COLLECTORS

WASTE COLLECTION SYSTEMS ASSESSED AND GOOD PRACTICES IDENTIFIED

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Assessment of the financial performance of 12 selected case studies in waste collection

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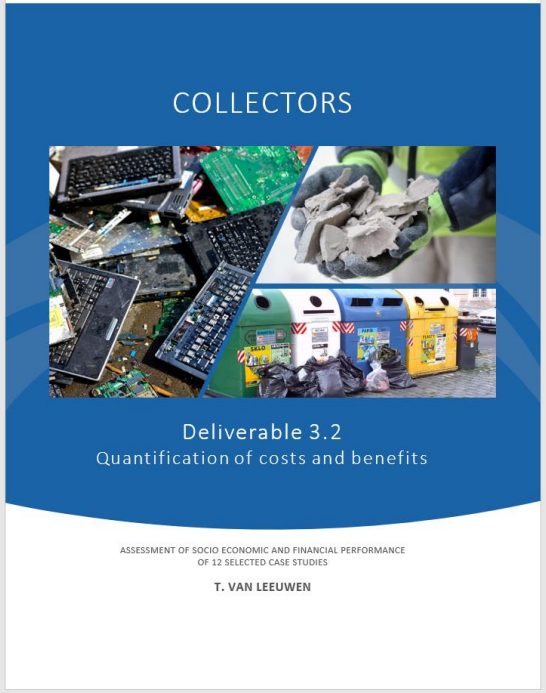
Agenda

1. Short introduction
2. PPW results
3. WEEE results
4. CDW results



Deliverable 3.2 report on CBA's (link)

Structure:

- *Cases studied*
- *Methodology*
- *Financial results*

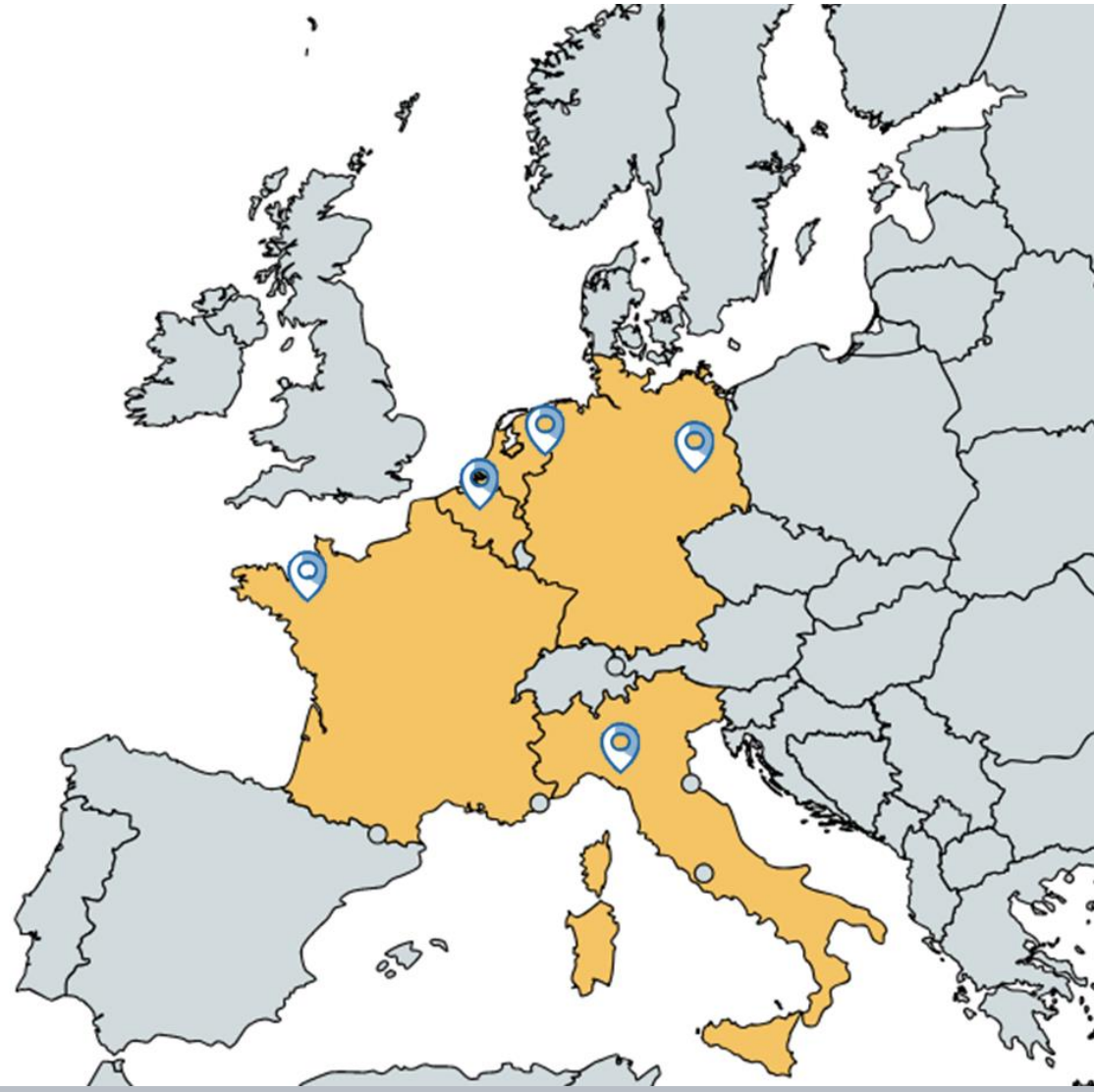
PPW cases

Cases

1. Tubbergen (NL)
2. Gent (BE)
3. Rennes (FR)
4. Berlin (DE)
5. Parma (IT)

Packaging waste

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



CBA PPW methodology

Scope

Rationale

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

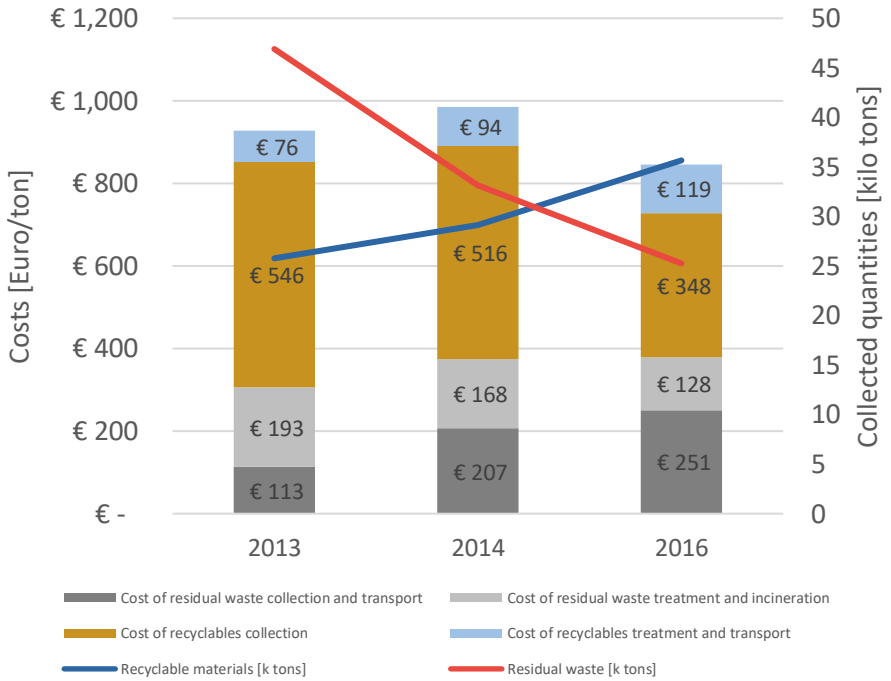
Parameters

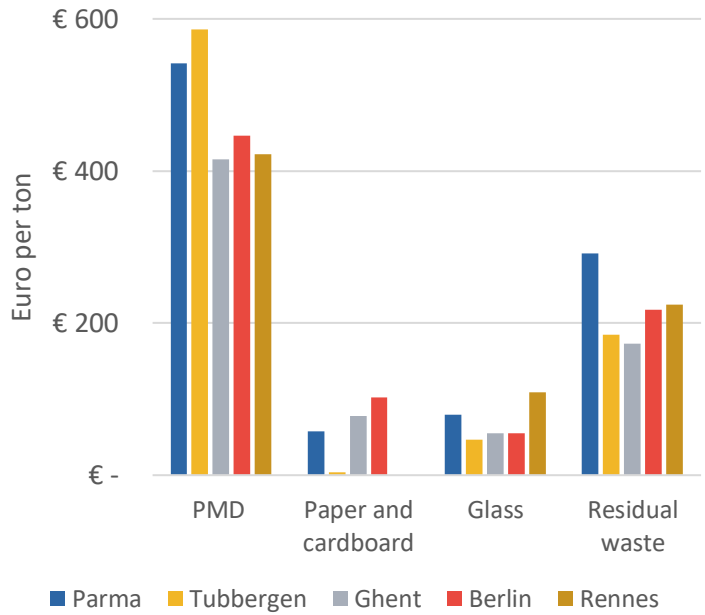
- Investment costs (infrastructure, bins, chips,..)
- Operational costs (collection, sorting, street cleaning, taxes)
- Revenues (sold materials, incineration revenues, EPR fees, tax savings, citizens waste fees)

Waste fees and operational costs

		Parma (IT)	Ghent (BE)	Berlin (DE)	Tubbergen (NL)	Rennes (FR)
Glass (G)	♻	Separated (G, PC, PMD)	Separated (G, PC, PMD)	Separated (G, PC, PMD)	Separated (G, PC, PMD)	Separated (G, PMD+P)
	🗑	Road containers CAS	Dtd (monthly) Bring-points (monthly) CAS	Dtd (2-weekly) Bring-points CAS	Bring-points	Dtd (weekly-monthly) Bring-points
	💰	Free	Free	Free	Free	Free
Paper and cardboard (PC)	♻	Seperate	Seperate	Seperate	Seperate	Comingled (P,M,D,PC)
	🗑	Dtd (weekly) Ecostations CAS	Dtd (monthly) Bring-points (monthly) CAS	Dtd (4-8 weekly) CAS	Dtd (monthly) Bring-points (monthly) CAS	Dtd (1-2weekly) Bring-points CAS
	💰	Free	Free	PAYT: € 2.38 per emptying of 120L	Free	Free
Plastic (P), Metal (M) & Drinking (D) composite packaging	♻	Comingled (P,M,D)	Comingled (P,M,D)	Comingled (P,M,D)	Comingled (P,M,D)	
	🗑	Dtd (weekly) Ecostations	Dtd (biweekly) Bring-points (biweekly) CAS	Dtd (weekly-biweekly)	Dtd (monthly) Bring-points (monthly) CAS	
	💰	Free	PAYT: € 6 for 20 blue bags	Free	Free	
Residual waste	🗑	Dtd (weekly)	Dtd (1-2weekly)	Dtd (biweekly)	Dtd (monthly)	Dtd (1-2weekly)
		FIXED € 249/y (3p - 100m²)	FIXED € 25 /y bringbank (5 uses) € 100/y container (5 uses)	FIXED € 6.39 /quarter	FIXED € 80 /y	
	💰	PAYT: First 960L free, then € 1.40 emptying Discount system for disposed recyclables[10].	PAYT: € 17.50 for 10 60L/15kg yellow bags € 3.50 for 120L container	PAYT: € 55.38 / quarter for 60L container	PAYT: € 0.24/kg at CAS € 5.60 for 140L container	Waste tax based on the property value

Table 1 - Overview of the collection modes and waste fees





Waste fees

Overview of collection modes & waste fees

PAYT element in almost all cases

Shift in costs

From comingled collection to seperate collection

With **dropping volumes,** ***residual waste***

1. collection cost increases
2. treatment cost decreases

With **increasing volumes,** ***recyclables***

1. collection cost decreases
2. treatment cost increases

Operational costs

PMD as most expensive waste stream to collect, followed by residual waste.
Paper, cardboard and glass are fairly cheap

Detailed mapping of costs and benefits

Achievements:

Mapped in detail the relevant costs of the

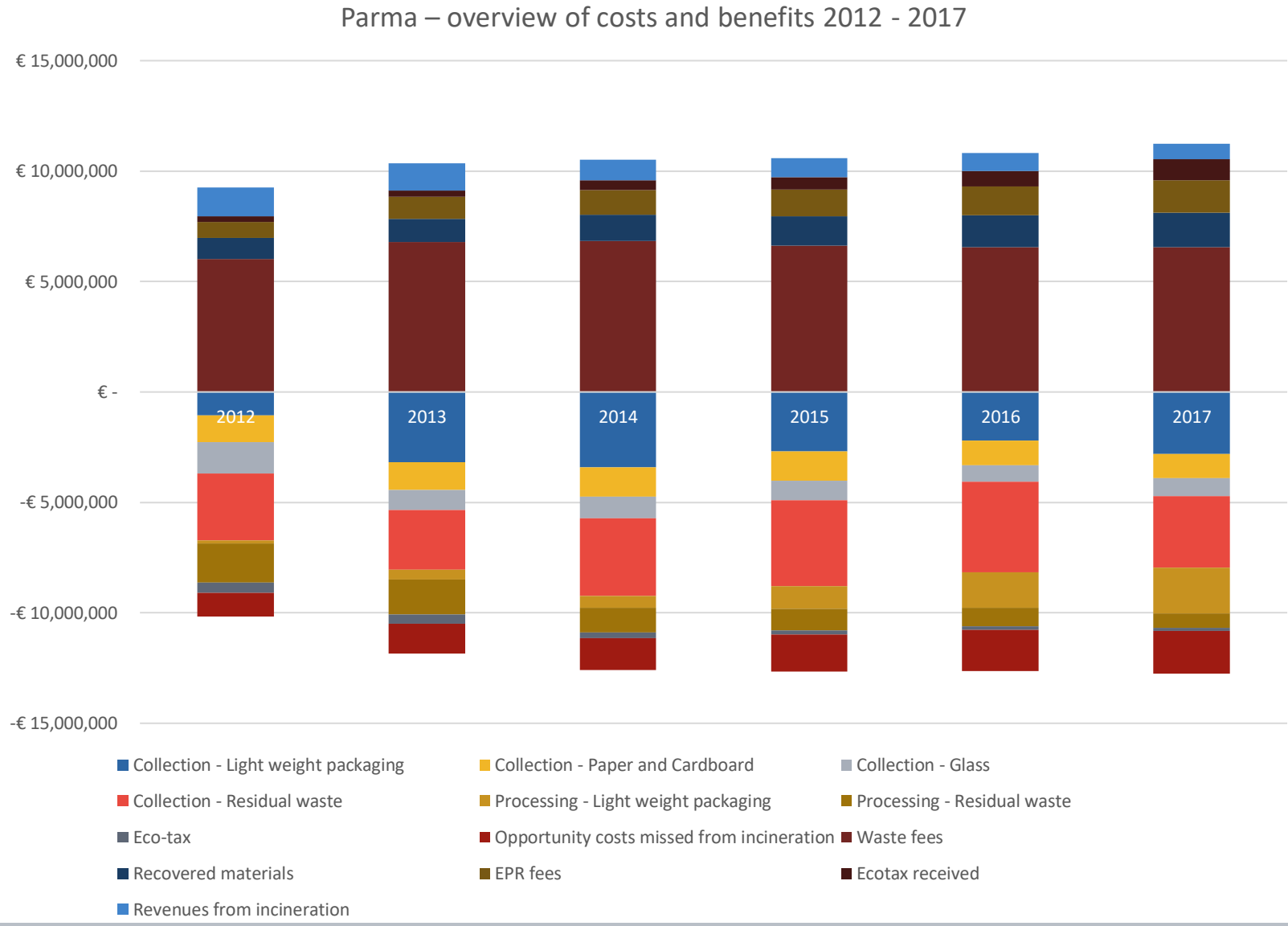
PPW collection system

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!



Lessons from PPW CBA

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

Case	Average waste fee [€/hh]	Waste fee part of total revenues [%]	Trend
Parma	243	59%	Steady
Ghent	61	27%	Steady
Berlin	126	38%	N.A.
Tubbergen	140	42%	Dropping
Rennes	133	44%	Dropping

Case	EPR fee of total revenues [%]
Parma	10 %
Ghent	22 %
Berlin	52 %
Tubbergen	40 %
Rennes	N.A.

WEEE cases

Cases

1. Pembrokeshire (UK)
2. Helsinki (FI)
3. Genoa (IT)
4. Cyclad (FR)
5. Vienna (AT)

Small WEEE collection (consumers)

- Lamps
- Small household appliances
- Small IT

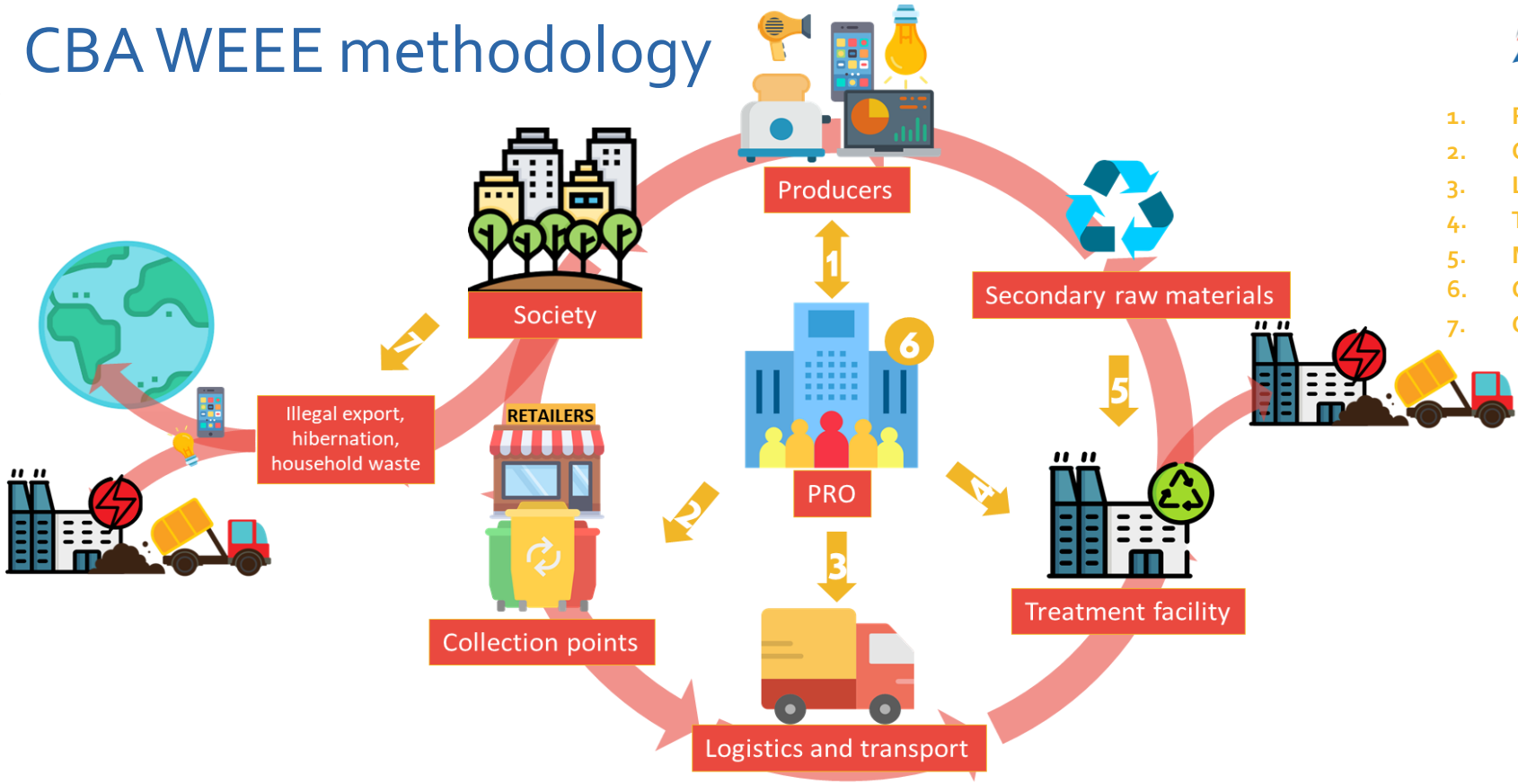
Focus on measures to increase WEEE collection

- Awareness campaigns
- Mobile pickup
- Securing collection sites
- Reuse

CBA WEEE methodology

1. PRO fee
2. Collection contribution
3. Logistic costs
4. Treatment costs
5. Material recycling costs/benefits
6. Compliance
7. Costs for society

Scope:



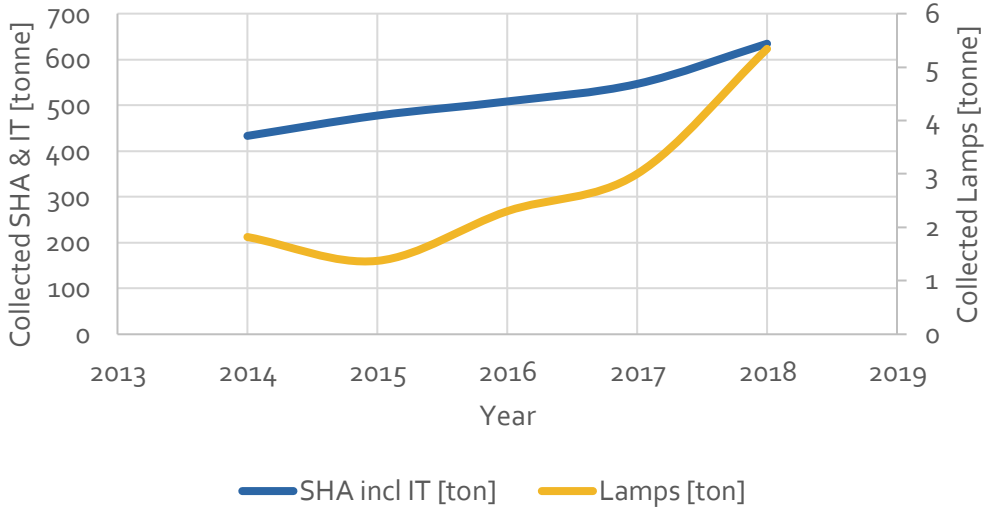
Rationale

Highlighting the financial flows and cost effectiveness of the WEEE collection system, specifically whilst boosting WEEE collection

Parameters:

- Investment costs (infrastructure, awareness campaigns,..)
- Operational costs (collection, logistics, treatment, compliance, recycling costs, leakage)
- Revenues (PRO fee, recycling revenues)

Economic assessment WEEE



Findings:

Economic data is not readily available:

CBA scenarios developed under large data uncertainty.

Overall it seems that measures to increase collection:

- Economic NPV > 0
- Financial NPV < 0

Public funding enabled implementation (LIFE, Horizon 2020, national/regional innovation funds).

Limited recycling and recovery revenues rightly warrant the crucial role of the PRO in the WEEE landscape.

Assessment reconfirms the importance of monitoring/enforcement and the unfair competition of unregistered treatment.

CDW cases

Cases

1. Odense (DK)
   - Bricks
   - Sanitary waste
   - Insulation materials

2. Reimerswaal (NL)
   - Gypsum

CBA CDW methodology

Scope:
CDW is mostly in private hands
Focus on the operation within the influence of the municipality; CAS, transport and disposal of the waste stream

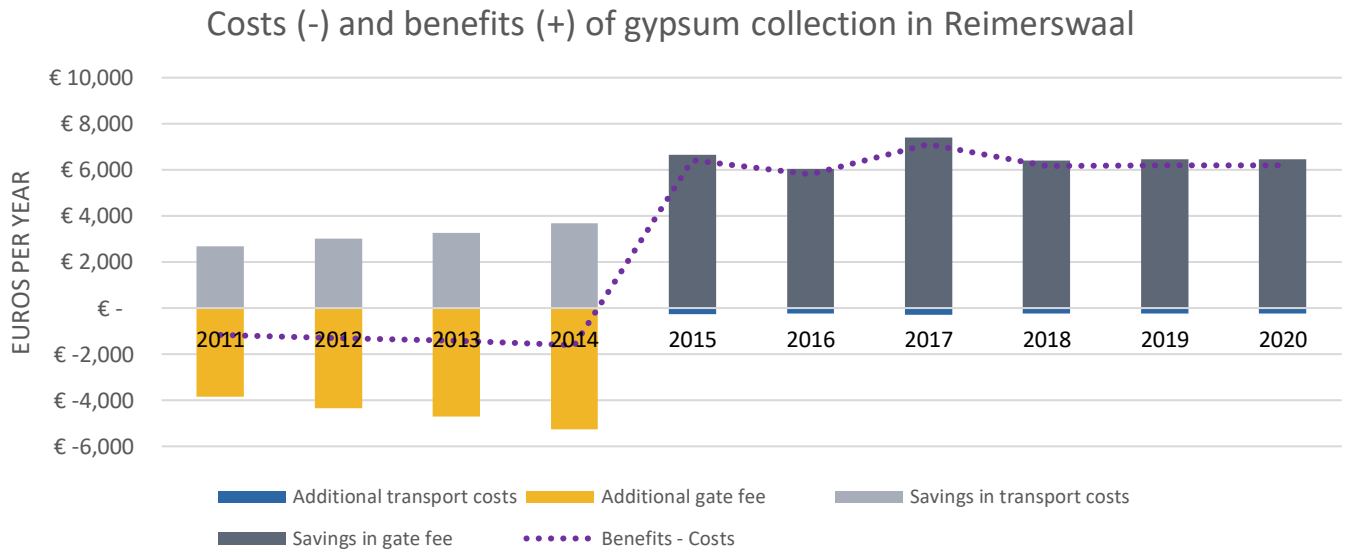
Rationale
Assess the financial feasibility of separately collecting specific waste streams from the bulk CDW.

Parameters:
- Investment costs (infrastructure,..)
- Operational costs (operational costs CAS, transport costs, gate fees)
- Revenues (savings in gate fees, transport and taxes)

Economic assessment CDW

Main conclusions

1. Investment costs are limited, while the revenues (for the municipality) can be significant!
2. Costs for the collection, treatment and recycling can vary largely per CDW fraction.
3. The availability of a local recycling or landfill facility can make or break the business case for waste operators.



Economic assessment CDW

	Costs in 2012	Costs in 2014
Gate fee gypsum recycling	€ 75 per ton	50 € per ton
Waste tax gypsum disposal in NL	€ 108 per ton	X (landfill ban)

€ Recycling < € disposal

Plus landfill ban

	Costs
Gate fee sanitary recycling	€ 100 per ton
Waste tax sanitary disposal in DK	€ 55 per ton

€ Recycling > € disposal

Policy and local recycling network (transport costs) will play a role

OUR CONSORTIUM

Thank you!

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