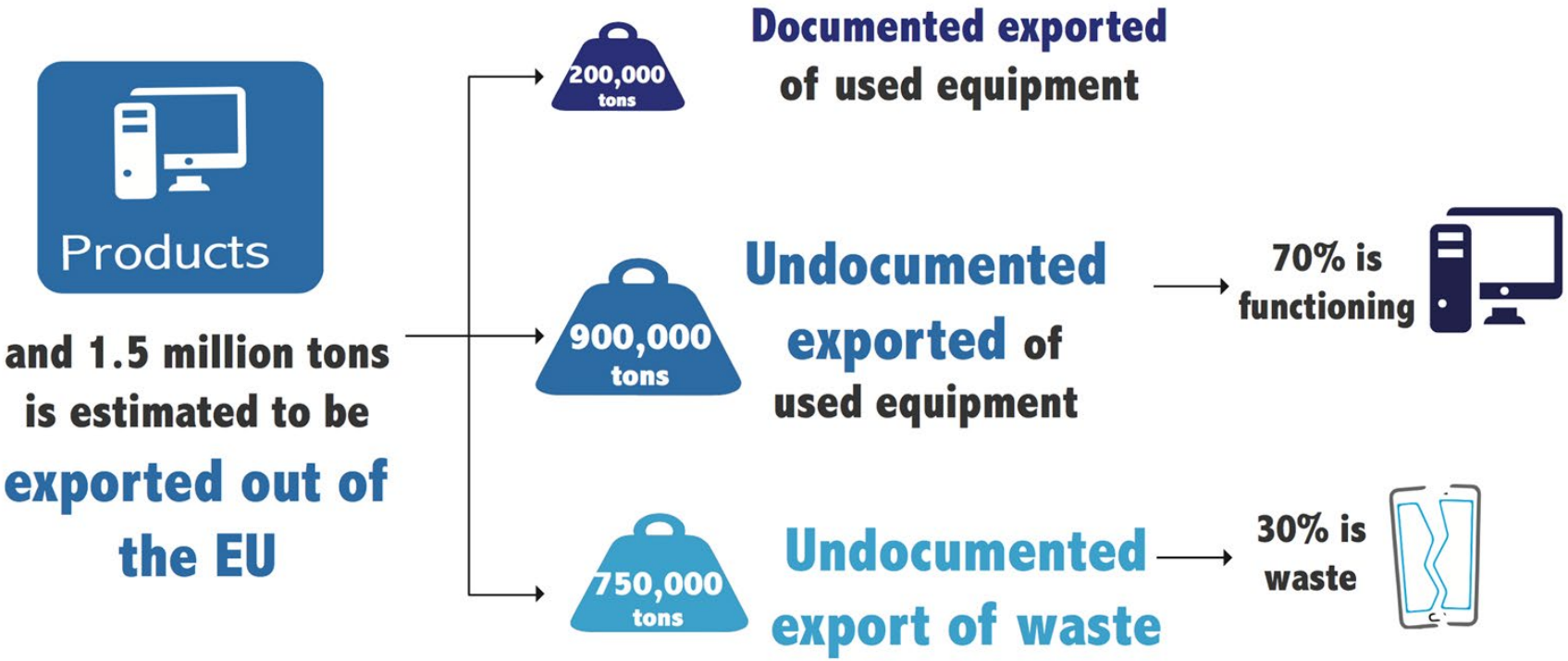
- Promote collection of separated WEEE streams
- Train staff at collection points
- Educate end users
- Collection and logistics guidelines and standards
- Fight against scavenging, improve collection points
- Monitor scavenging

Thank you!

lucia.herreras@weee-forum.org

Additional slides

The WEEE flows in EU: role of export



ecosystem
recycler c'est protéger

COLLECTORS

The experience of CYCLAD: cooperation between a municipality and PRO for reaching higher performances

cyclad
Tous les déchets ont de l'avenir

Syndicat Mixte de collecte, traitement et prévention des déchets & Économie Circulaire.

: 1 company, 4 activities

ecosystem is a non-profit collective take-back scheme* accredited by the French government for WEEE since 2006

Household WEEE
323 M€
599 k tons
80 M devices
2 096 members

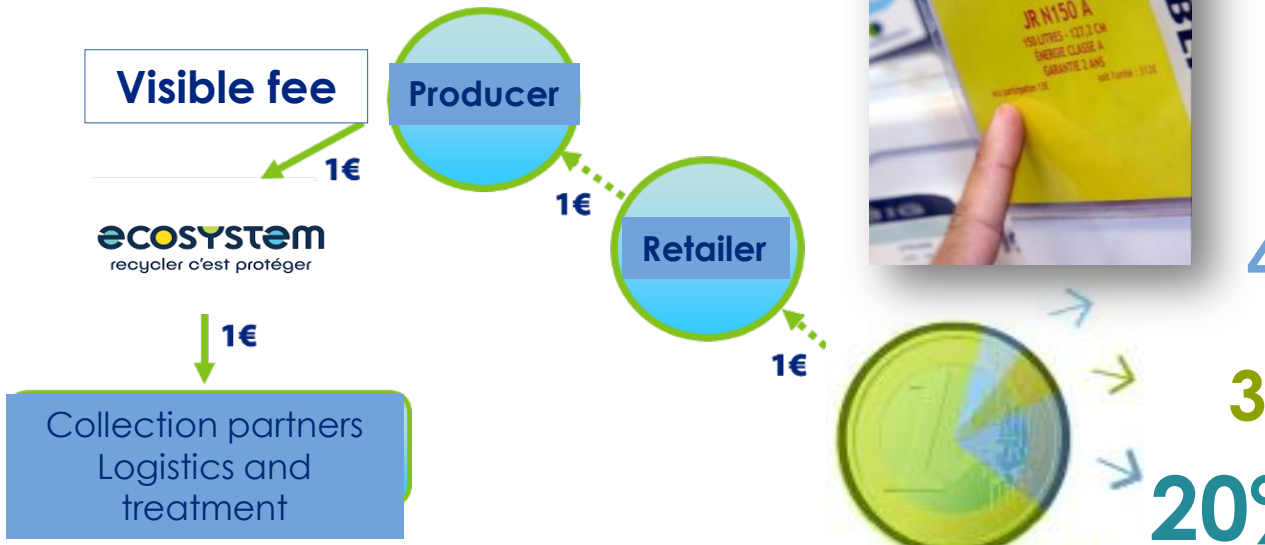
Lamps
23 M€
5,2 k tons
58 M lamps
829 members

Professional WEEE
11 M€
39 k tonnes
1 585 members

Small extinguishers
1,2 M€
203 tons
22 members

2019 consolidated data
(*) Producer Responsibility Organization

Visible fee: a global financing plan



4% Overheads (development, organization, control)

3% Information

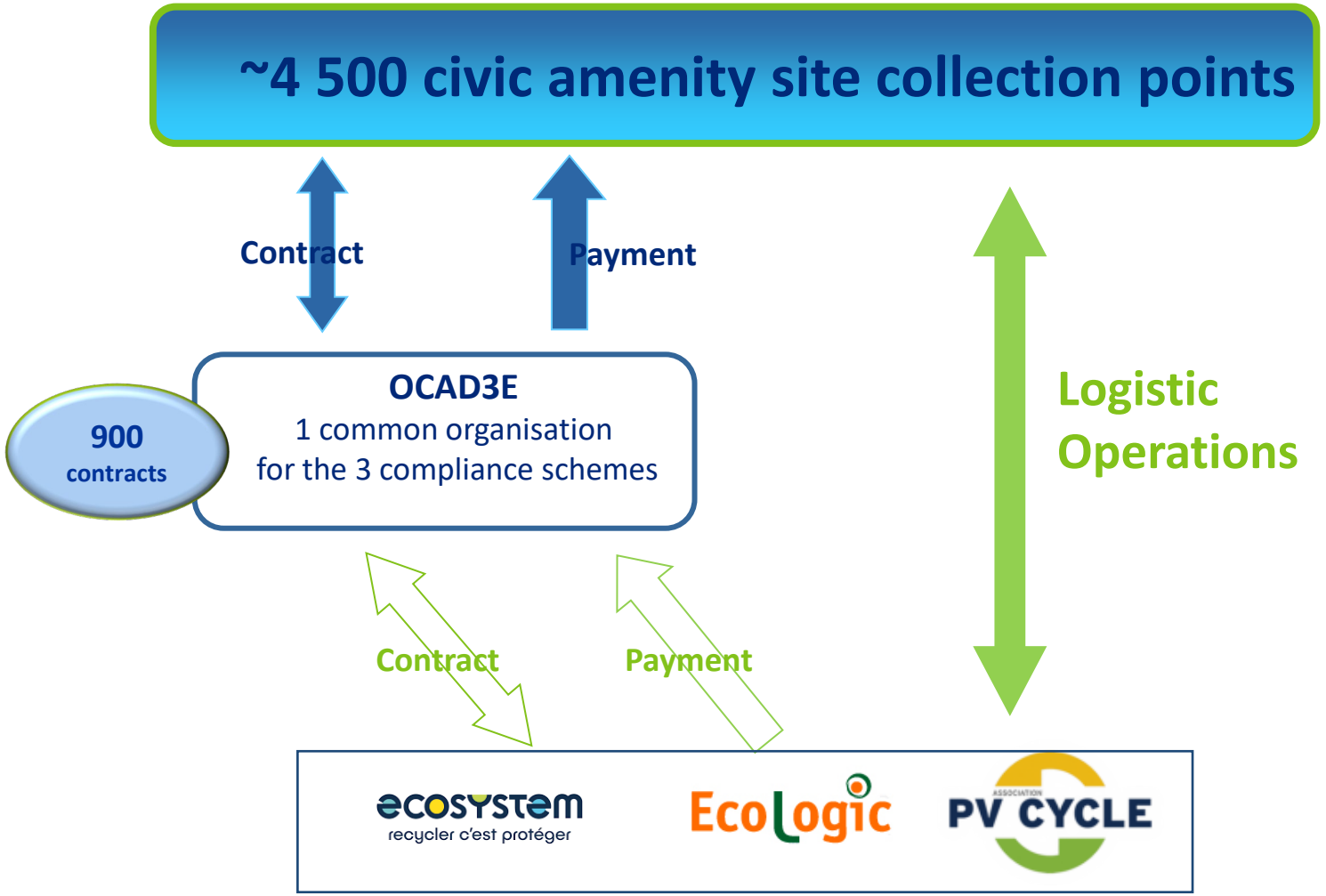
20% Financial support to collection / solidarity networks

73% Operating costs, R&D

A virtuous system :

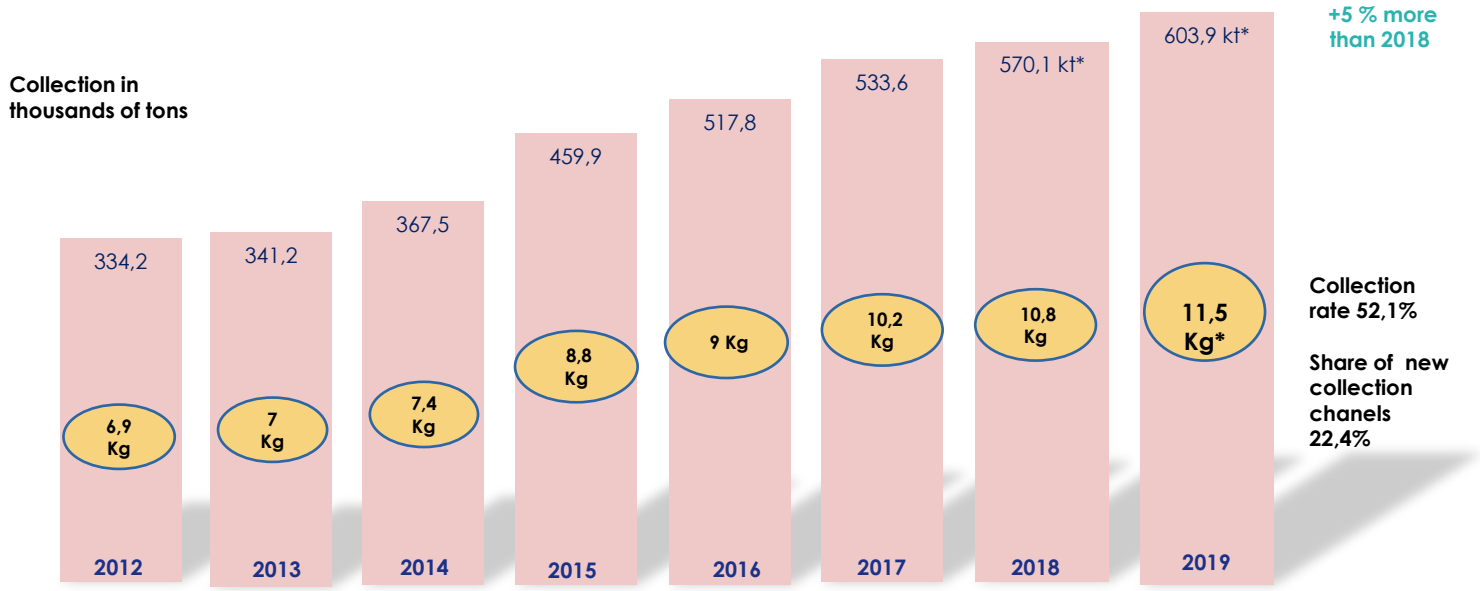
- Same amount from the consumer to the logistics and treatment operator (no margin at any step)
- Educational tool
- Modulation of the fee in order to make producers responsible
- Guarantee of a perennial financing of a general interest scheme

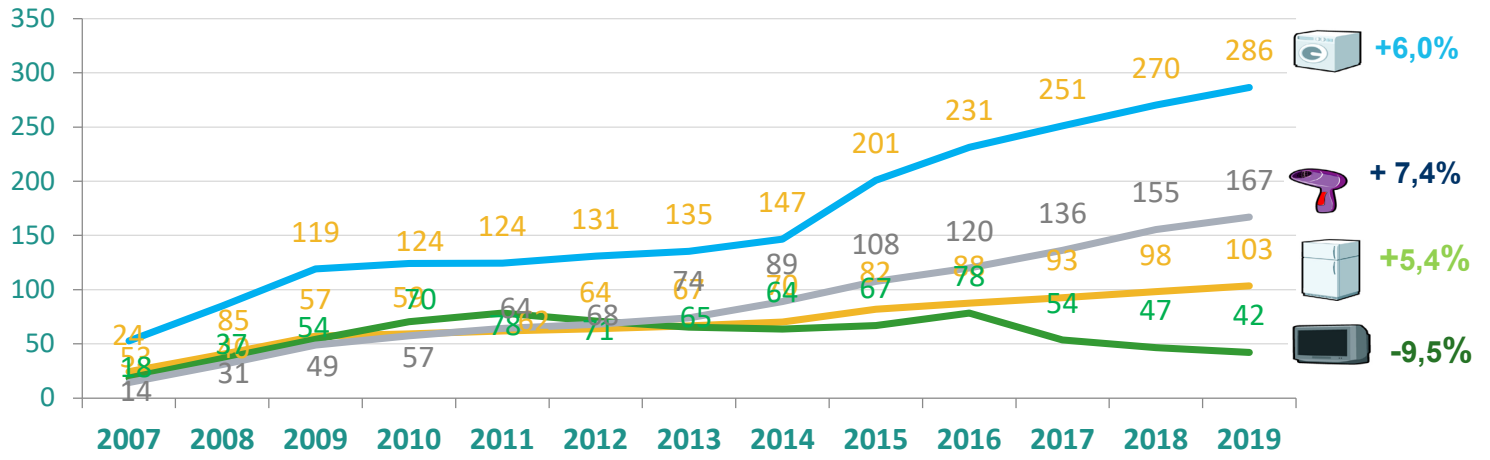
Contracts with municipalities thanks to a dedicated clearing house (OCAD3E)



WEEE household collection by ecosystem

- **Increasing trend** over last years.
- In 2019 : 603 Ktons of WEEE, i.e. near **5% more than in 2018**.
- 4 categories of WEEE collected (large household appliances cold and non cold; small household appliances and screens) , + lamps.
- A remarkable **upward trend for the collection of both large and small appliances, notably since 2015**, and a gradually **decreasing of screens**.





Theft of WEEE in France : Estimation of the prejudice

- 15 to 20% of WEEE brought in the civic amenity sites or retailer collection points are stolen before collection*

- Estimation of both plunder and theft in some regions reach almost 40% of WEEE

- Annual Loss of WEEE because of Theft and plunder is estimated to : 50 000 tons

➔ **Both environmental and economical prejudice**

*** (ADEME study, OCAD3E)**

What's an unsecure WEEE disposal in civic amenity site

Presence of a **vandalized box**

Degraded fence : **Repeating steals**

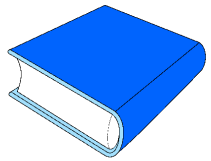
Looters at the entrance of the site

- **No WEEE marquing**
- **Broken and stolen screens**
- **Stolen fridges without compressors**

WEEE sector in France : Regulation Actions

1. **Ban on cash transactions** for scrap dealers

2. **Mandatory « police records »** on every scrap dealer's site



3. **Taxability** of each transaction
4. **Obligation for any operators managing WEEE to have** a contract with a take-back system company
5. **OCAD3E systematically engages actions** with a dedicated lawyer
   - Since 2010 : more than 400 **lawsuits and nearly 250 judgments**
   - Police agreement to access to a specific timesaving pre-complaint to be filled in online

Good practices in place to increase collection

More than 5 000 audits/year

- **Optimisation of collection frequency**
  - Once, Twice a day and even on Saturday and Sunday
- **Locked and secured shipping containers**
- **Video surveillance on sites (Video protection)**
- **Marking of WEEE allowing traceability**
- **Ergonomic handling tools**
- **Large WEEE storage in a 30m³ bucket**

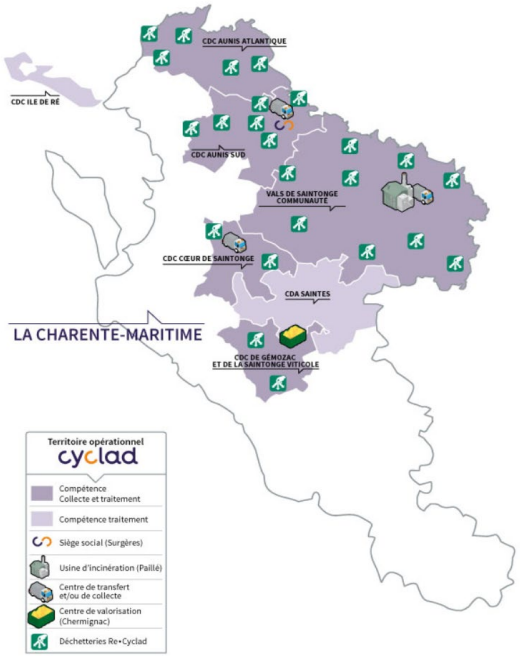
nearly 100 containers installed in 2019

nearly 200 containers repaired and secured since 2018

Tonnage Increase 6 *MONTHS* after installation **+30 %**

CYCLAD

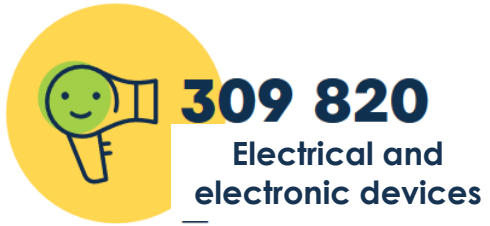
- Cyclad is the Mixed Syndicate in the northeast of Charente-Maritime.
  - 235 municipalities and 228,000 inhabitants.
  - For waste collection, treatment and final land disposal Cyclad provides services to 6 intercommunalities comprising 188 communes



- **Cyclad is labeled "Zero Waste Territory" by the Ministry of Ecology, Sustainable Development and Energy.**
- The syndicate's formation shows the political will of a rural area to make use of synergies for an efficient waste management in a sparsely populated area.
  - To provide communities with a compendium of good practices, supported by a concrete reality grounded and duplicable.
  - Put into practice the recommendations for deposit safety and fight against theft and looting.
- **Cyclad received in 2019 an award in the examplary sites project to set up the "safe deposit of WEEE"**

CYCLAD performance

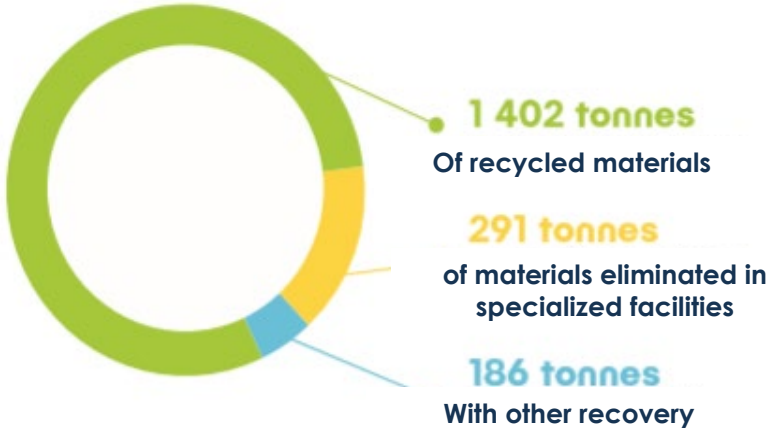
Categories	2015	2016	2017	2018	2019	Progression (%) 2018/2019
Large household appliances cold	454	485	545	620	679	10%
Large household appliances non cold	229	229	258	300	328	9%
Small WEEE & IT	478	508	547	635	675	6%
Screens	248	307	218	207	192	-7%
Lamps	1	2	3	4	5	37%
Total WEEE	**1409**	**1532**	**1572**	**1766**	**1879**	**6%**



309 820
Electrical and electronic devices
=
12,9
kg of devices / inhabitant / year

54 279
Lamps
=
0,4
lamps/ inhabitant / year

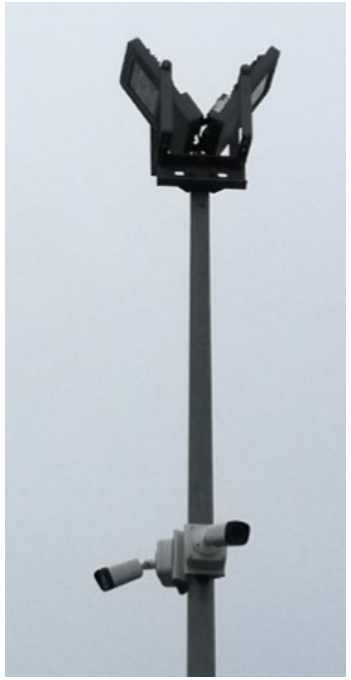
- In 2019 : **1897 tons of WEEE** (equivalent to 309,820 domestic appliances plus 54,279 lamps) in 4 categories
- **Regarding 2018 the volume of WEEE collected has increased by 6.4%** (above the national average of 5%)
- **Collection 12,9 kg/inhab/year of cyclad is above the 11,5 kg/inhab/year for France**



CYCLAD

Site protection

- **User control**:
  - No user control
  - Orientation with the agent and users Counting
- **Video surveillance** :
  - Video surveillance internally managed
  - Viewing videos on agent alert
  - Launching on motion detection



CYCLAD

Deposit protection

	Large household appliances	Screens	Small WEEE
Storage	On the ground in a secure container	Metal palet box in a secure container	
Closure	Padlock under bell		
Condition	Good, fixed metal ramp		
Marking of the WEEE with regularity			

Innovative idea : system for fixing hot water ballons

Overview of WEEE area

container

Hot water ballons fixing system

Screens and PAM boxes

Cyclad : Circular Economy = Cyclab'box

- For WEEE There are **8 CyclaB'Box** on their sites. These areas allow people to retrieve objects.
- The idea is to implement a **temporary "repair coffee":**
  - A Social Economy technician specialized in repairing WEEE
  - An electrical connection

- **The Circular Economy model is as the heart of the system**.
- Cyclad laboratory is positioned as a **project facilitator and a hyphen** between all the actors of the territory ready to embark on a circular economy approach
- A charter will be offered to each user. Everyone will have to give their time and share their skills in exchange for free access at equipment, at the knowledge, at logistic...
- Despite its small size, the CyclaB'Box has great ambitions :
  - **to reduce the waste of consumer goods,**
  - **to make the concept of circular economy accessible to all**
  - **to prepare the recycling centers of tomorrow.**

Cyclab'box : Bringing the CAS into the era of the circular economy

- People bring an unworkable WEEE : the **repair by withdrawling pieces** from the stock of WEEE present in the dump or **creation of a piece with mobile 3D printer**.

- If the equipment **is not repairable : information where to buy or to have a second-hand equipment**

- The idea is to be part of a huge societal change. They do not just receive WEEE, 3 laboratory workshops (wood, WEEE and food-lab).

-In 2020, They will **allocate a budget of 25,000 euros to deploy 100 actions concerning awareness on different themes**. For WEEE they will test 10 "repair" mobile coffee and will evaluate the effectiveness of this action.

Cyclab'box study of convenience

- **The Civic Amenity Site collection points are really in the heart of the sorting gesture of people.**
- This analysis is done upstream. All waste disposal centers are equipped with one or more containers to deposit WEEE. The signage is homogeneous.
- Very good return of people and the guardians of the collection points
- 100% of the facilities have been installed. The rest is to deploy the video protection on the 6 remaining sites (planned this year)
- For all **modernized sites, the attendance has jumped from 15% to 20%.**

Its **objective is twofold** :

Reduce the burial of waste and the waste of consumer goods,

Change the way we look at our objects by giving them a use value and **make our waste a resource**,

Conclusions

- CYCLAD, together with ecosystem being the main PRO in the region **65 % of all collected WEEE** is received at 25 CAS
- Policy recommendations are implemented and three different measures lead to increase WEEE collection quantities and to avoid leakage
    - **Improve security of CAS to prevent theft** (locked containers, camera surveillance and regular police checks)
    - **A legal ban on cash transaction for metals**
    - **Campaigns against misinformation on what happens to WEEE after collection targeting the general public**
- CYCLAD is **one of the highest percentage of WEEE collection** that is generated of the municipalities considered
- CYCLAD **had anticipated the 2020 ANTI-WASTE LAW for a CIRCULAR ECONOMY in France with the setp up of :**
    - New tools to better control and sanction offences against the environment (greater power of the Mayors to fight against littering and illegal dumpsand)
    - Assist citizens in new consumption practices (development of deposit-systems).
    - Change the look at the CAS and prepare the recycling center of tomorrow, which should no longer be just a transit point between the inhabitant and the landfill or recycling center, but **a develoment center**

The potential for re-use: how to improve the involvement of the re-use sector within municipal WCS

Mathieu Rama| Senior Policy Officer

Webinar | WEEE collection: good practices to allow quality recycling and re-use

02 June 2020

rreuse

Picture credit: Farsi Prossimo (1) BauKarussell (2) Tomorrowland_Maarten De Bouw (3) donateNYC (4) Collectif Rotor: lecho-circulaire.com (5) Pixabay (6) Reuseful UK (7)

RREUSE NETWORK IMPACT 2018

RREUSE IS AN INDEPENDENT NON-PROFIT ORGANISATION REPRESENTING
SOCIAL ENTERPRISES ACTIVE IN THE FIELD OF RE-USE, REPAIR AND RECYCLING

1 000 000 TONNES

[THIS IS EQUIVALENT TO THE WEIGHT OF 137 EIFFEL TOWERS]

OF MATERIAL DIVERTED FROM LANDFILL THROUGH RE-USE, REPAIR AND RECYCLING, WHICH INCLUDED:

FURNITURE
200 000 TONNES
collected
OUT OF WHICH →
80 000 TONNES
re-used

TEXTILES
260 000 TONNES
collected
OUT OF WHICH →
95 000 TONNES
re-used

ELECTRICALS
290 000 TONNES
collected
OUT OF WHICH →
20 000 TONNES
re-used

BOOKS & RECORDS
16 000 TONNES
collected
OUT OF WHICH →
5 500 TONNES
re-used

BRIC-A-BRAC
30 000 TONNES
collected
OUT OF WHICH →
14 000 TONNES
re-used

27 MEMBERS ACROSS
25 EUROPEAN COUNTRIES
AND THE USA

850 SOCIAL ENTERPRISES
ARE PART OF RREUSE'S WIDER NETWORK
95 000 EMPLOYEES,
VOLUNTEERS AND TRAINEES
ENGAGED IN THE ACTIVITIES OF
RREUSE'S MEMBERS

2 000 SHOPS WELCOMED
39 000 000 CUSTOMERS
[THIS IS EQUIVALENT TO SERVING THE WHOLE POPULATION OF POLAND]
CONTRIBUTING TO AN OVERALL
RREUSE MEMBER ACTIVITY
TURNOVER OF € 1 200 000 000

RREUSE MEMBERS COLLECTED AND HANDLED **22 DIFFERENT MATERIAL STREAMS**:
FURNITURE, ELECTRICALS, TEXTILES, BOOKS & RECORDS, BRIC-A-BRAC, TOYS, DIY, BICYCLES, CONSTRUCTION MATERIALS, BIOWASTE, VEGETABLE OIL, FOOD DONATIONS, GLASS , PAPER, WOOD, PACKAGING & PLASTICS, METAL SCRAP, USED CARTRIDGES, BATTERIES, MATTRESSES, PAINT, OTHER MATERIALS

rreuse

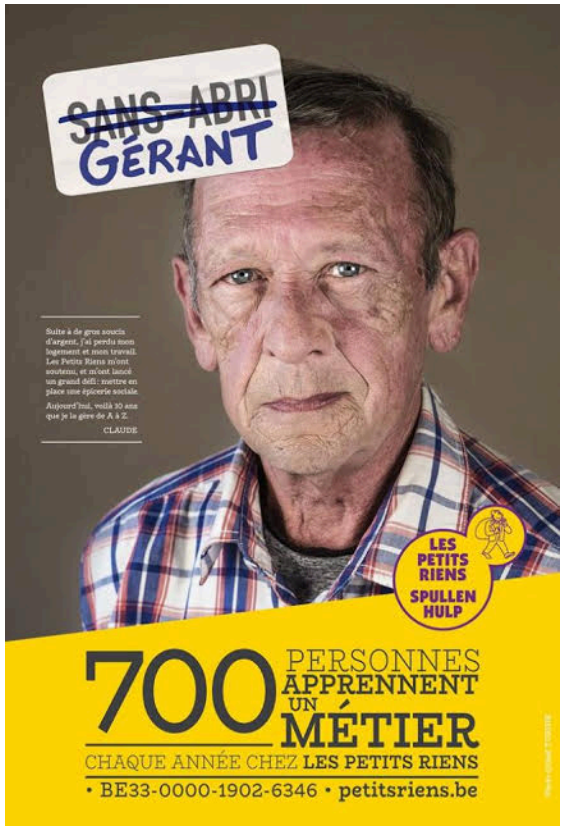
The main activities of our members include

awareness raising campaigns, international projects, exchange of best practice and business support

rreuse

The main activities of our members include

Integration of disadvantaged groups on the job market



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JOB CREATION POTENTIAL
10,000 TONNES OF USED GOODS

1
Incineration

6
Land fill

36
Recycling

296
Re-use

Source of data: US EPA (2002) and the Institute for Local Self Reliance; Icons by Freepic – CC license

1/3

According to a study made in Bavaria (Germany), between 26% and 45% of waste electric and electronic equipment (WEEE), furniture and leisure goods disposed of at household waste collection centres could be prepared for re-use if collected properly (only between 13% and 16% if collected as usual)

Messmann, L., Boldoczki, S., Thorenz, A. and Tuma, A. (2019) Potentials of preparation for reuse: A case study at collection points in the German state of Bavaria. Journal of Cleaner Production. 1534–1546. DOI:10.1016/J.JCLEPRO.2018.11.264. (available here)

Picture credit: www.sfpublicworks.org

WEEELove campaign

Waste electrical goods need to be protected from rain or they can't be re-used

ECOS

#WEEELove

rreuse

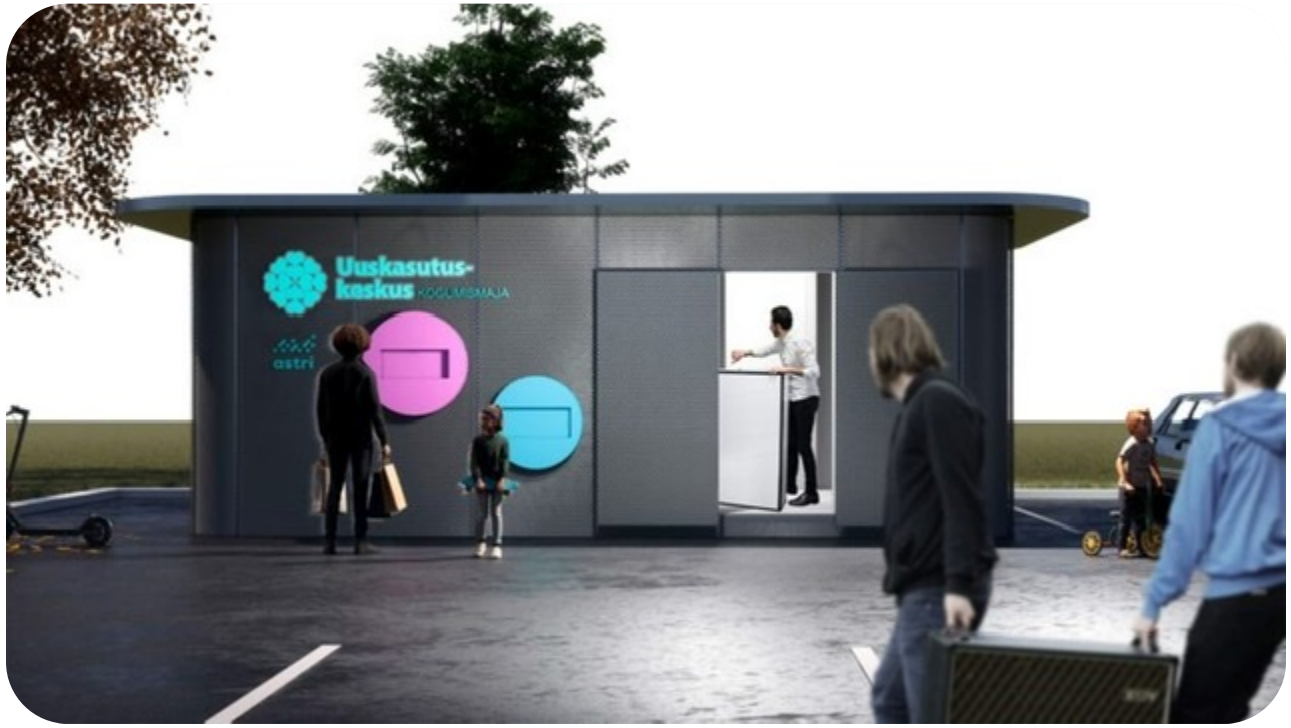
WEEELove campaign

Waste electrical goods need to be handled with care, or they can't be re-used

ECOS

#WEEELove

rreuse



Astri Group and Uuskasutuskeskus (Estonia) developed a “collection house”:
Located in parking lots of shopping centres and markets, as well as in other outdoor areas.
Made to collect re-usable clothes, books, dishes, shoes, toys, small furniture, household appliances, etc.

Policy

Re-use targets at national level

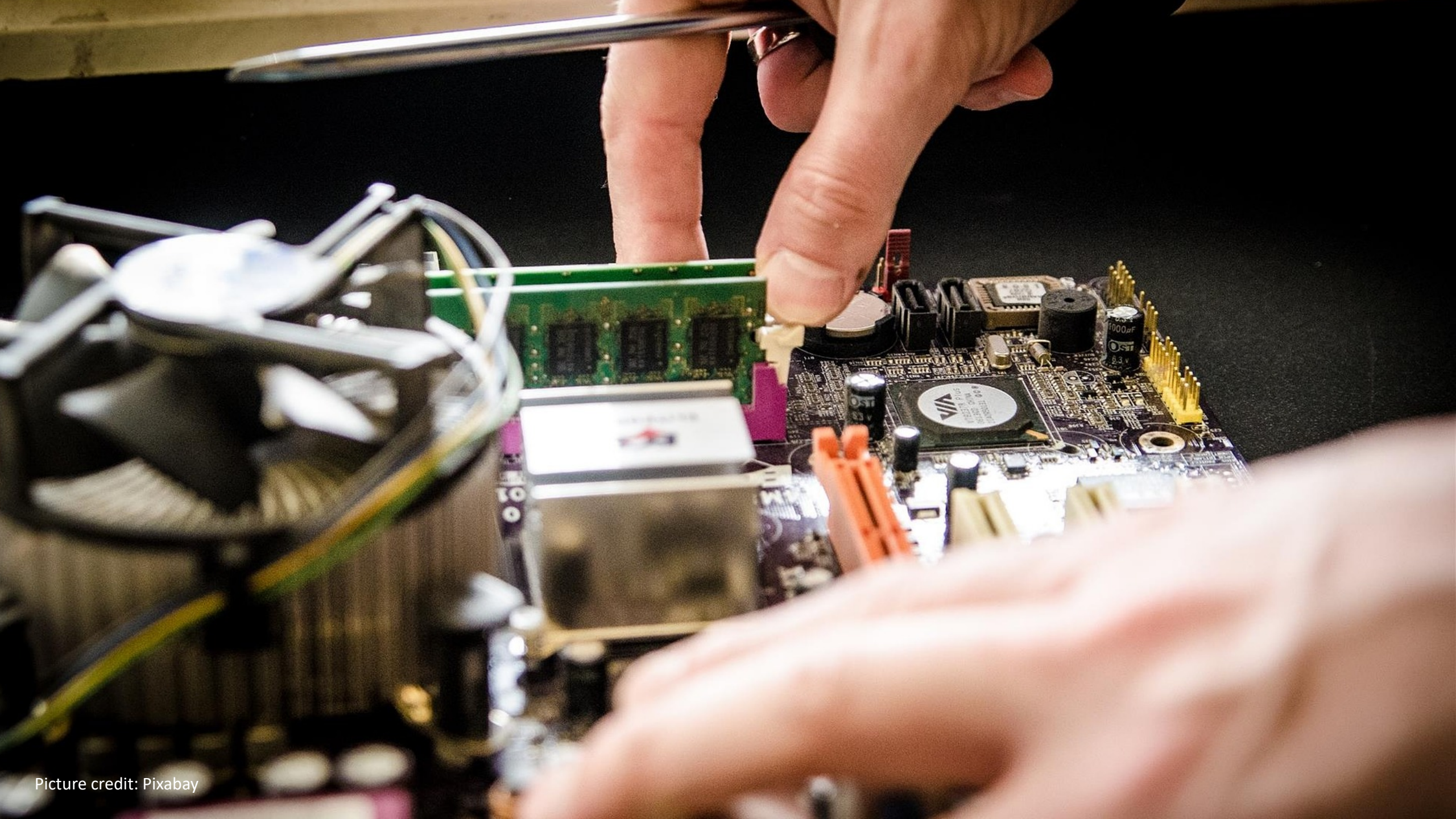
- **Flanders, Belgium:** 7 kg re-used material per capita by 2022
- **Wallonia, Belgium**: 2 % of WEEE to be prepared for re-use from January 2020
- **Spain**:
  - 50 % preparing for re-use and recycling by 2020 of which 2% will be prepared for re-use
  - WEEE target: 3 % of large household appliances and 4 % of IT equipment to be prepared for re-use from 2018
- **France**: Furniture EPR scheme Valdelia has a 5 % re-use and preparing for re-use target by 2023

Read more

rreuse

In Europe 77% of citizens would be willing to have their goods repaired but hardly ever do because it is too expensive for them to do so.*

* EU Flash Eurobarometer 388



Picture credit: Pixabay

Making repair & re-use easier and cheaper

- **European Right To Repair Movement**
- **Ecodesign** measures to boost repair at EU level
- **EU standards** for treatment of waste electricals

- Comments on the **VAT rules proposal**
- Position paper on **Reduced taxation** to support re-use & repair

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Public authorities in the EU are spending about 14 % of GDP on public purchases.

55 % of procurement procedures still use the lowest price as the only award criterion.

Commercialisation

What is needed:

-Labels and warranties to ensure good quality to clients

-Availability of repair and maintenance booklets (provided by manufacturers or developed by the reuse centre)

-More communication

LIFE RE-WEEE Project

Project Title

"Development and Demonstration of Waste Electrical & Electronic Equipment (WEEE) Prevention and Reuse Paradigms"

Implementation Duration

January 2016 – June 2019
(3,5 years)

Project Objective

WEEE reduction and reuse strategy implementation

Total Budget

2.161.405 €
EC contribution 60%
LIFE+ Environment

Action Areas

- **Greece**
- **Belgium**

Coordinator Beneficiary

appliances recycling s.a.

Co-Beneficiaries

ε.ο.αν.
ΕΛΛΗΝΙΚΟΣ ΟΡΓΑΝΙΣΜΟΣ ΑΝΑΚΥΚΛΩΣΗΣ
Hellenic Recycling Agency (H.R.A.)

Ecological Recycling Society

GREEN FUND

Harokopio University of Athens

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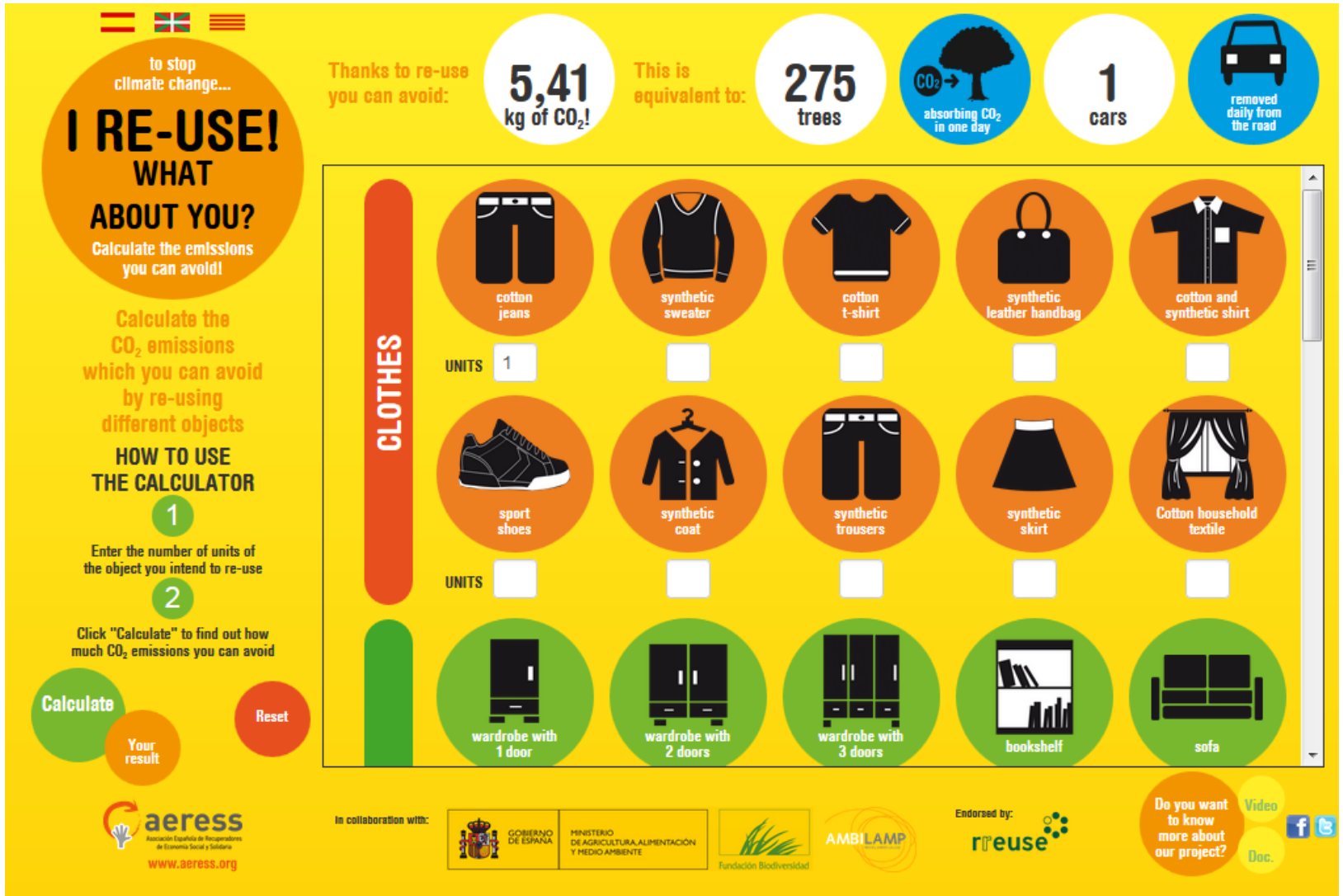
REWEEE objectives according to EU policies

- **Prevention and reduction of WEEE production**
- **Priority to re-use and ensuring of qualitative management activities**
- **Achievement and compliance with the targets set by legislation**
- **Standards development for infrastructure and transportation activities in domestic and European level**
- **Natural resources and energy savings**
- **Access to cheaper appliances**

Action B.1: Design and Development of Methodologies and Tools for Measuring (W)EEE Preparation for re-use and Re-use

Results

- **According to Eurostat, in 2017, 3.876.836 - 4,104,738tn of WEEE have been collected in Europe. This is equivalent to 407 Eiffel towers!**
- **(W)EEE preparing for re-use and re-use centres studied collected the equivalent of 12 Eiffel towers and re-used a little bit more than 2**



Calculate the CO2 emissions you can save by re-using

?

Keep in touch!

RREUSE is on social media…

…and we do have a newsletter!
sign up at www.rreuse.org

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Contact us:

EU Waste Framework Directive, Ecodesign, Repair, Standards, Waste Electricals (WEEE):

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Elaine Hanlon: elaine.hanlon@rreuse.org

Potential memberships and partnerships, Textiles:

Jana Zurkova: jana.zurkova@rreuse.org

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Sustainable construction guidelines for public authorities

Paolo Marengo (ACR+)

26/06/2020

AGENDA

- Guidelines introduction
- EU policy background
- Sustainable construction practices
- Conclusion

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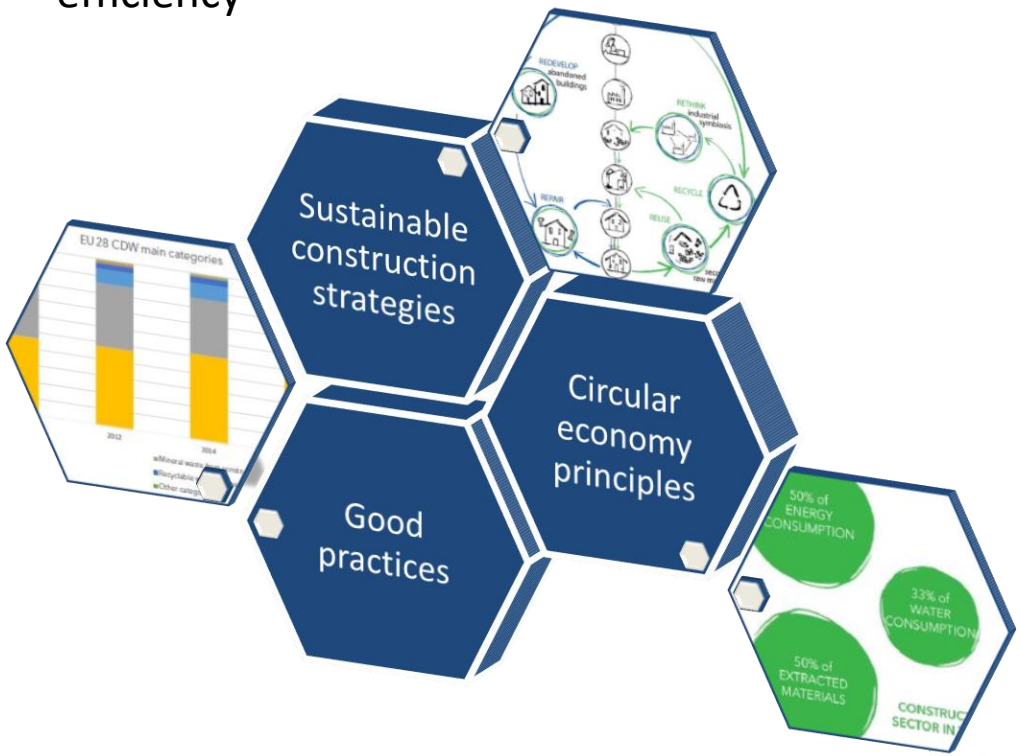
Guidelines

Target: local and regional authorities as they play a crucial role in the whole construction life cycle

Focus: circularity and material resources efficiency



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Construction sector figures

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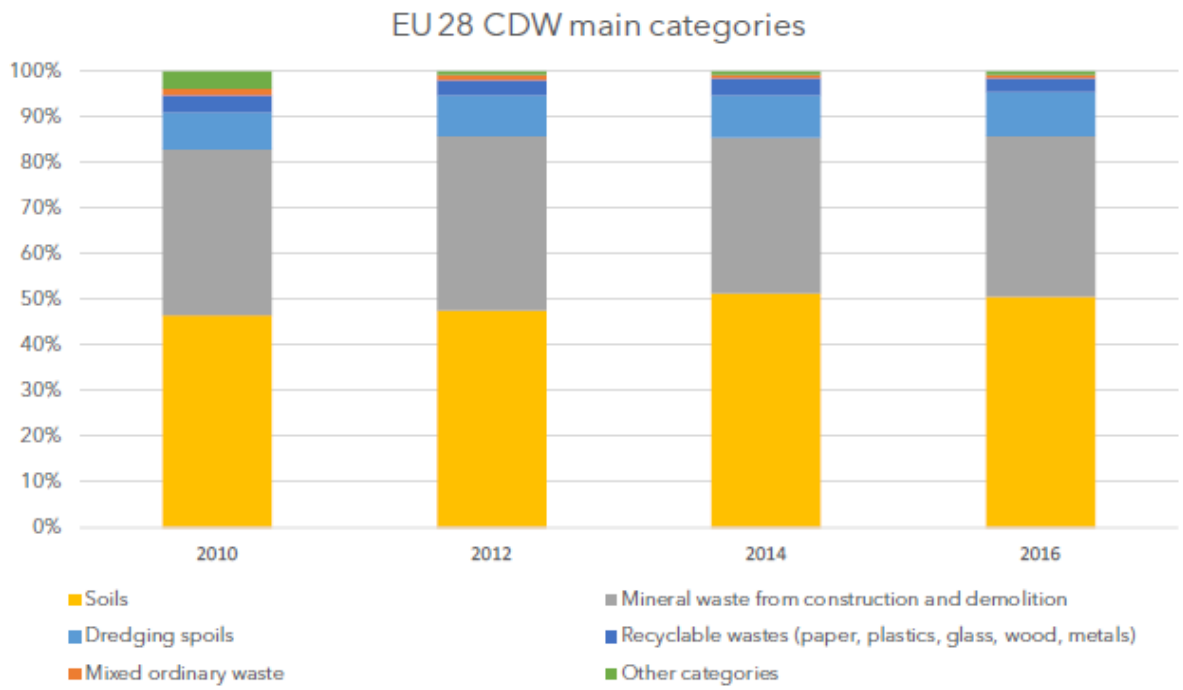
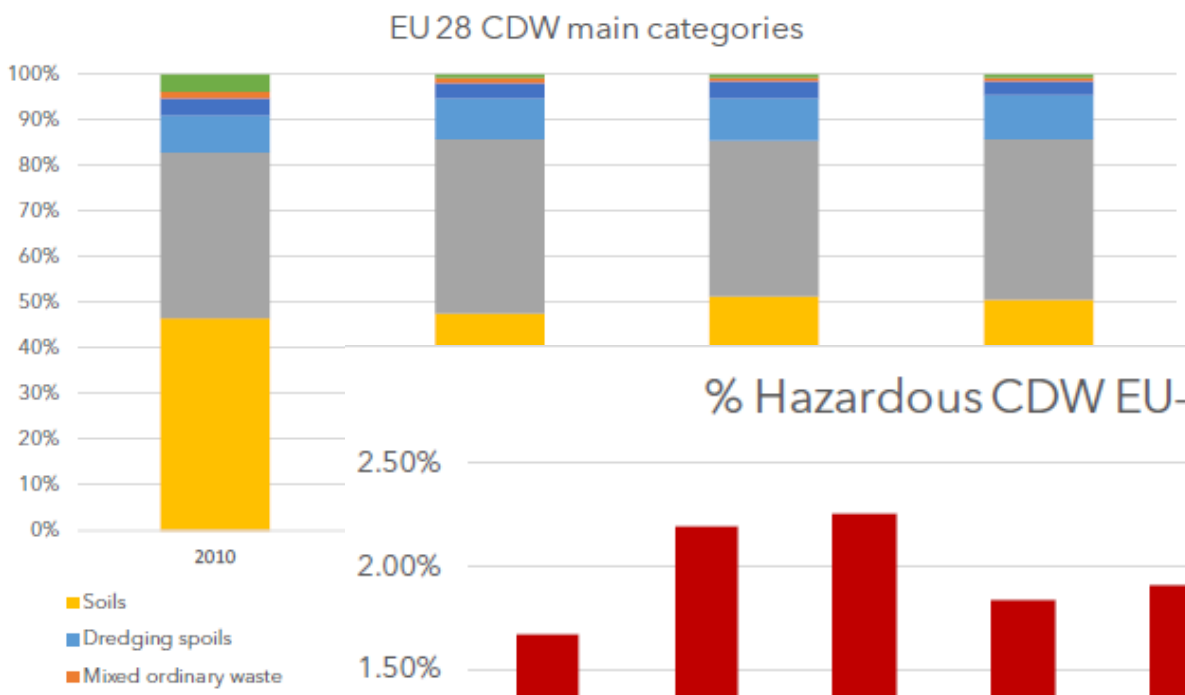
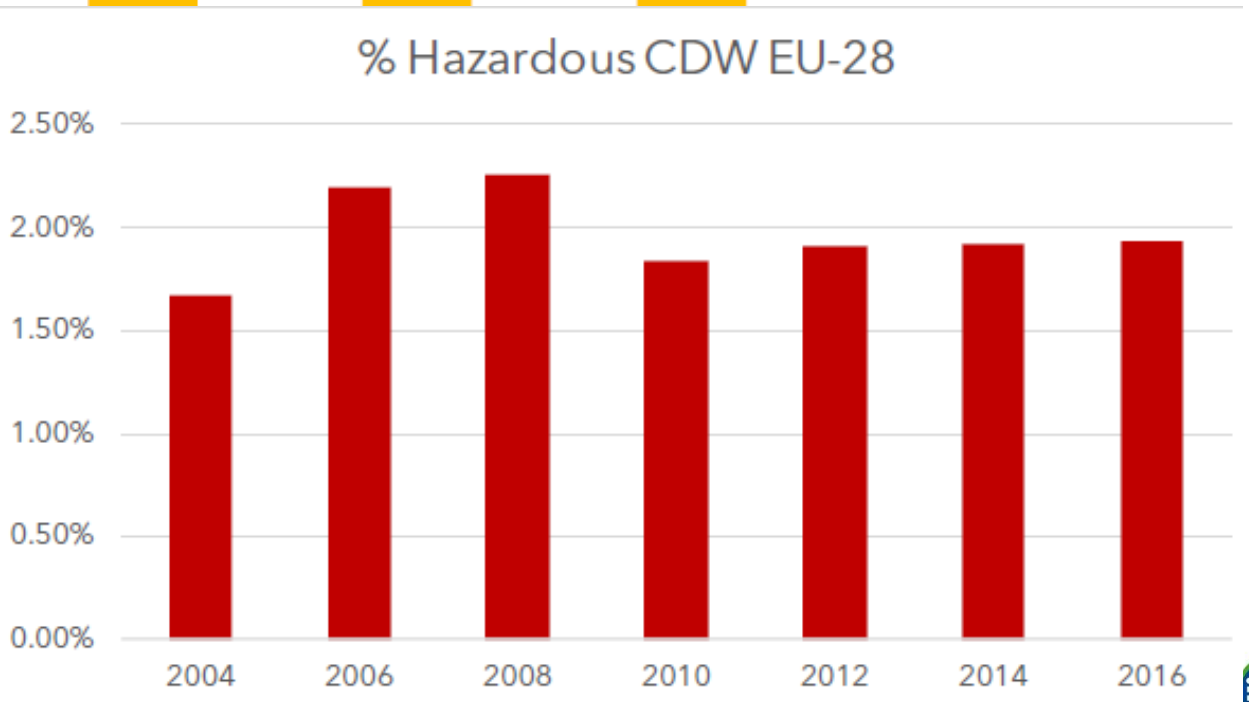
EU CDW



Source: Eurostat database, accessed August 2019

EU CDW





Source: Eurostat database, accessed August 2019

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EU policy background

Green Deal

- The construction sector plays an important role - **renovation wave** for the building sector in 2020

Circular Economy Action Plan

- Strategy for a Sustainable Built Environment in 2021

Recovery plan

- Renovation wave, is seen as an opportunity for job-creation

Climate law

- EU carbon neutrality by 2050

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EU initiatives

2011	• Roadmap to a Resource Efficient Europe (COM/2011/0571)
2012	• Strategy for the sustainable competitiveness of the construction sector and its enterprises
2014	• Resource Efficiency Opportunities in the Building Sector (COM/2014/0445)
2017	• Resource Efficient Use of Mixed Wastes - Improving management of construction and demolition waste
2018	• EU Construction and Demolition Waste Protocol and Guidelines
2018	• Guidelines for the waste audits before demolition and renovation works of buildings
2019	• LEVEL(S) - Taking action on the TOTAL impact of the construction sector

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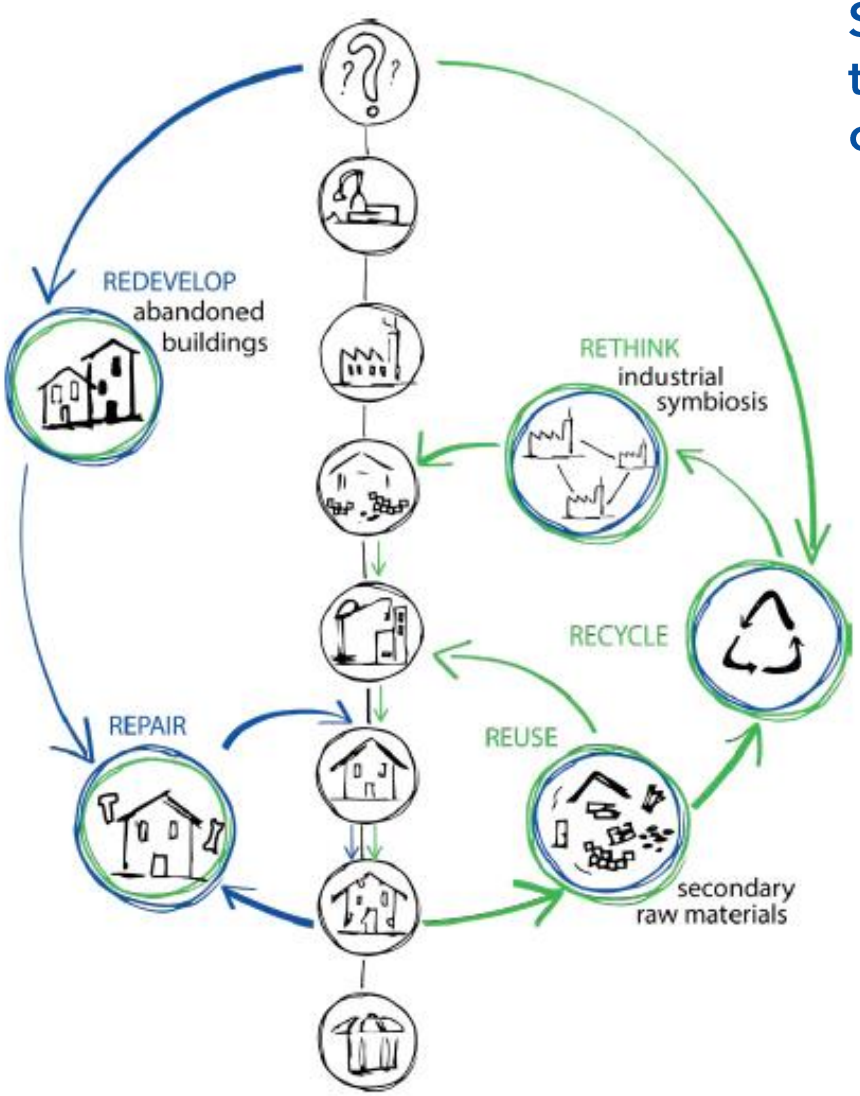
Sustainable construction: what does it mean?



Sustainable construction principles in the perspective of a circular economy

Resource preservation

Territorial hierarchy

Shared governance

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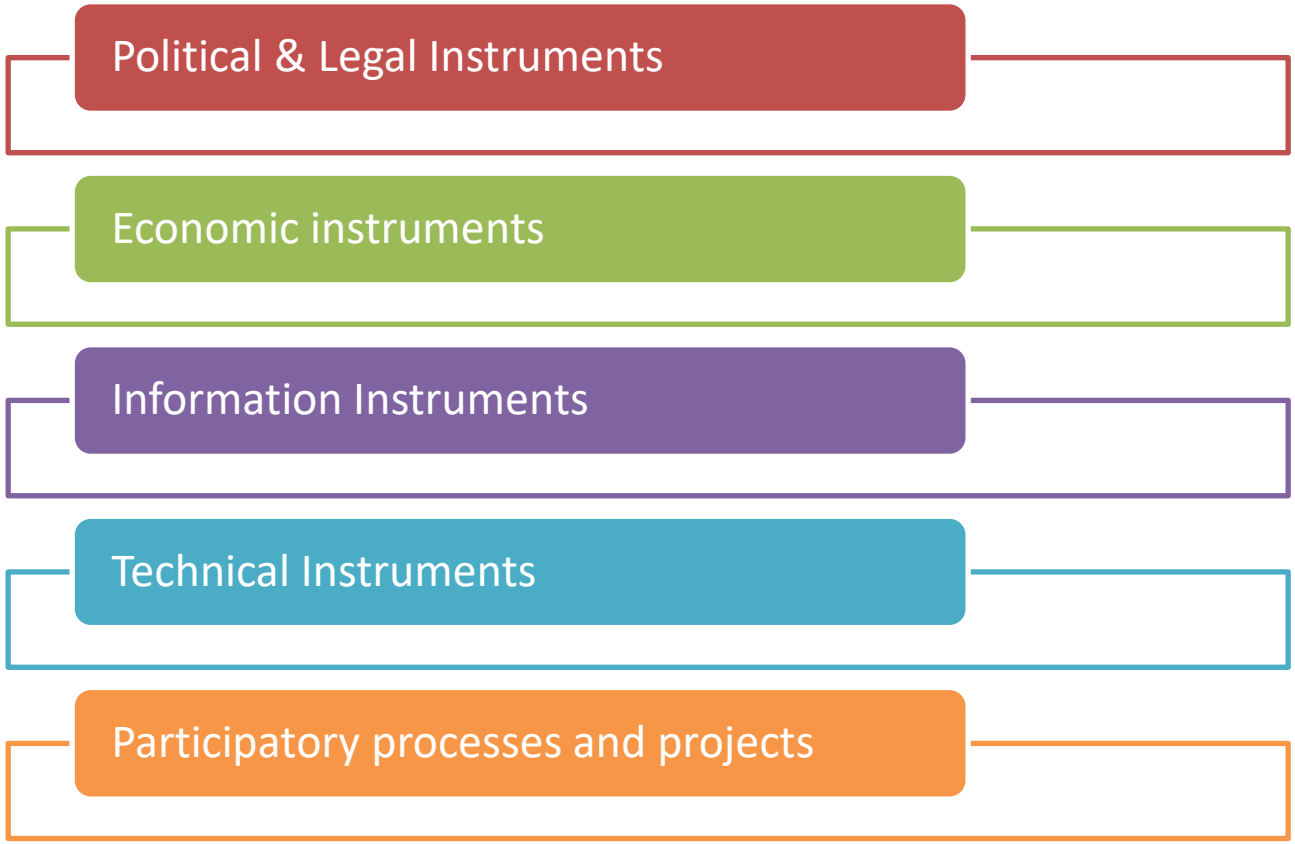
Instruments to design strategies



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Cross-cutting themes

Guidelines layout – good practice boxes

Material Passports in the BAMB project

Theme: Research & Innovation

Type of instrument: EU funded project

Funded by: H2020 programme

Implemented by: BAMB Consortium

The BAMB (Building as **material bank**) project brought together 16 partners from eight European countries, and from different places in the value chain, for one mission - to move the building industry towards a circular economy. BAMB developed and integrated tools to enable the shift to a circular building sector, supported by business models, policy propositions and a management and decision-making model. BAMB created ways to increase the value of building materials. Dynamically and flexibly designed buildings can be incorporated into a circular economy - where materials in buildings sustain their value, that will lead to waste reduction and the use of fewer virgin resources. The electronic **Materials Passports** developed in BAMB are sets of data describing defined characteristics of materials in products that give them value for recovery and reuse. BAMB Materials Passports aim to:

- Increase the value or keep the value of materials, products and components over time;
- Create incentives for suppliers to produce healthy, sustainable and circular materials/building products;
- Support materials choices in Reversible Building Design projects;
- Make it easier for developers, managers and renovators to choose healthy, sustainable and circular building materials;
- Facilitate reversed logistics and take back of products, materials and components.

Voluntary measures, such as performance labels and guarantees for products and services can also be developed to address barriers, such as the mistrust in recycled construction products. Voluntary agreements and commitments can also be used to boost eco-innovation. In the Netherlands, the Dutch government opted for the Green Deal approach to stimulate sustainable innovation. A Green Deal is an innovative model of a public-private partnership that unites a coalition of companies, civil society organizations, and the territorial government in a mutual agreement or covenant under private law.

Product-service systems (PSS) are business models that provide an integrated mix of products and services. Together, they will fulfil a particular customer demand based on innovative interactions between stakeholders of the value production system, where, in a sustainability context, the economic and competitive interest of the providers will lean towards continuously more environmentally-beneficial solutions.

In certain cases, the PSS will be more **product-oriented**. Customers own the product and services are provided to ensure product performance over a certain period of time – such as with warranties and maintenance contracts. However, in other cases, the service provider retains ownership rights related to the product. The customer can then purchase the use of this product over a specified period of time. This **use-oriented** form of PSS applies to renting, leasing, and sharing. But there is also a **result-oriented** approach, whereby customers purchase the outcome, the result of service provision, specified in terms of performance. A well-known example of this is the case of a company offering customers to pay for light instead of buying light bulbs and paying the energy bill. In this scenario, the service provider has a very strong incentive to maintain the energy bill as low as possible, by installing highly efficient light bulbs. This was, for example, implemented in the National Union of Student houses in London and in the Shiphol airport (Amsterdam). This form of PSS is exactly what circular procurement promotes: innovative performance or usage-based business models, focused on access to services and products, rather than ownership.

A low carbon, circular economy approach to concrete procurement in the City of Zurich (Switzerland)

Theme: Procurement & market development

Type of instrument: Local authority green public procurement

Funded by: City of Zurich

The local authority set out a **mandatory use of recycled concrete for public building** in 2005. The requirement refers to SN EN 206:2013 and SIA 2030 standards. This means that concrete products must contain at least 25% recycled aggregates in total mass. Furthermore, the local authority includes in the tender specifications that recycled concrete should reach the RC-C quality as a minimum, (concrete with 50% virgin and 50% recycled aggregates). However, RC-M concrete (concrete with 50% virgin and 50% recycled aggregates) is preferred, where technical feasible. These requirements have been allowing the development of a local market for CDW materials. This case is included as a best practice in the Circular Europe Network (CEN).

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Knowledge development, communication and education

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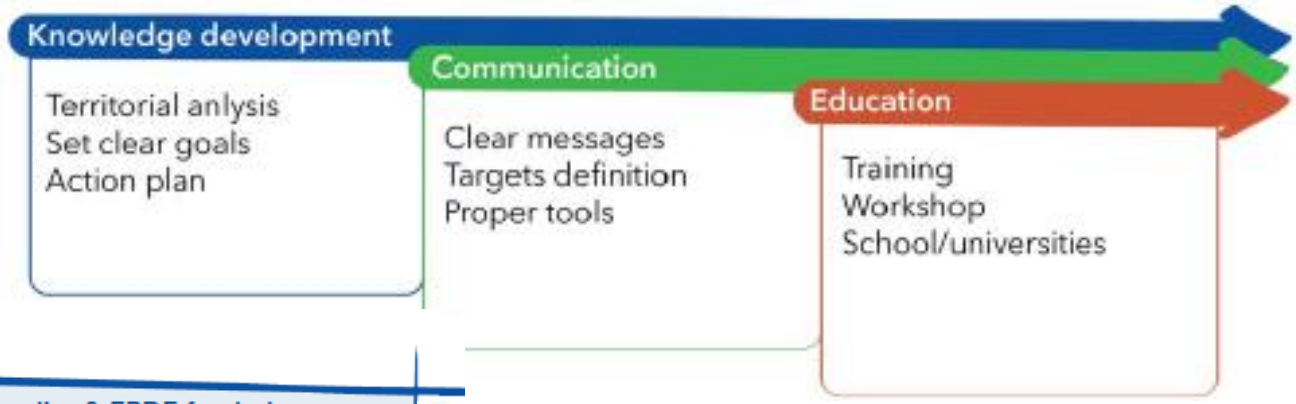
Knowledge development, communication and education



Brussels territorial studies & ERDF-funded BBSM project (Belgium)

Theme: Knowledge development and communication

Type of instrument: Study/analysis and ERDF-funded project

Funded by: Brussels Capital Region and European regional development funds (2014-2020 ERDF)

Implemented by: Brussels Capital Region, BBSM consortium

The COLLECTORS project

COLLECTORS
WASTE COLLECTION SYSTEMS ASSESSED AND GOOD PRACTICES IDENTIFIED

Theme: Knowledge development and communication

Type of instrument: EU funded project

Funded by: H2020 programme

Implemented by: COLLECTORS Consortium

Amsterdam City Circle Scan and circular construction impact study (The Netherlands)

Theme: Knowledge development and communication

Type of instrument: Action Agenda and Studies

Funded by: Municipality of Amsterdam

Implemented by: Municipality of Amsterdam

The URBANWINS project

URBAN WINS

Theme: Knowledge development and communication

Type of instrument: EU funded project

Funded by: H2020 programme

Implemented by: URBANWINS Consortium

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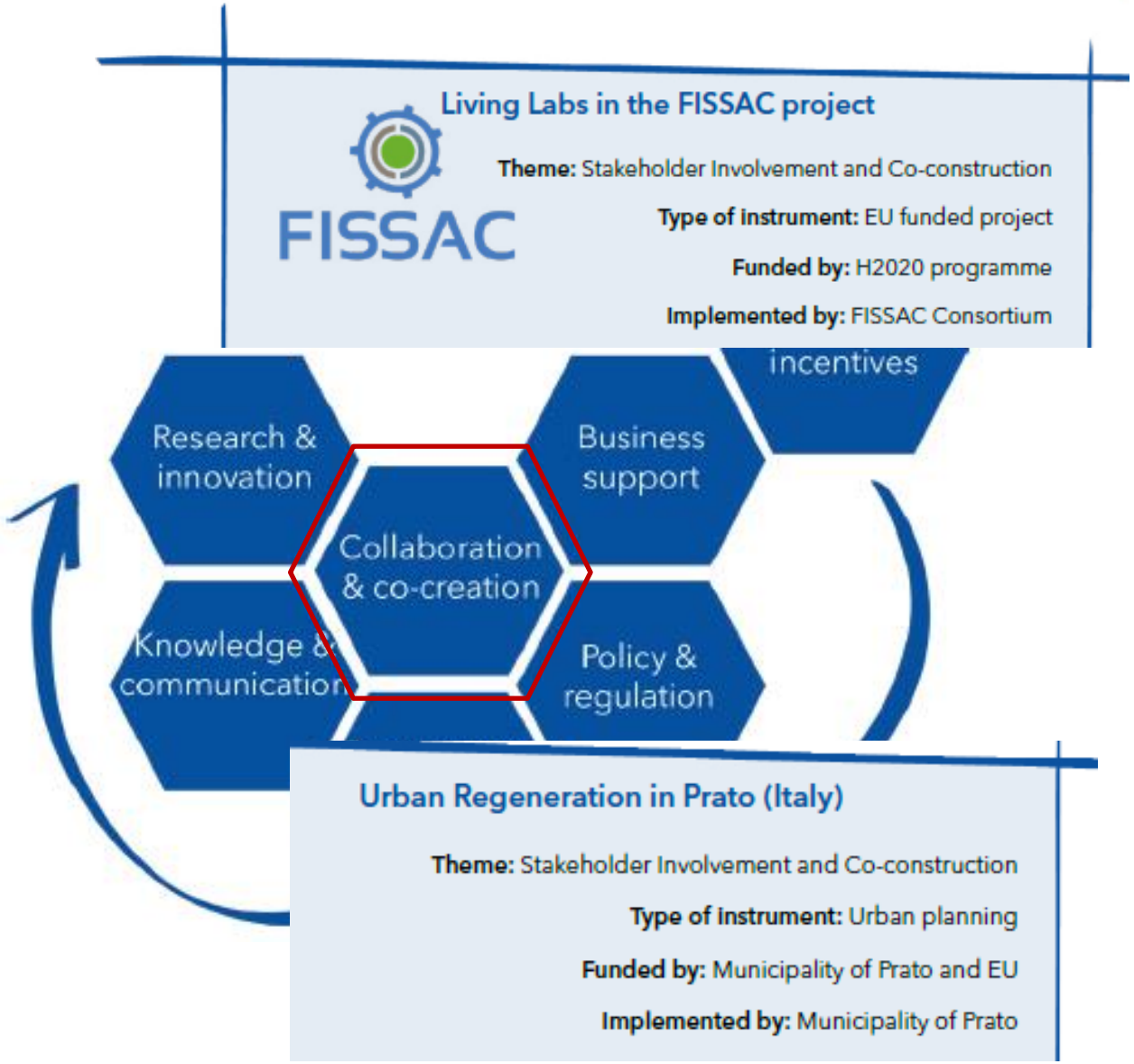
Collaboration & co-creation

Co-construction is key, both with external stakeholders but also within the **internal layers and services of public administrations**



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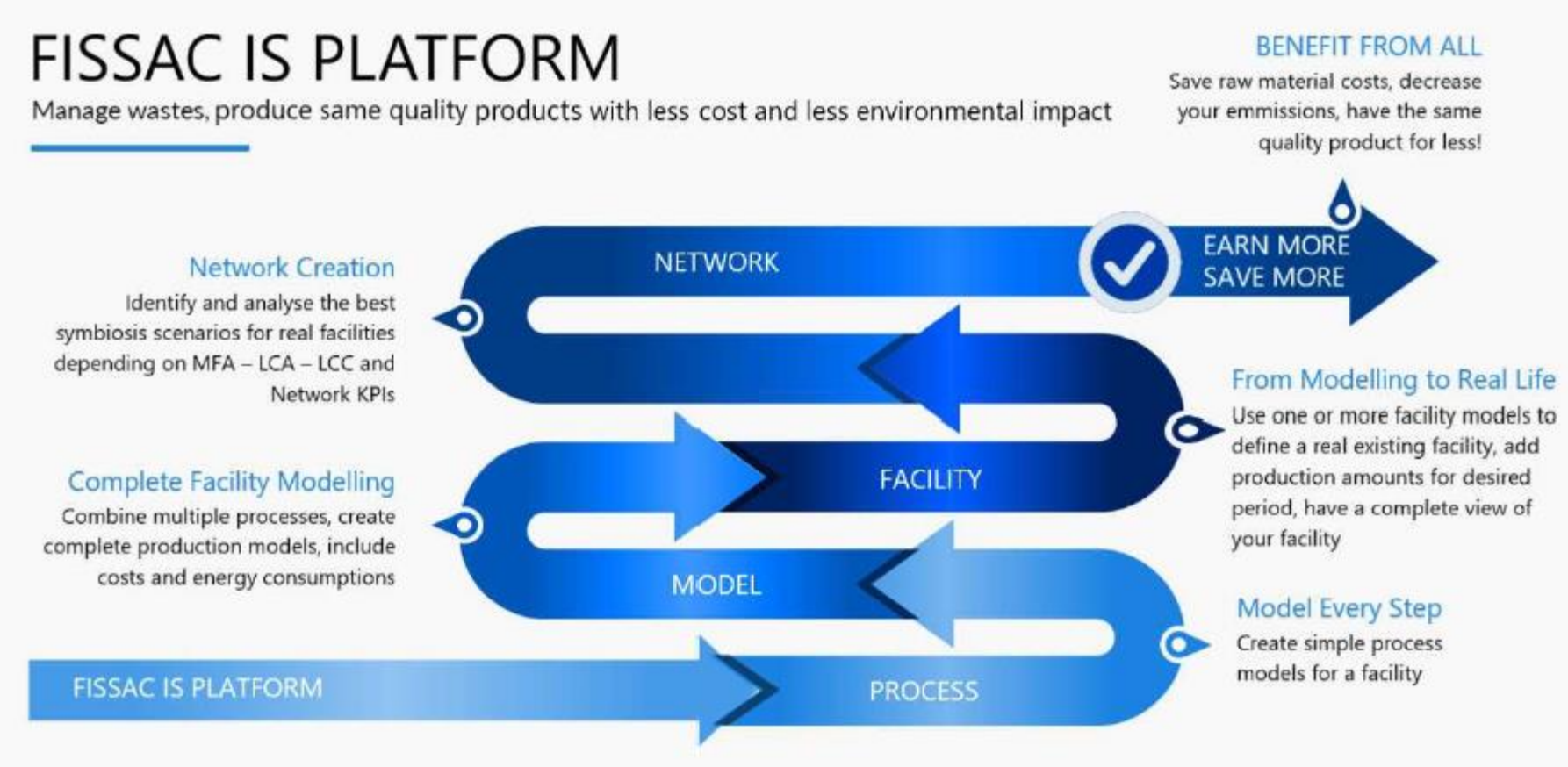
FISSAC industrial symbiosis platform



[Webinar](http://platform.fissacproject.eu/)
http://platform.fissacproject.eu/

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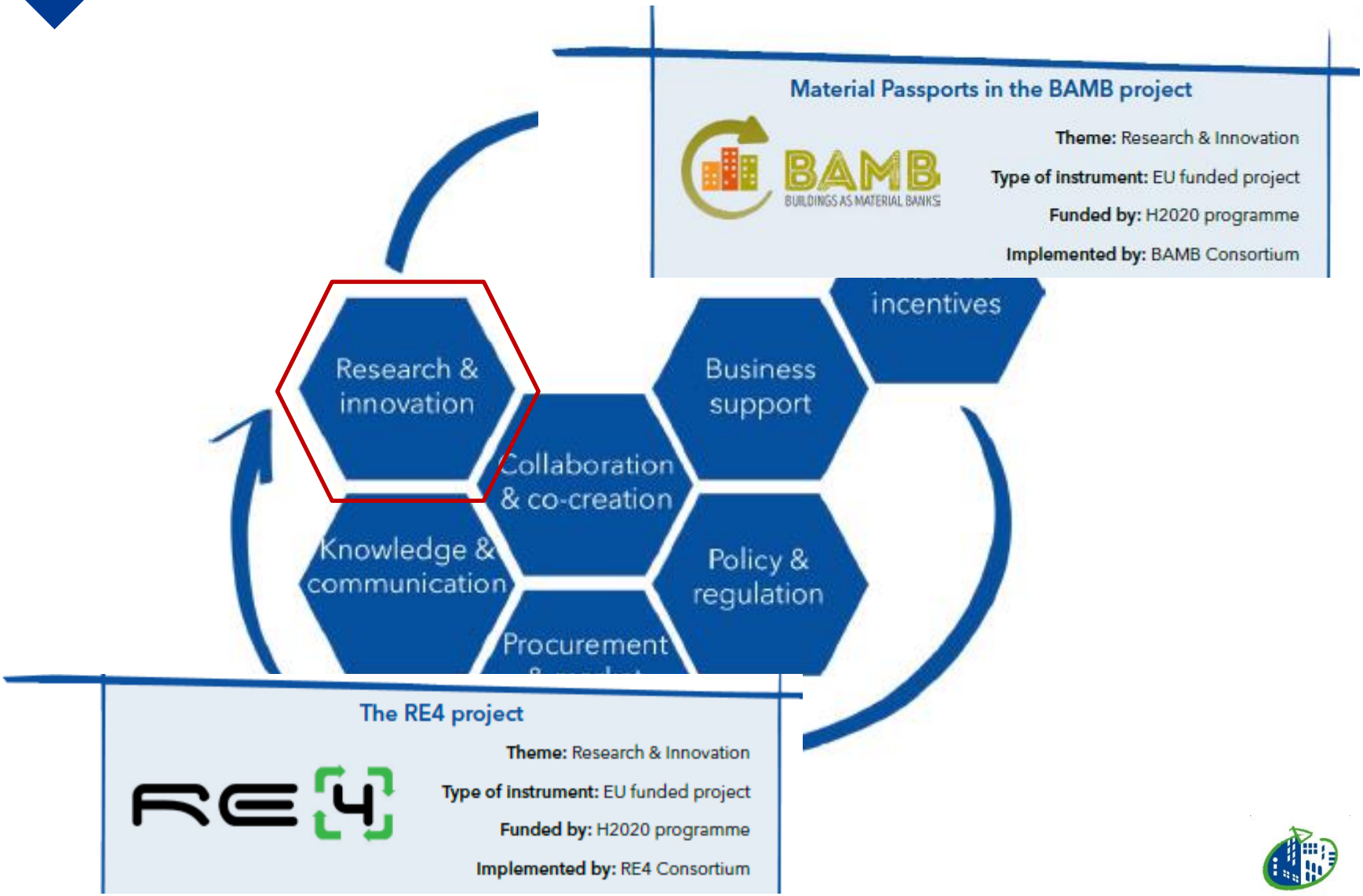
Research & innovation



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Business support

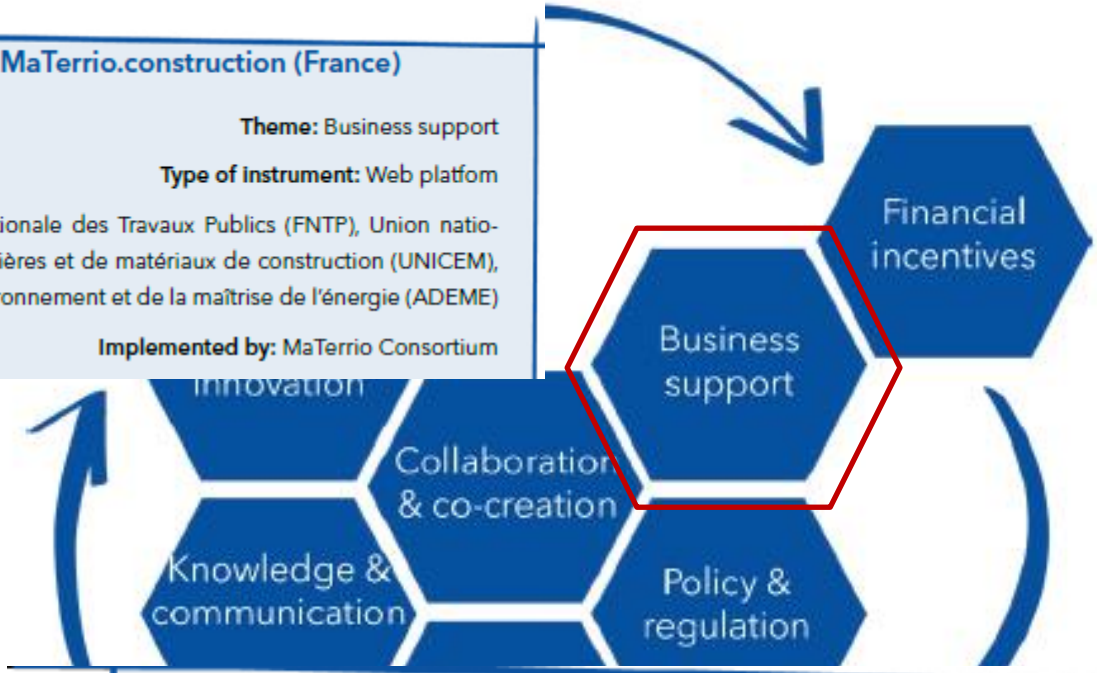
Web Platform MaTerrio.construction (France)

Theme: Business support

Type of instrument: Web platfom

Funded by: Fédération Nationale des Travaux Publics (FNTP), Union nationale des industries des carrières et de matériaux de construction (UNICEM), Agence de l'environnement et de la maîtrise de l'énergie (ADEME)

Implemented by: MaTerrio Consortium



Circular Glasgow (United Kingdom)

Theme: Business support

Type of Instrument: Network

Funded by: Glasgow Chamber of Commerce

Implemented by: Glasgow Chamber of Commerce

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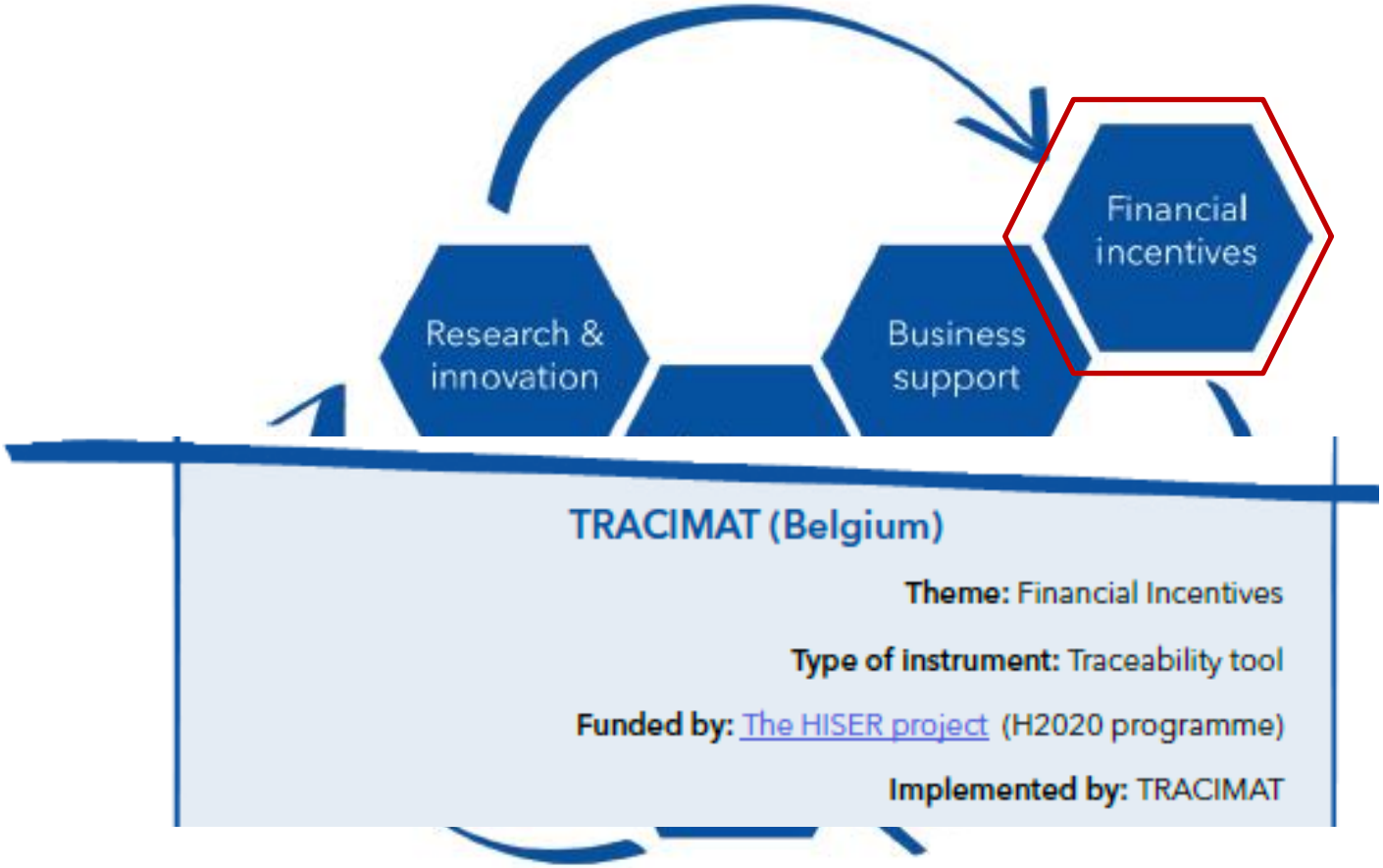
Financial incentives



Policy & Regulation

PRECAT 20 - Catalonia government's program for prevention, waste and resource management (Spain)

Theme: Policy and Regulation

Type of instrument: Regional programme

Funded by: Generalitat de Catalunya

Legislation on CDW management in the Basque Country (Spain)

Theme: Policy and Regulation

Type of instrument: Regional Order

France: pre-audits compulsory on demolition sites

Law 2009-967 of 3 August 2009, known as "Grenelle I" law, and Law 2010-788

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Procurement & market development

A low carbon, circular economy approach to concrete procurement in the City of Zurich (Switzerland)

Theme: Procurement & market development

Type of instrument: Local authority green public procurement

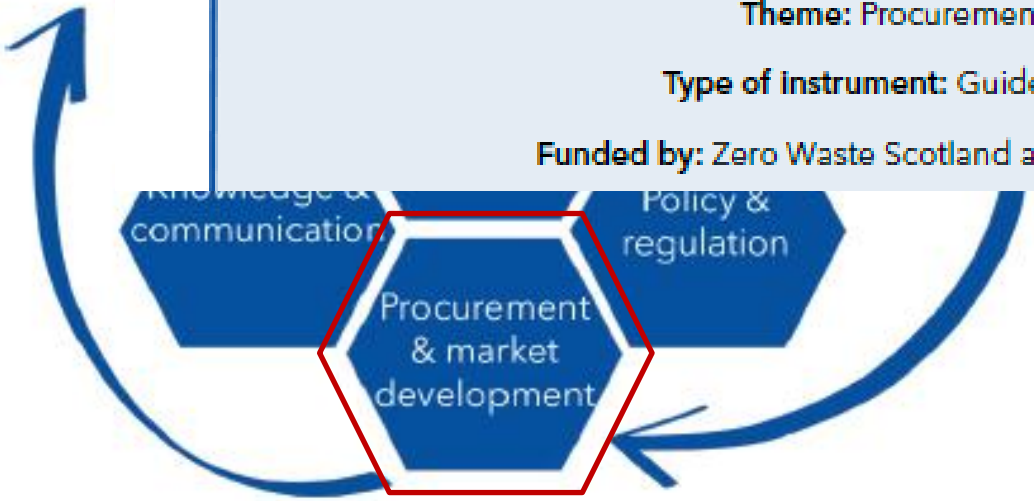
Funded by: City of Zurich

Construction Sustainable Procurement Guidance (United Kingdom)

Theme: Procurement & market development

Type of instrument: Guide on public procurement

Funded by: Zero Waste Scotland and Scottish Government



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Conclusion

- A strong political commitment, with clear goals, is an effective starting point to set up a strategy
- Various cross-cutting elements should be put in the focus, considering the local priorities
- Circular economy models and principles have an enormous potential to design proper action plans striving for material resource efficiency.
- Renovation wave is a great challenge and opportunity

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Download the publication

https://www.acrplus.org/
http://fissacproject.eu/

FISSAC
Fostering Industrial Symbiosis for a Sustainable Resource Intensive Industry across the extended Construction Value Chain

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Thank you

www.acrplus.org

Paolo Marengo (pm@acrplus.org)

COLLECTORS

Circular approach for CDW

Webinar, 26 June 2020

Ive Vanderreydt
VITO

This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 776745

Outline

1. COLLECTORS project
2. Improving circularity
3. Focus on CDW

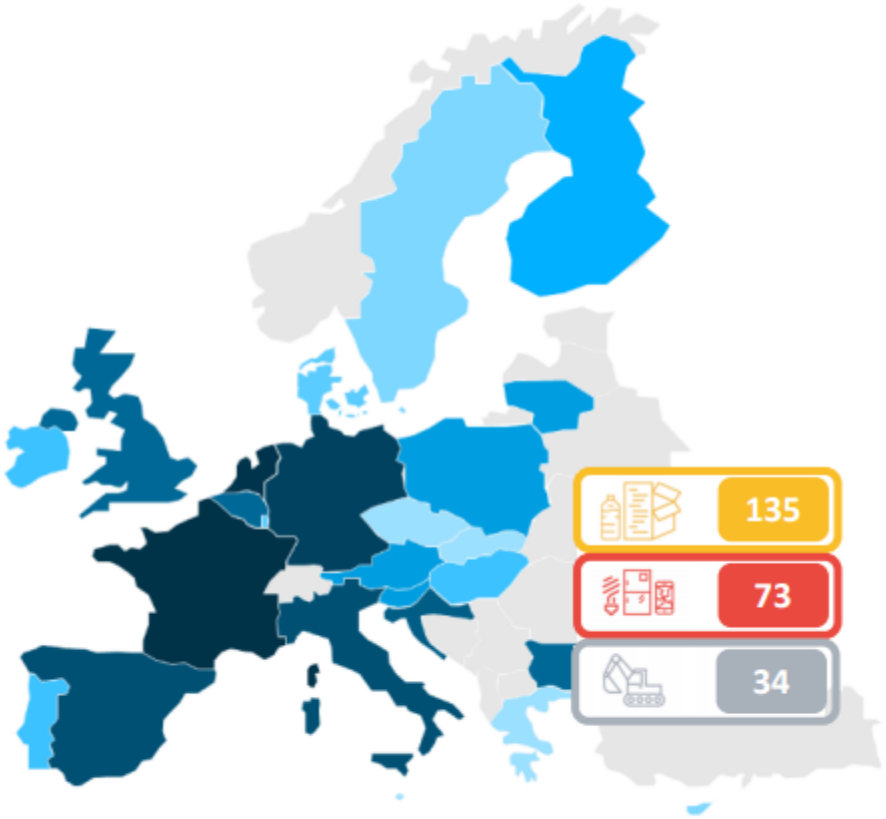
vito

COLLECTORS

WASTE COLLECTION SYSTEMS ASSESSED AND GOOD PRACTICES IDENTIFIED

Objective:

Identify good practices in waste collection and increase knowledge sharing; to ensure that good performing regions and cities can serve as examples and inspiration for regions with similar local contexts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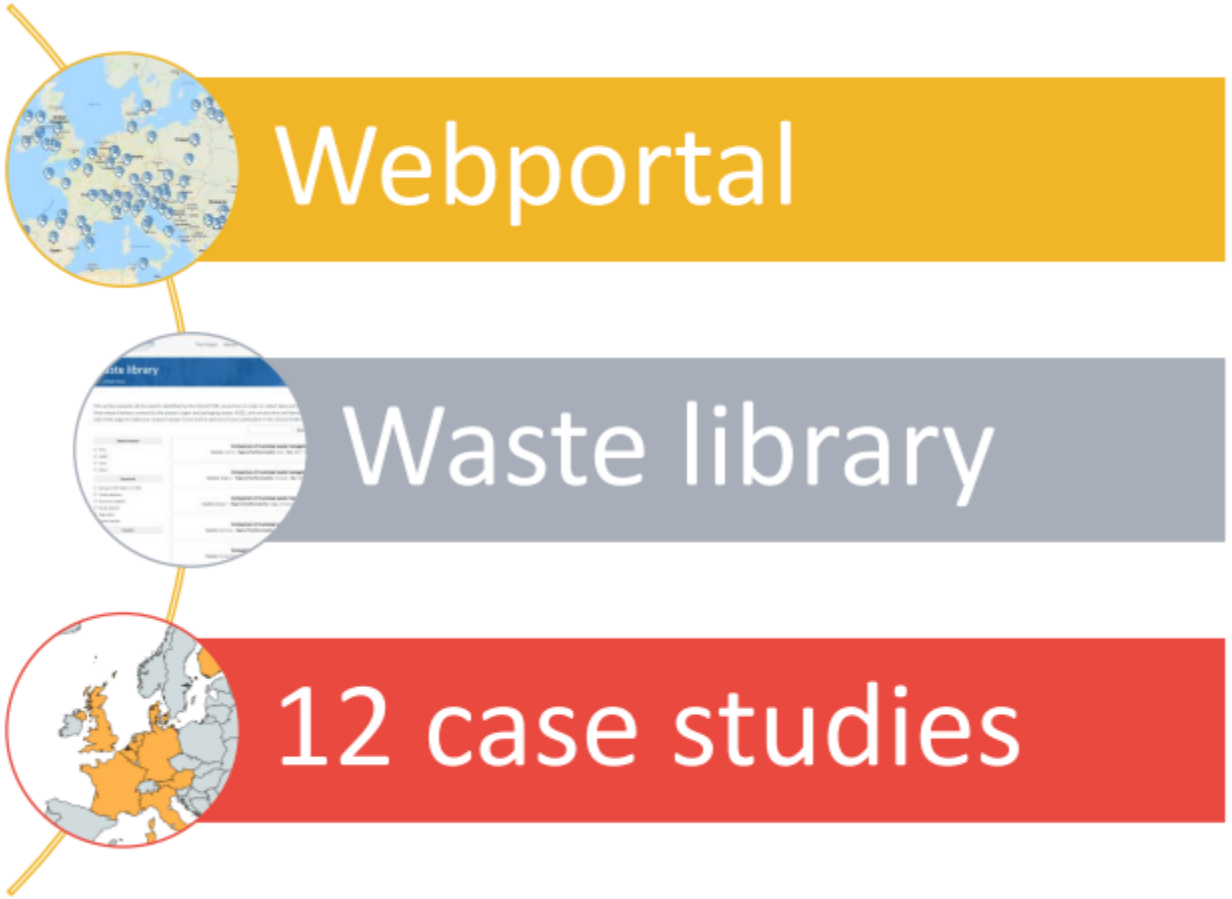
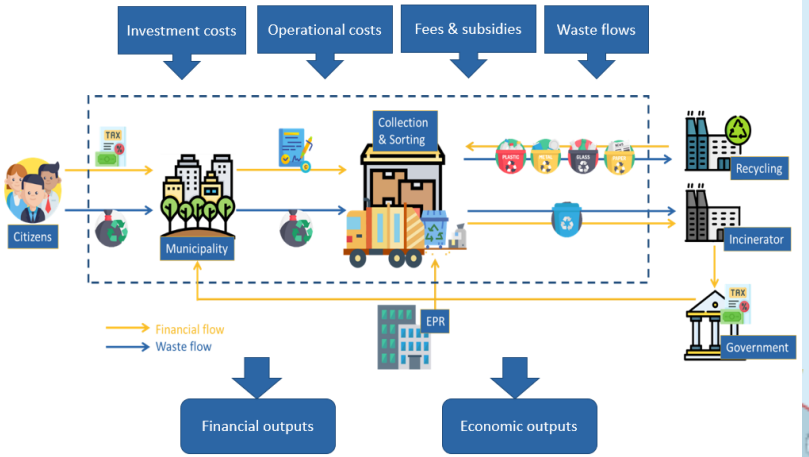
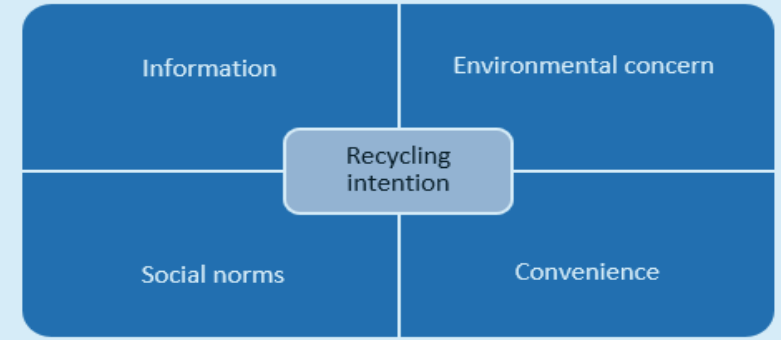

Webportal
Waste library
12 case studies



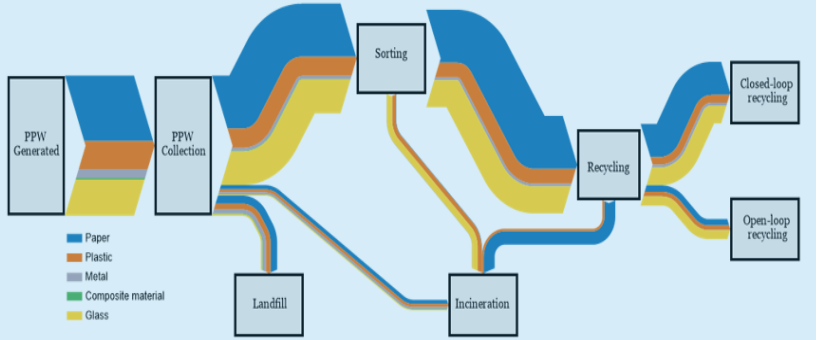
Financial

12 case studies

5 PPW, 5 WEEE, 2 CDW



Societal acceptance



Environmental

Circular economy

vito

COLLECTORS
WASTE COLLECTION SYSTEMS ASSESSED AND GOOD PRACTICES IDENTIFIED

Phase 1. Inventory

Map and harmonize existing information on waste collection systems throughout Europe for packaging and paper waste, WEEE, and CDW.
Disclose it on a web-based platform to help decision-makers find systems that are in line with their needs.

- **Inventory of waste collection practices**

Phase 2. Assessment

Assess the overall performance of waste collection systems in different geographical areas based on comparable data, using life-cycle assessments and cost-benefit analyses.

- **Twelve case studies**

Phase 3. Implementation

Stimulate successful implementation of better-performing waste collection systems by providing the necessary tools for decision makers, with tailored instructions per type of location.
Multi-criteria decision making will be applied as participatory learning exercises.

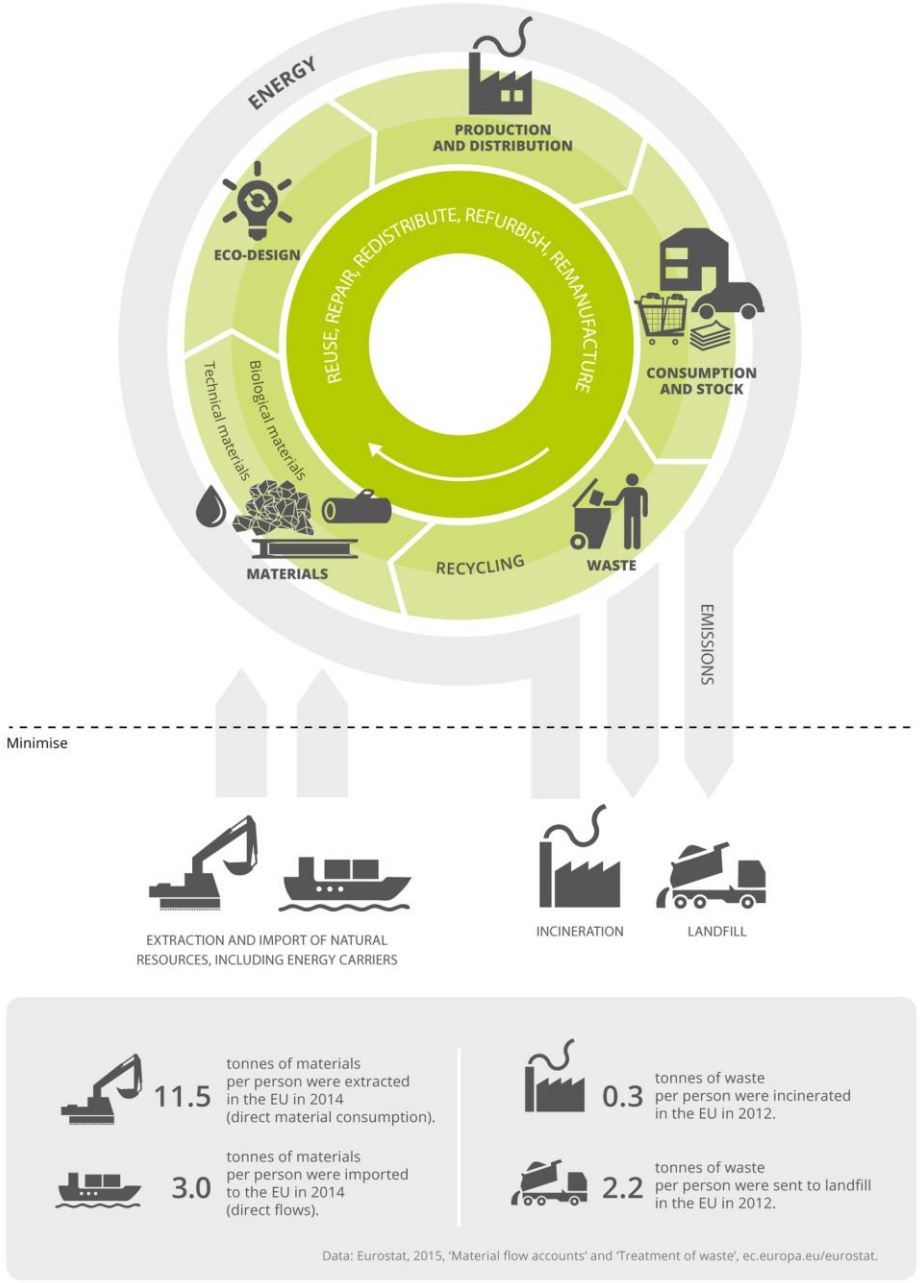
- **Implementation guidelines**
- **Policy recommendations** on aligning the different policy levels involved.
- **3 customised factsheets** on waste collection systems

Events

COLLECTORS will organize five events which include different types of workshops and sessions:
4 regional conferences and 1 EU conference

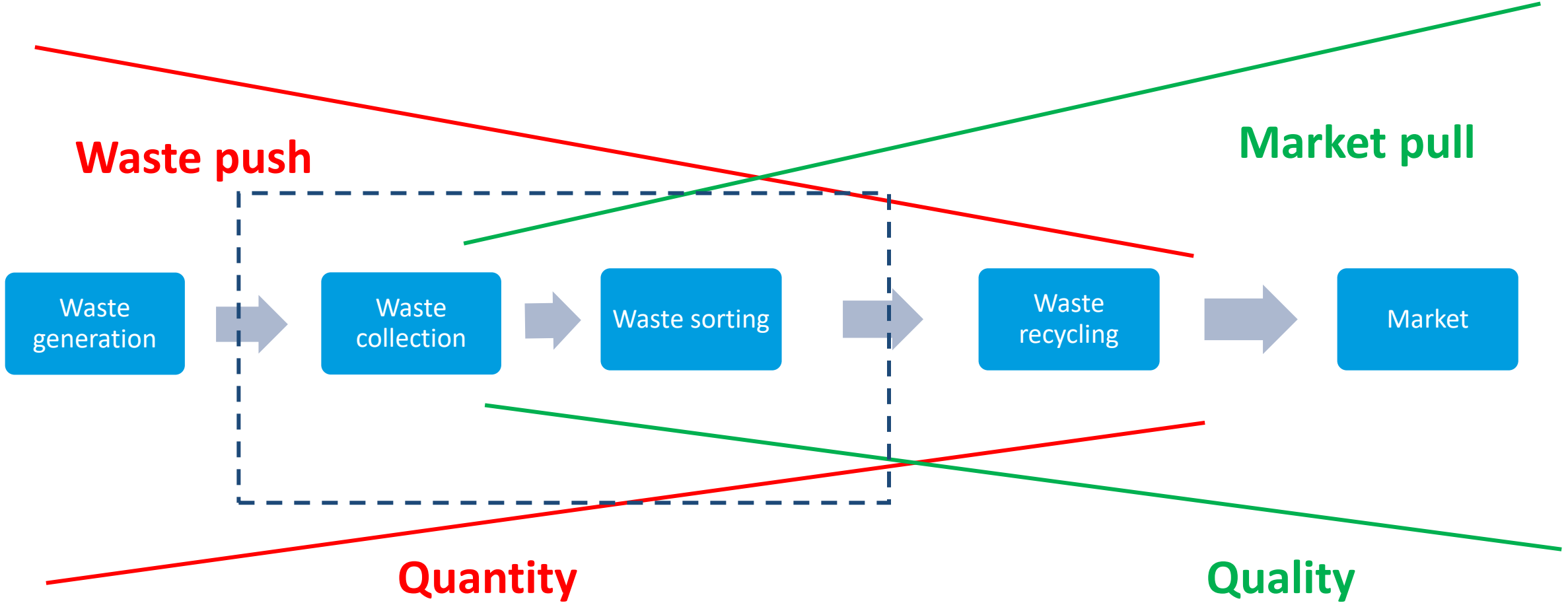
Get Involved!

Improving Circularity



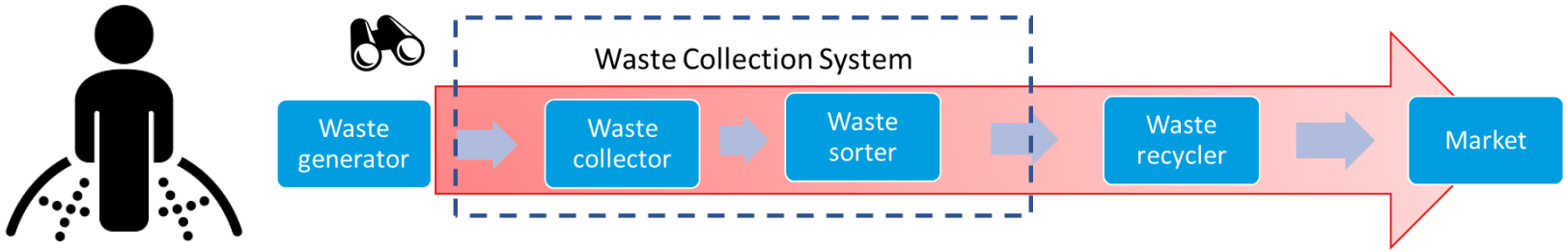
Source: European Environment Agency

Role of recycling in CE

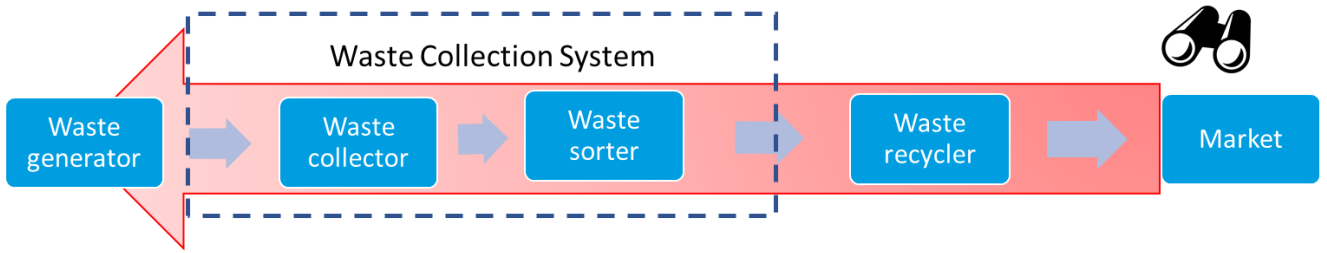


Role of waste collection in recycling value chain

2 perspectives:
From citizen point of view (societal perspective)

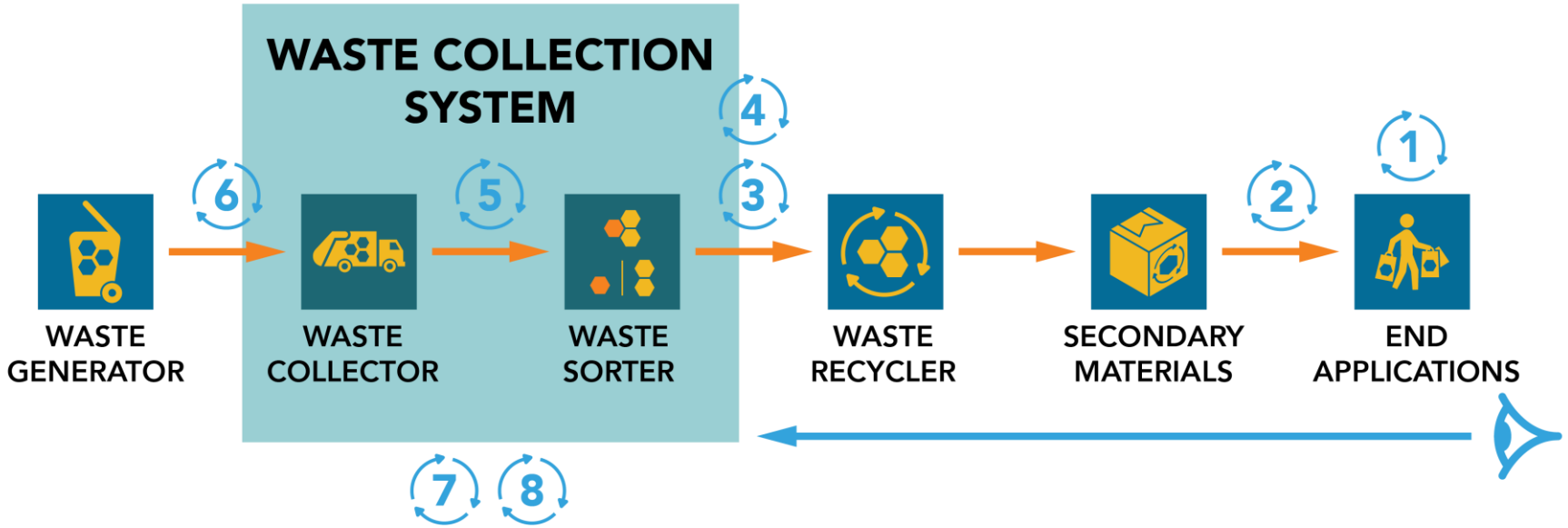


From systemic and technical point of view (CE perspective)



MAIN QUESTION

Which conditions enable the recycling value chain to produce more value, by producing more (quantitative) and/or better (qualitative) secondary materials?



1 MARKET/DEMAND
for secondary materials or for end applications

2 MANUFACTURING INFRASTRUCTURE
with feedstock flexibility to absorb/use sec. materials

3 SORTING AND RECYCLING INFRASTRUCTURE
availability of this infrastructure

4 SUPPLY
minimum amount

5 QUALITY OF WASTE
quality requirements / uncertainty & stability

6 TRACEABILITY
proxy for quality

7 POLICY OBLIGATIONS
such as recycling targets

8 ECONOMICS
costs ≤ revenues for each link in the value chain

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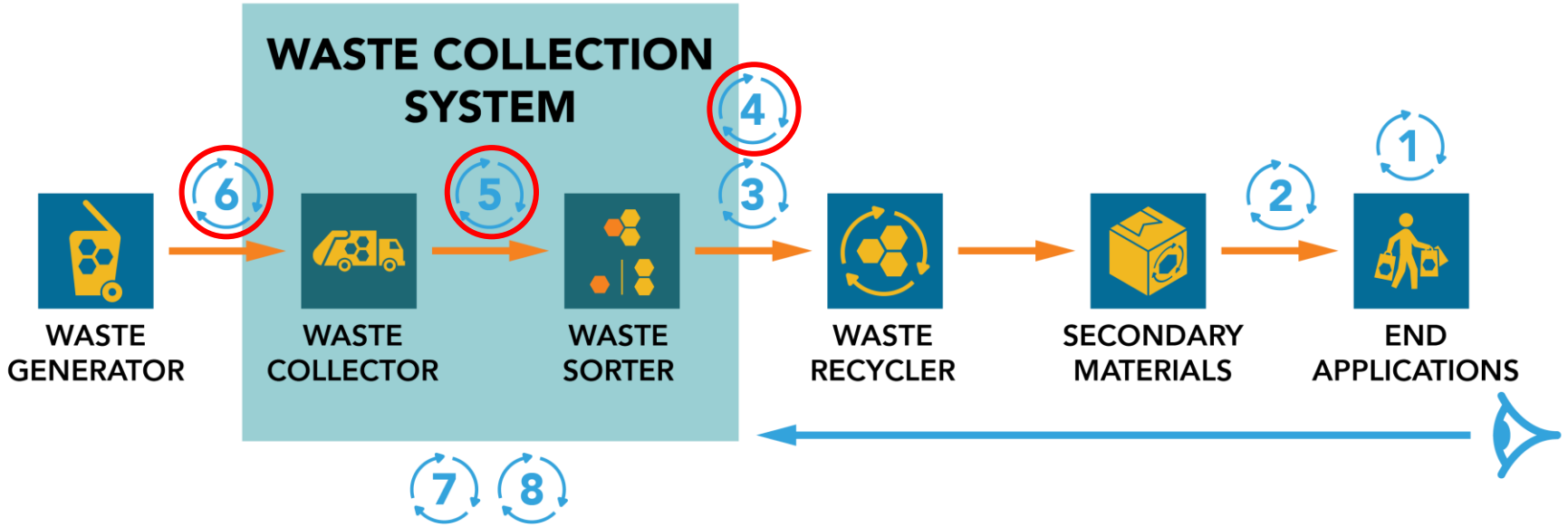

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Focus on CDW

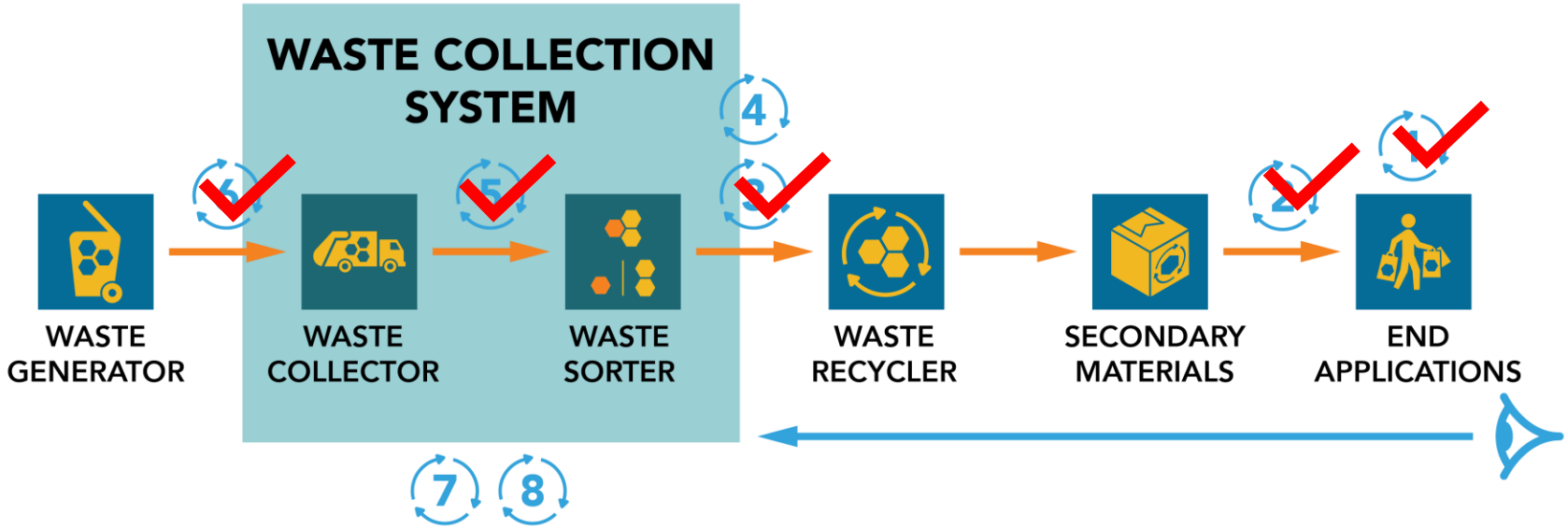
2 cases

- Reimerswaal, focus on gypsum
- Odense, focus on bricks

Figure 3: The CDW case studies: Odense (DK) and Reimerswaal (NL)

MAIN QUESTION

Which conditions enable the recycling value chain to produce more value, by producing more (quantitative) and/or better (qualitative) secondary materials?



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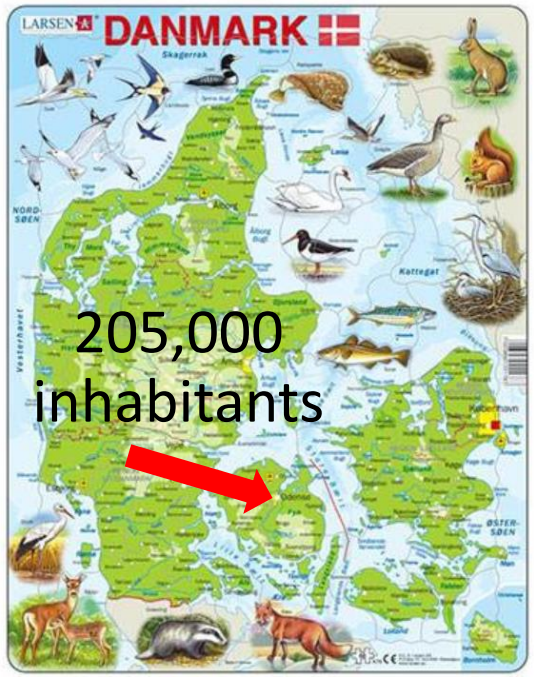
7. **POLICY OBLIGATIONS**
   such as recycling targets
8. **ECONOMICS**
   costs ≤ revenues for each link in the value chain

Thank you!

Ive Vanderreydt
VITO
ive.vanderreydt@vito.be

For more info about the project visit the COLLECTORS website at www.collectors2020.eu

Odense Municipality



Management of Construction & Demolition Waste

Michael Dino Hansen

Odense Waste Management LTD

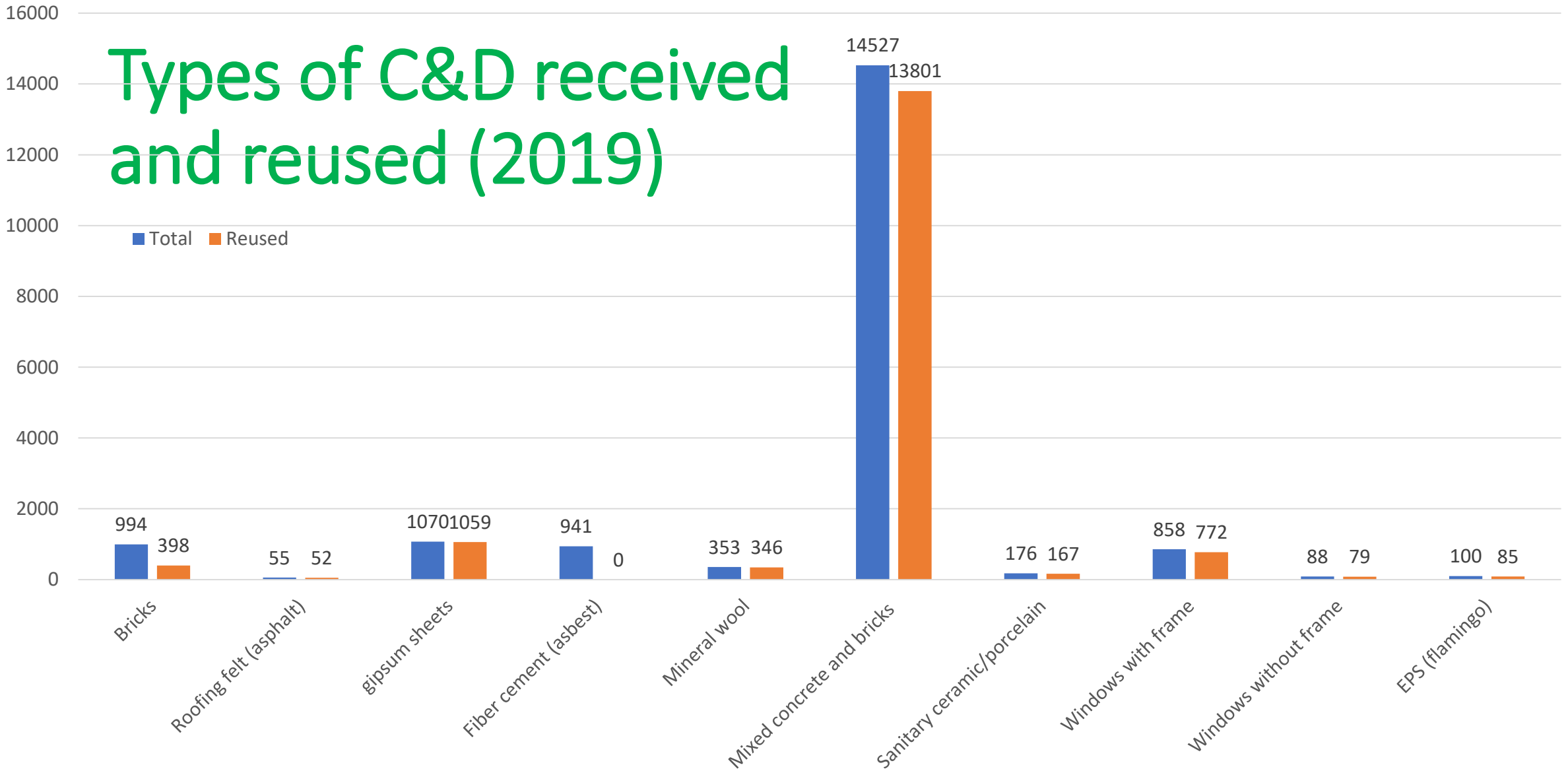
System to Manage C&D Waste

Can be delivered to 8 civic amenity sites throughout the municipality

- Households for free (included in yearly waste fee)
  - Obliged to report and screen quantities above 1 m^3;
    1 ton or projects above 10 m^2
  - No maximum quantity

- Small businesses pay 20 Euro (incl. VAT) per visit
  - Obliged to report and screen waste
  - No maximum quantity
  - Maximum 2500 kg per visit

Types of C&D received and reused (2019)



Challenges (Private)

- The professional demolition companies have procedures and systems in place to deal with C&D waste - the problem is the private and small enterprises
- National action plan for PCB containing C&D waste published in

https://pcb-guiden.dk/file/186399/handlingsplan.pdf

- Statutory order on PCB (2016)
- Criteria for when C&D waste is exist

NO awareness on hazardous C&D waste

NO reporting on building modifications

NO compliance to regulation

NO focus/follow up by authorities

Changes to be implemented in 2021/22

C&D Waste only to be received at 2 civic amenity sites

The citizens and companies will be interviewed to screen whether the C&D could contain hazardous substances

- Build/renovated between 1950-1977 ?
- Sampling and analysis of collected materials
- Correct disposal of contaminated C&D waste

- Separation of tiles from concrete and bricks
- Information campaign on C&D waste

→ Will result in extra cost

Thank you

For further information contact

Head of Recycling Department
Mette Lilholm Lorenzen
mel@odenserenovation.dk

Michael Dino Hansen
mdh@odenserenovatation.dk

Odense Waste Management headquarter and civic amenity site


Gamle Mursten ApS
- fra affald til ressource
eco-innovation
This project is co-funded by the European Union within the CIP ECO-innovation initiative of the Competitiveness and Innovation Framework Programme, CIP

Company details

Ownership: privat

Number of employees: 27

Turnover: 3 mil € 2019

Annual growth: 41 %

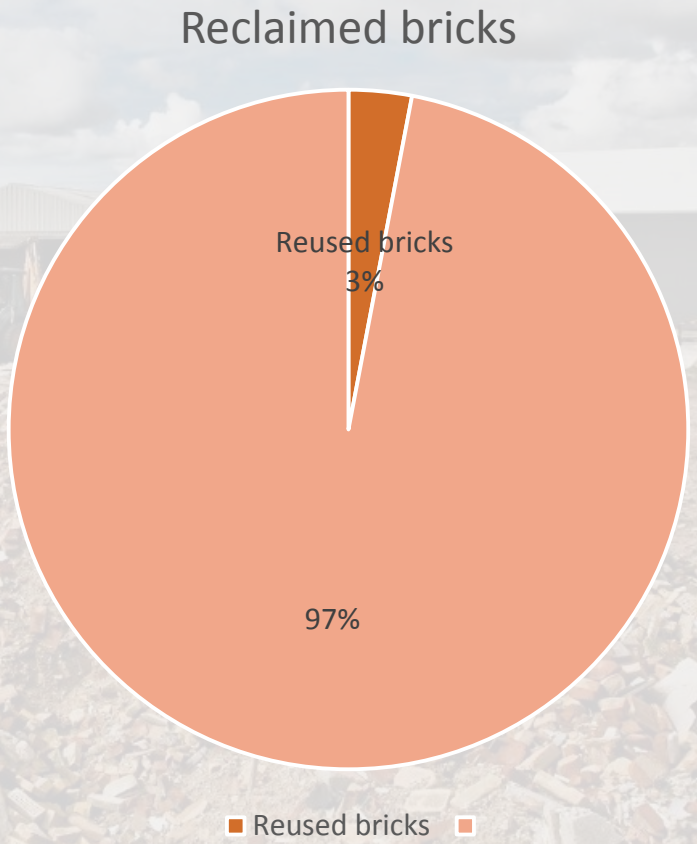
Bricks per year: 2-3 mil

CO2 Savings, o,5 kg per Brick = 1000 ton in 2017

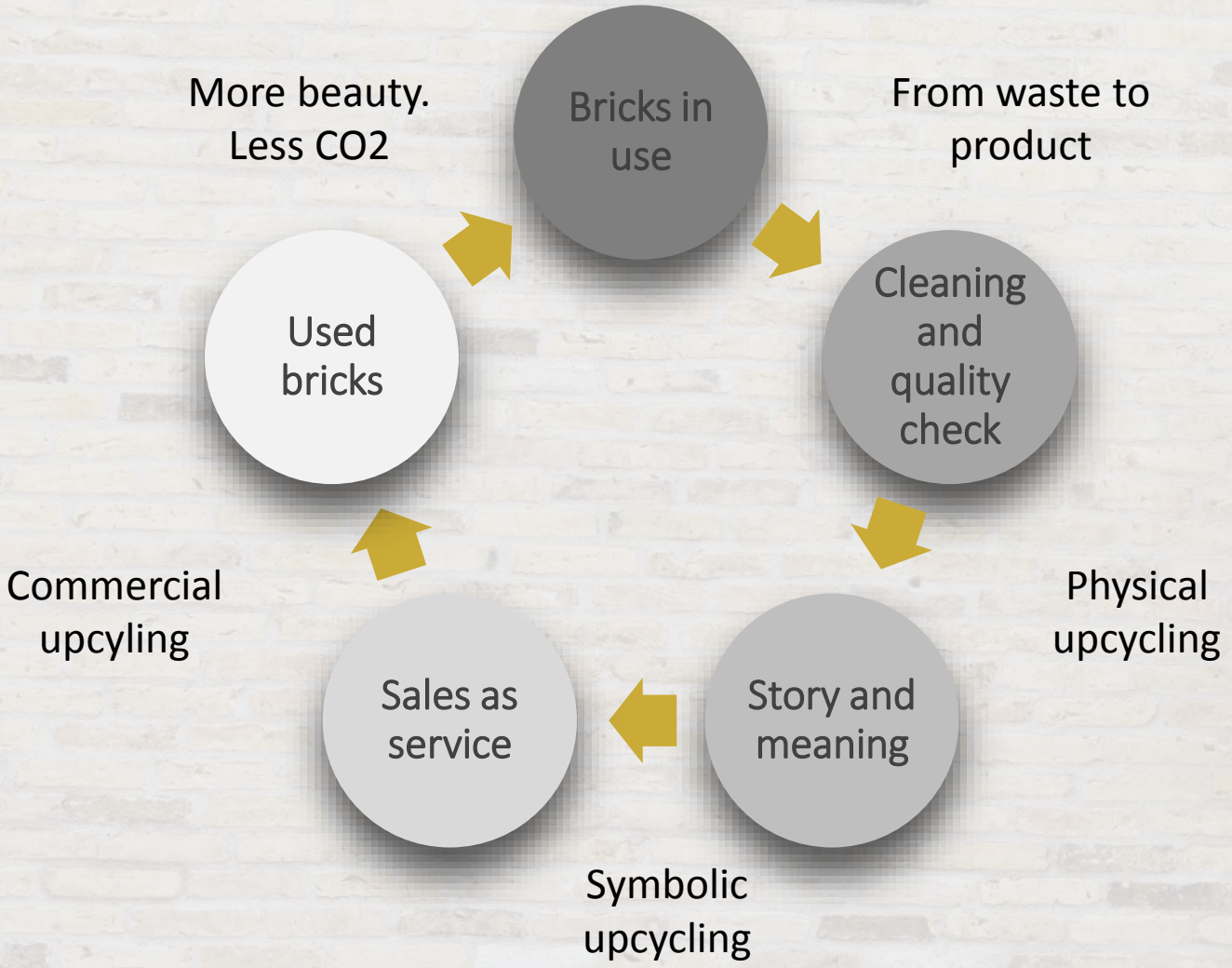
Potential co2 saving in DK 23.600 ton per year

THE EU?

Potential for reclaimed bricks



The value system




Carlsberg

Thank you for your time

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More information on:
www.gamlemursten.dk/uk
www.gmsystemer.dk/uk

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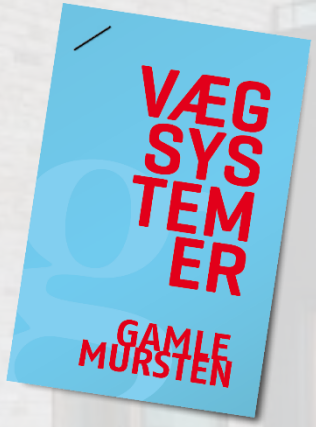

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WASTE COLLECTION SYSTEMS ASSESSED AND GOOD PRACTICES IDENTIFIED

www.collectors2020.eu

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