



DOOR TO DOOR COLLECTION OF MSW IN CATALONIA

Francesc Giró

Agència de Residus de
Catalunya

14/05/2014



What is Door to Door Collection?



- Much more than a waste collection system
- Allows to exert and demand shared responsibility for waste management by establishing a “pact” between citizens and administration
- A system based on technical and common sense

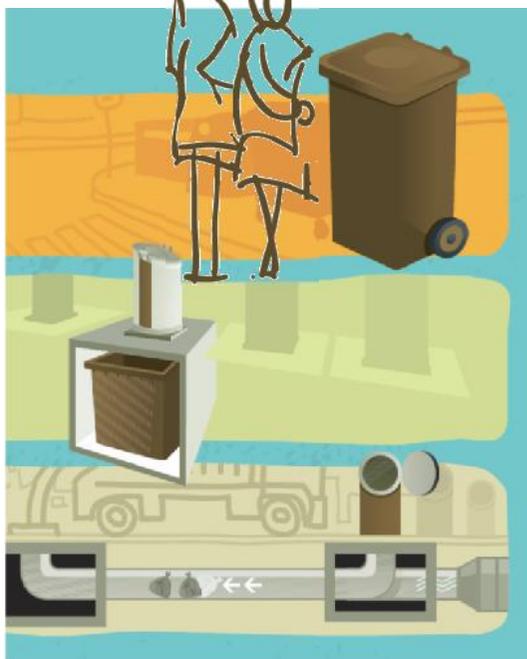
What is NOT Door to Door Collection



- A waste collection system that automatically works wonders on the collection results
- An excentric whim of waste management officials and/or politicians
- A collection system only fit for small municipalities and rural areas
- A collection system entailing higher costs than others

Road Containers

The citizens bring their wastes to the different collection systems located in the public space:



Door to Door Collection

The different municipal waste streams are collected directly at their point of origin, according to an established schedule and time table..





- **The results of more than 10 years of experience with D-t-D in over 100 municipalities lead to the following CONCLUSIONS :**
 - **It is a drastic and sudden change**
 - Of concepts and customs
 - Of citizens' habits -> requires thorough preparation: Training + Awareness
 - Of quantitative and qualitative results -> satisfies everyone
 - Of attitude -> requires alliance of all stakeholders (citizens, administration, collection company)
 - Of improved results for Biowaste, Glass, Paper-Cardboard, mixed Packaging
 - **It requires adjustment to particular geographic, social, urbanistic, etc. contexts,**
 - D-t-D is feasible in different circumstances. It just requires enough understanding to adapt it to the particular conditions.
 - **It is well accepted by**
 - Citizens: for its convenience, in spite of the inevitable effort of separation at source.
 - Politicians: consider it beneficial in general terms
 - Some municipalities switch to Door-to-Door Collection

- **Reduction of Total MSW Generation**
 - 5 - 20 % reduction
 - Reasons: waste from small industries are excluded from collection, awareness of citizens, shift in consumption patterns, waste exportation
- **Improved results regarding quantity and quality of Biowaste, Glass, P/C, Packaging**
 - Increase of separate collection of Biowaste increases the other waste streams
 - Global separate collection rate: 60-85 %.
 - Immediate compliance with collection targets (PROGREMIC and FWD)
 - Immediate compliance with reduction targets for biodegradable waste (Landfill Directive)
 - Less contamination in Biowaste [$< 5\%$] (or $< 2\%$ when the use of compostable bags is compulsory), what improves the operation of biological treatment and the quality of the compost.
 - Lower cost for treatment infrastructures and operations.
- **Long term results that tend to improve over time**

• Costs are equivalents

- An integrated (not additive) view on waste management is required,
- Collection frequency needs to be adjusted to the real arising of each waste stream, in order to restrict collection cost
- The cost increase for the collection is balanced by the decrease of treatment cost and revenues from recyclable materials (EPR schemes) and refunding of the disposal tax
- An integrated financial balance is required:
 - Costs
 - Collection: D-t-D helps to optimize costs.
 - Treatment:
 - » Biowaste. Better input quality lowers operation costs
 - » Residual waste. Treatment cost will rise substantially over the coming years
 - Disposal Tax: will rise substantially over the coming years
 - Revenues
 - Fees: Tend to keep stable
 - Refund of Disposal Tax: Tends to rise for high quality material
 - EPR revenues (Ecoembes, Ecovidrio): New agreements for 2013

Success Factors

- **Conviction and commitment to D-t-D**
- **Political consens**
- **Participation process**
- **Implication of all stakeholdersde (City Council, political groups, collection company, associations, etc.)**
- **Well designed technical - financial implementation of D-t-D**
- **Comunication+Training+Awareness campaigns**
- **Monitoring of D-t-D performance and feedback to the citizens**



Separate Collection Door to Door in Catalonia [1]

Number of Municipalities		DtD abandoned	Municipalities DtD
Door to Door	86	3	83
Road Containers and Door to Door	30	2	28
Total	116	5	111
		2008	VILASSAR DE MAR
		2011	SANT JULIÀ DE LLOR I BONMATÍ
		2013	MASLLORENÇ
		2013	SANTA EULÀLIA DE RONÇANA
		2013	CASTELLÓ D'EMPÚRIES

110

99 municipalities implement simultaneously DtD and separate collection of biowaste
11 municipalities switch from road containers to Door to Door collection

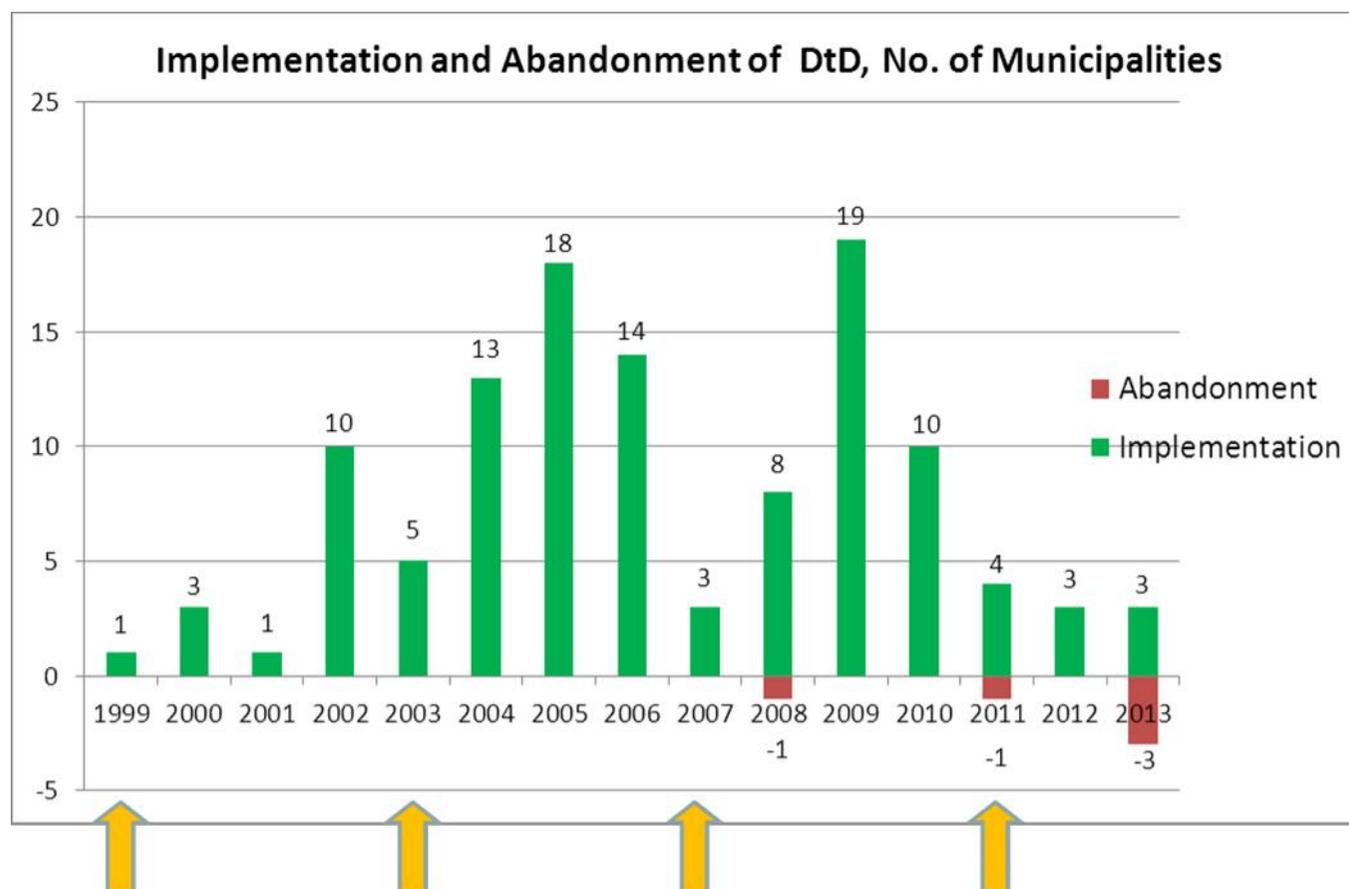
November 2013

Separate Collection Door to Door in Catalonia [2]

Number of Municipalities		DtD	> 70 % DtD DtD-RC	> 50 % DtD RC-DtD >> DtD	< 50 % DtD RC-DtD
Door to Door	82	82			
Road Containers and Door to Door	28		13	7	8
Total	110		102		8
			ALIÓ 91%	ARENYS DE MAR 52%	BLANES 29%
			ARENYS DE MUNT 91%	BRULL 36%	CABRA DEL CAMP 38%
			ARGENTONA 73%	CENTELLES 48%	CERDANYOLA DEL VALLÈS 6%
			FIGUEROLA DEL CAMP 94%	MALLA 15%	ESPARREGUERA 2%
			LLAGOSTERA 75%	SANT ANDREU DE LLAVANERES 57%	GAVÀ 10%
			NULLES 98%	SANT JOAN DE LES ABADESSES 52%	PALAFRUGELL 8%
			RODONYÀ 70%	VILOBÍ D'ONYAR 59%	SANT CUGAT DEL VALLÈS 9%
			SANT FELIU DE CODINES 92%		TORREDEMBARRA 12%
			SANT POL DE MAR 77%		
			SANT SADURNÍ D'ANOIA 94%		
			SEVA 78%		
			SUBIRATS 70%		
			TIVISSA 101%		

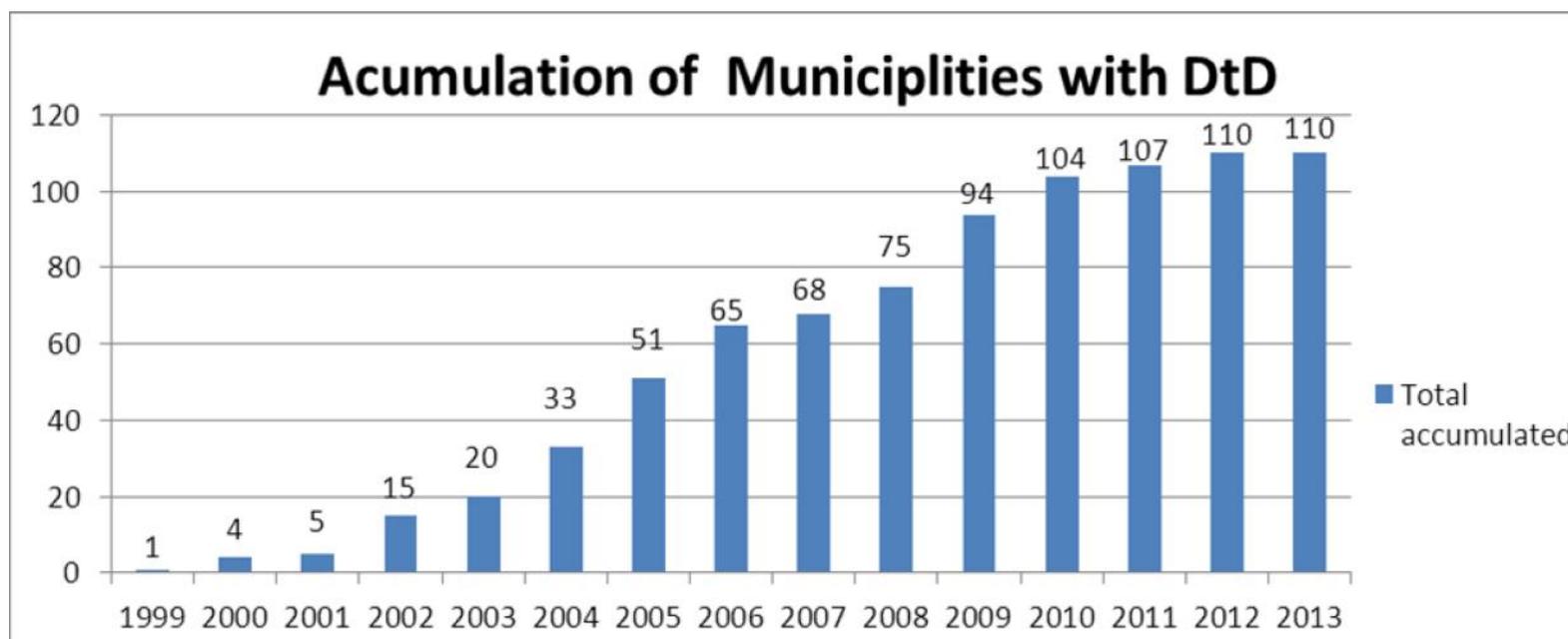
Separate Collection Door to Door in Catalonia [3]

n=115

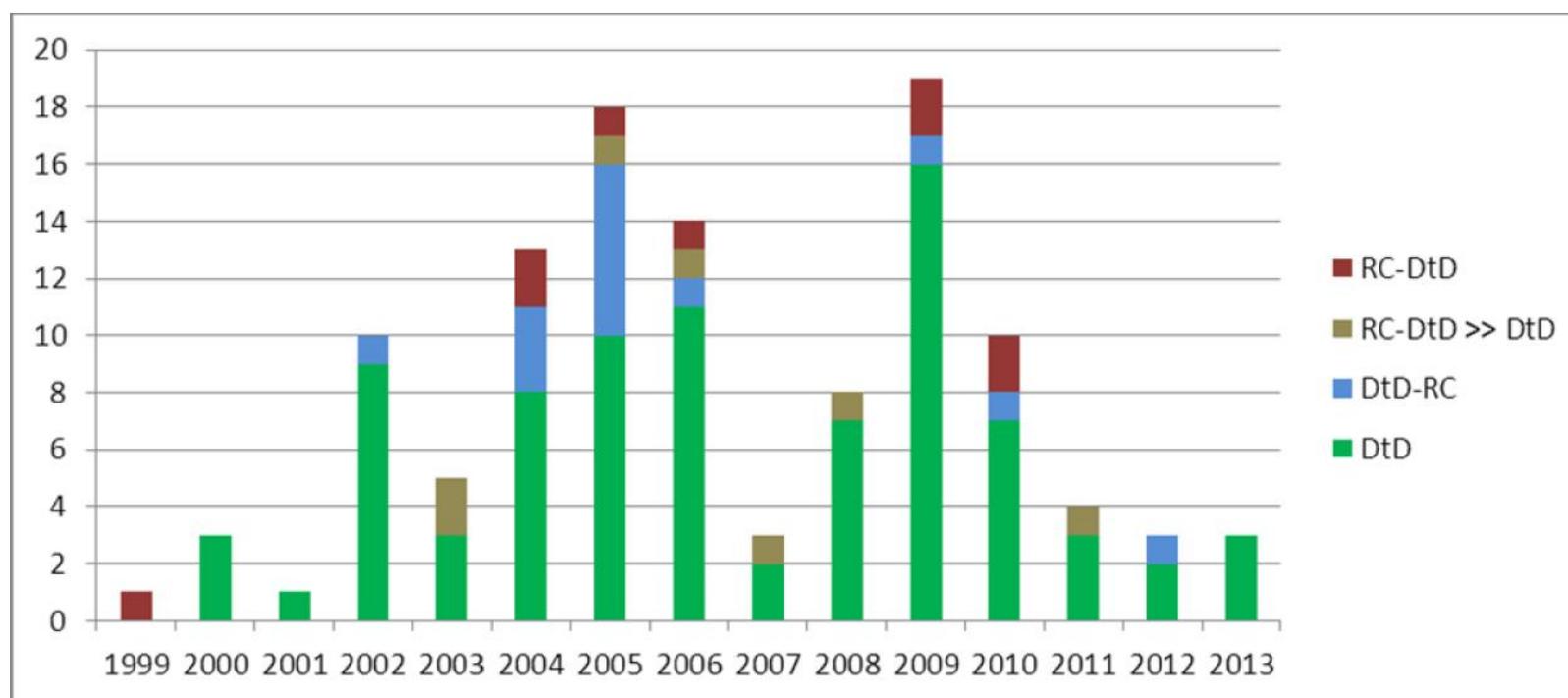


Separate Collection Door to Door in Catalonia [4]

n=110



Separate Collection Door to Door in Catalonia [5]





Separate Collection Door to Door in Catalonia [6]

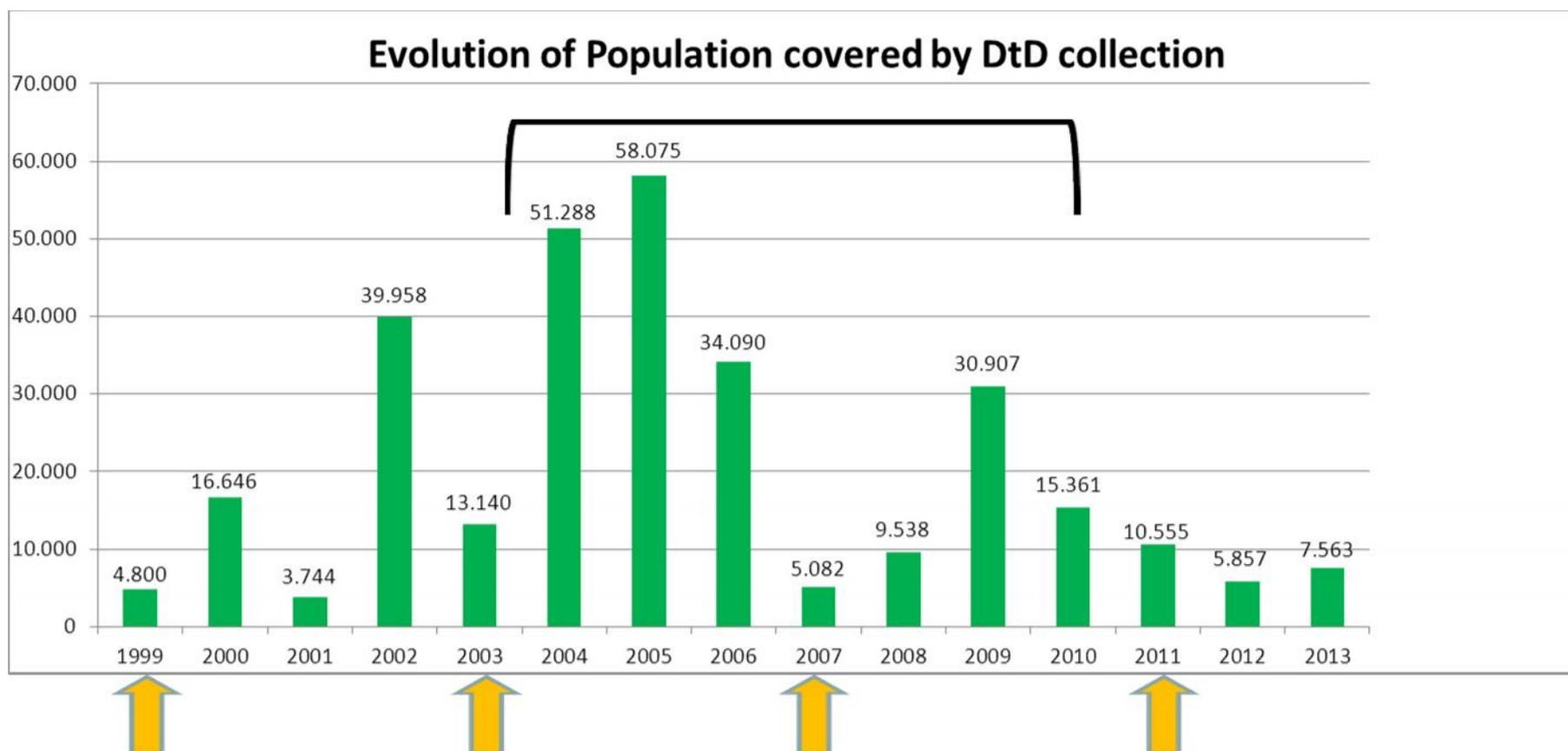
n=110 / 102



	Inhabitants_DtD	Households_DtD	Commerce/Industry_DtD
Considering 110 municipalities	306.604	131.443	3.951
Considering 102 municipalities	274.433	116.385	2.777

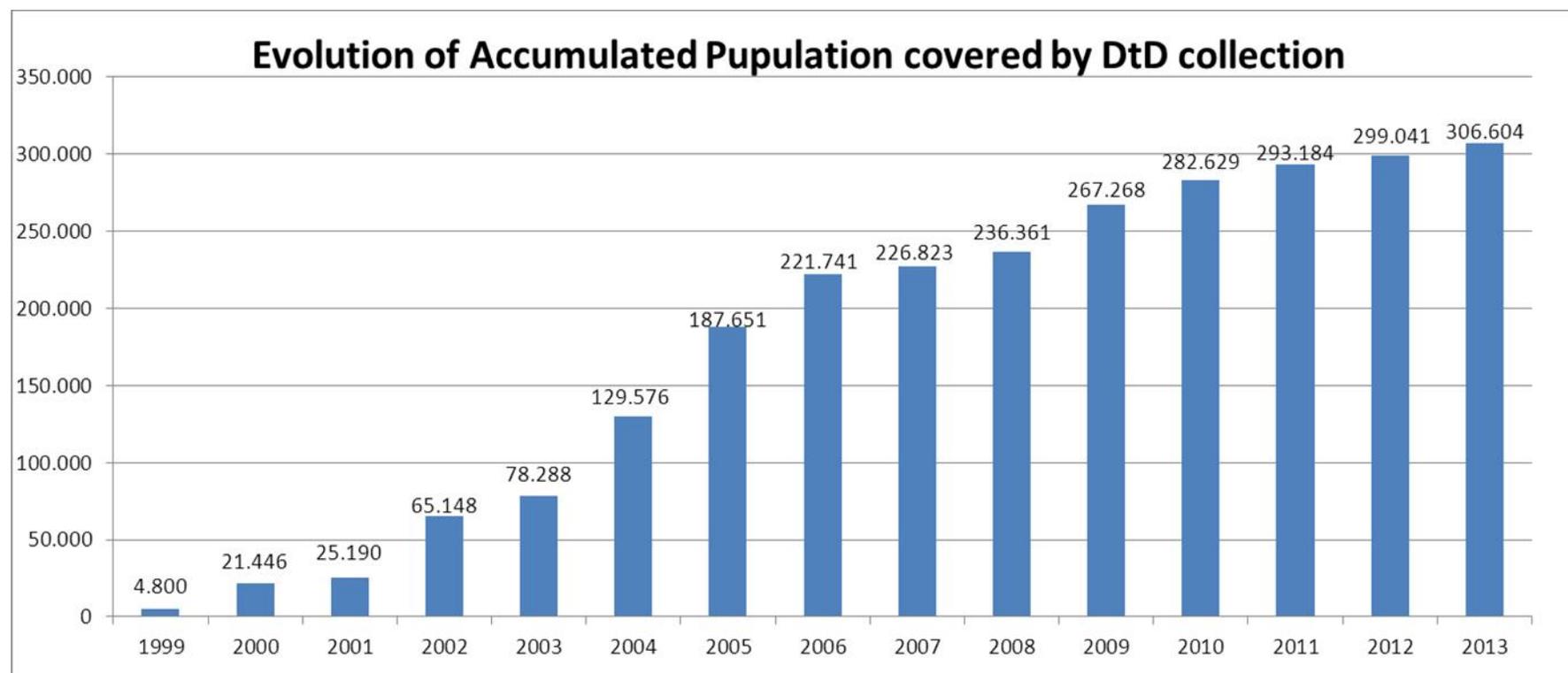
Separate Collection Door to Door in Catalonia [7]

n=110



Separate Collection Door to Door in Catalonia [8]

n=110



Separate Collection Door to Door in Catalonia [9]

n=110

	DtD	DtD-RC	RC-DtD >> DtD	AV-PAP	Total		Bio	R	G	P/C	PK	MP	FI
2 [Bio+R]	15	3	3	3	24	2 Waste Streams	●	●					
3 [Bio+MP+R]	13	1	2		16	Multiproduct	●	●				●	
4 [Bio+MP+GL+R]	1				1	Multiproduct	●	●	●			●	
3 [Bio+P/C+FIRM]	1				1	Residu Mínim	●			●			●
4 [Bio+R+P/C+PK]	21	9	1	1	32	4 Waste Streams	●	●		●	●		
5 [Bio+R+GL+P/C+PK]	31		1	4	36	5 Waste Streams	●	●	●	●	●		
Total	82	13	7	8	110								

Strategic Waste Streams

Results of Waste Generation and Separate Collection in Catalonia. 2012 [1]

Indicator MSW
Generation Expressed
in:

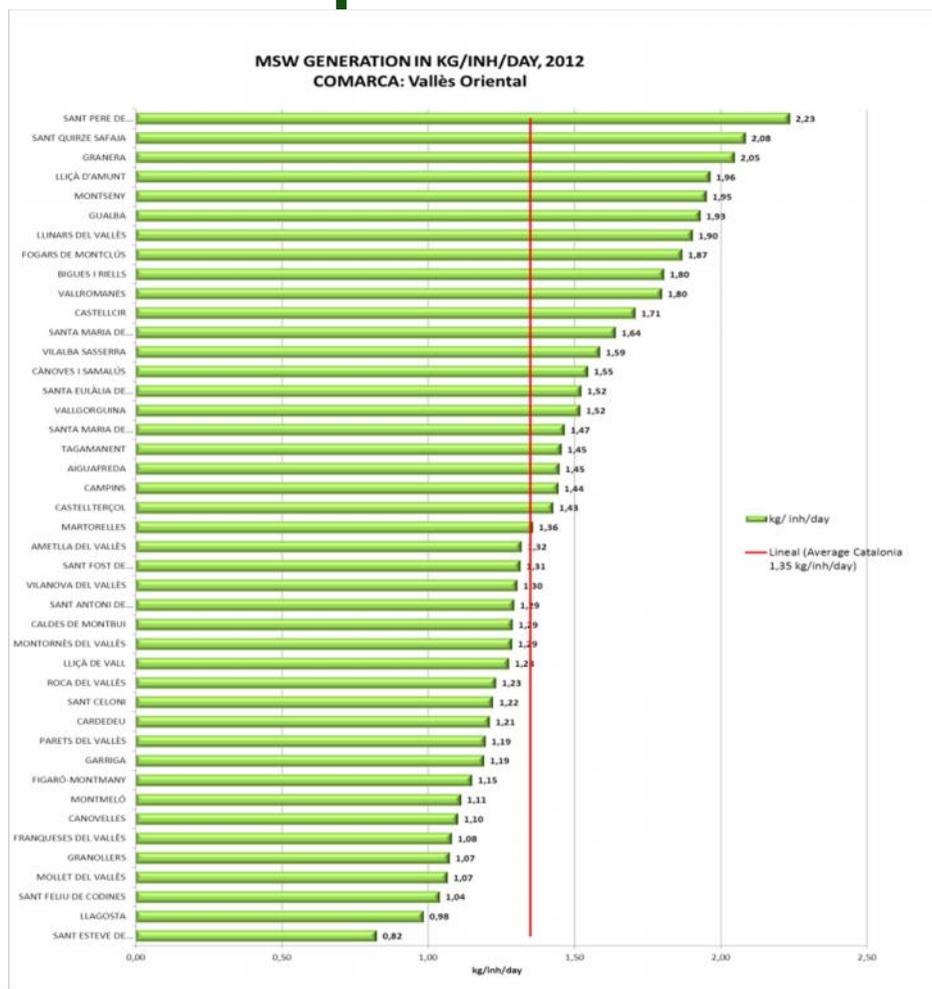
kg / inh / day

kg / inh / year

Average CAT 2012:

1,35 kg/inh/day

DtD << RC



Results of Waste Generation and Separate Collection in Catalonia. 2012 [2]

Indicator GSC and NSC

Includes:

ORDINARY: Bio, Glass, P/C, Pack.

Other: Bulky, Wood, WEEE, Metal, Cooking Oils, Textile, C&D, Haz. Waste, Batteries, Medicines, Asbestos, Mineral oils, Tyres, etc.

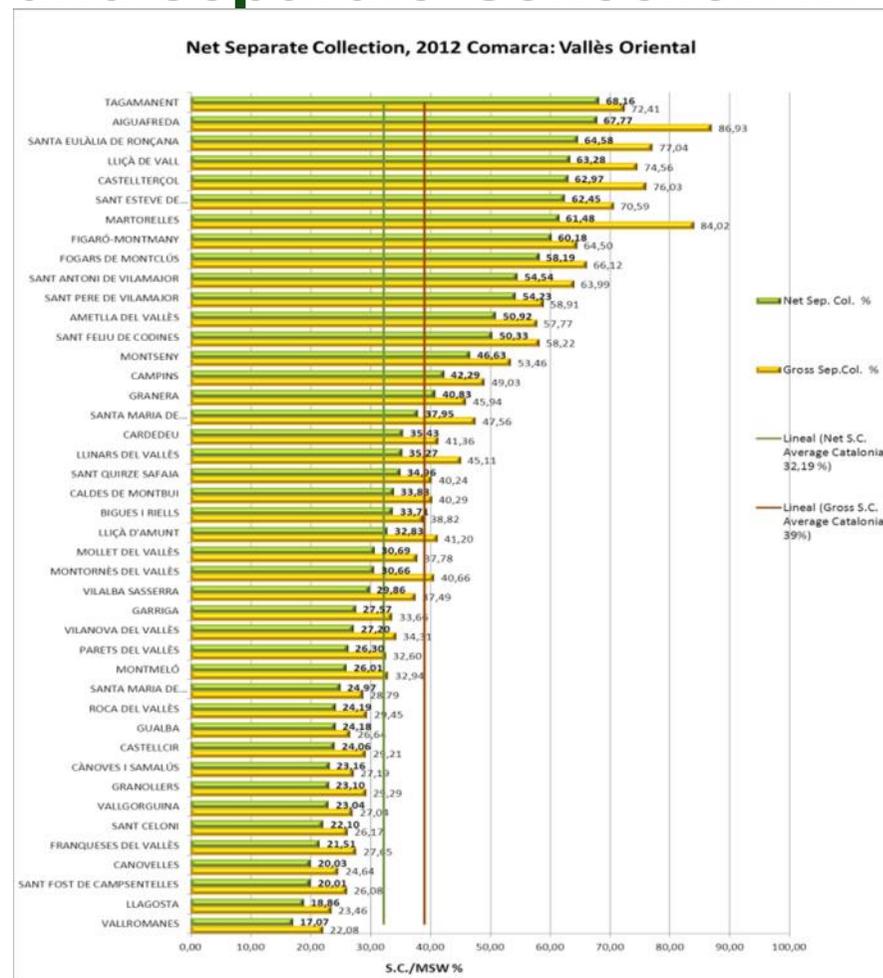
NSC = GSC - Contaminants

Expressed in: %

Average CAT 2012:

GSC: 39%

NSC: 32%



Results of Waste Generation and Separate Collection in Catalonia. 2012 [3]

Indicator NSC [Bio+Glass+P/C+Pack]

NSC = GSC - Contaminants

Expressed in: kg/inh/year

Average CAT 2012:

BIO: 51,8 kg/inh/year

P/C: 28,4 kg/inh/year

Glass: 28,5 kg/inh/year

Mixed Pack: 14,6 kg/inh/year

BIO+Glass+P/C+Pack: 123 kg/inh/year



Results of Waste Generation and Separate Collection in Catalonia. 2012 [4]

- Indicator NSC [Bio+Glass+P/C+Pack]
- NSC = GSC - Contaminants
- Expressed in: kg/inh/year
- Average CAT 2012:
 - BIO+Glass+P/C+Pack: 123 kg/inh/year
- Average CAT 2012 by Collection System
 - RC: 115 kg/inh/year
 - RC-DtD: 104 kg/inh/year
 - RC-DtD >> DtD: 176 kg/inh/year
 - DtD-RC: 183 kg/inh/year
 - DtD: 195 kg/inh/year

Carbon Footprint of MSW Management in Catalonia. 2012

[11]

Calculation tool

CO₂ ZW 

developed by

sostenipra 

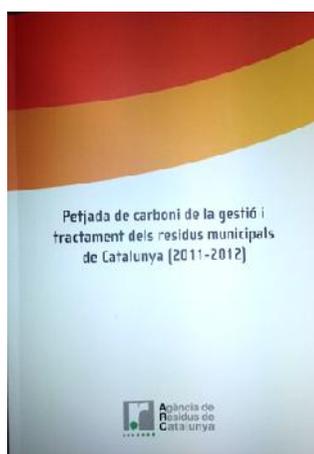
Sostenibilitat i Prevenció Ambiental

for the calculation of the

Carbon Footprint of Waste Management

Ramon Farreny | Carles M. Gasol | Xavier Gabarrell

Carbon Footprint of MSW Management in Catalonia. 2012



Total Emissions generated 2012

1.558.560 t CO₂ eq/year

Total Emissions avoided 2012

-769.167 t CO₂ eq/year

Total Carbon Footprint 2012

789.393 t CO₂ eq/year considering emissions avoided

201

Emissions generated per inhabitant 2012

206 kg CO₂ eq/inh·year

Emissions avoided per inhabitant 2012

-102 kg CO₂ eq/inh·year

Carbon Footprint per inhabitant 2012

104 kg CO₂ eq/inh·year considering emissions avoided

Emissions generated per tonne 2012

418 kg CO₂ eq/tonne·year

Emissions avoided per tonne 2012

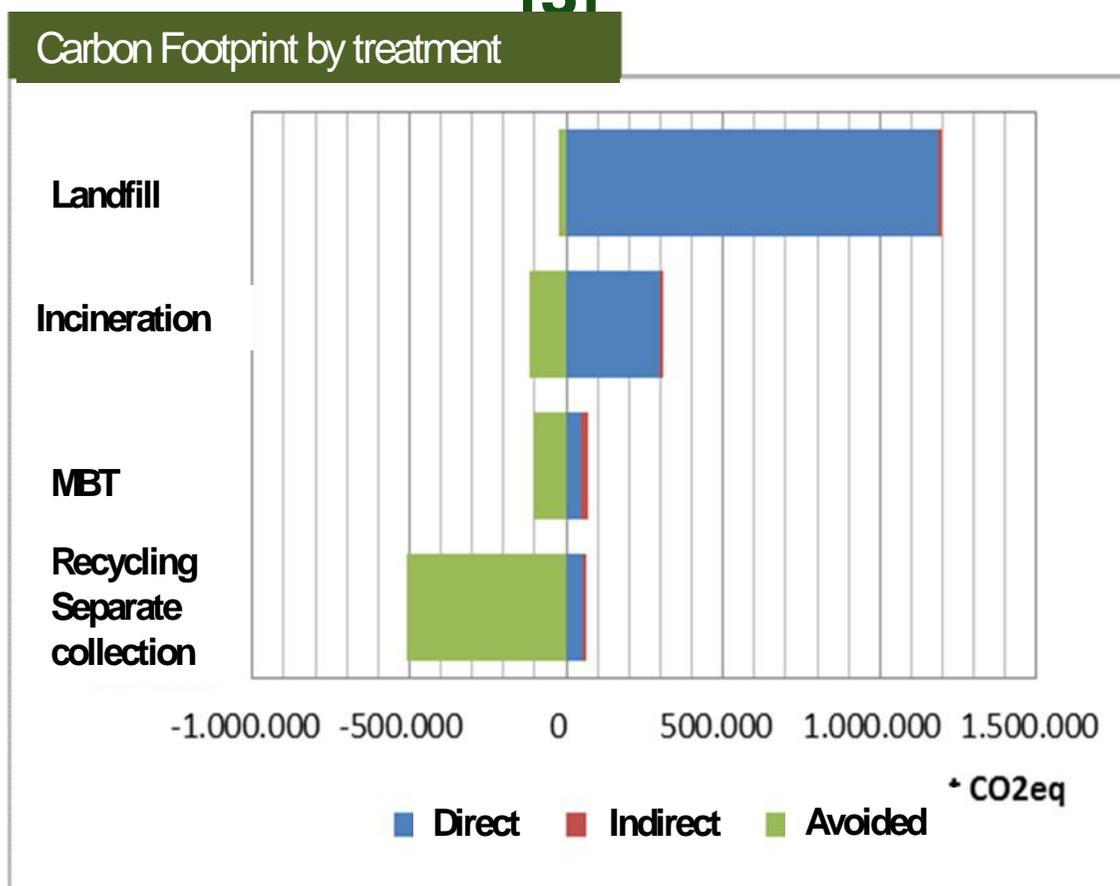
-206 kg CO₂ eq/tonne·year

Carbon Footprint per tonne 2012

212 kg CO₂ eq/tonne·year considering emissions avoided

Carbon Footprint of MSW Management in Catalonia. 2012

[3]

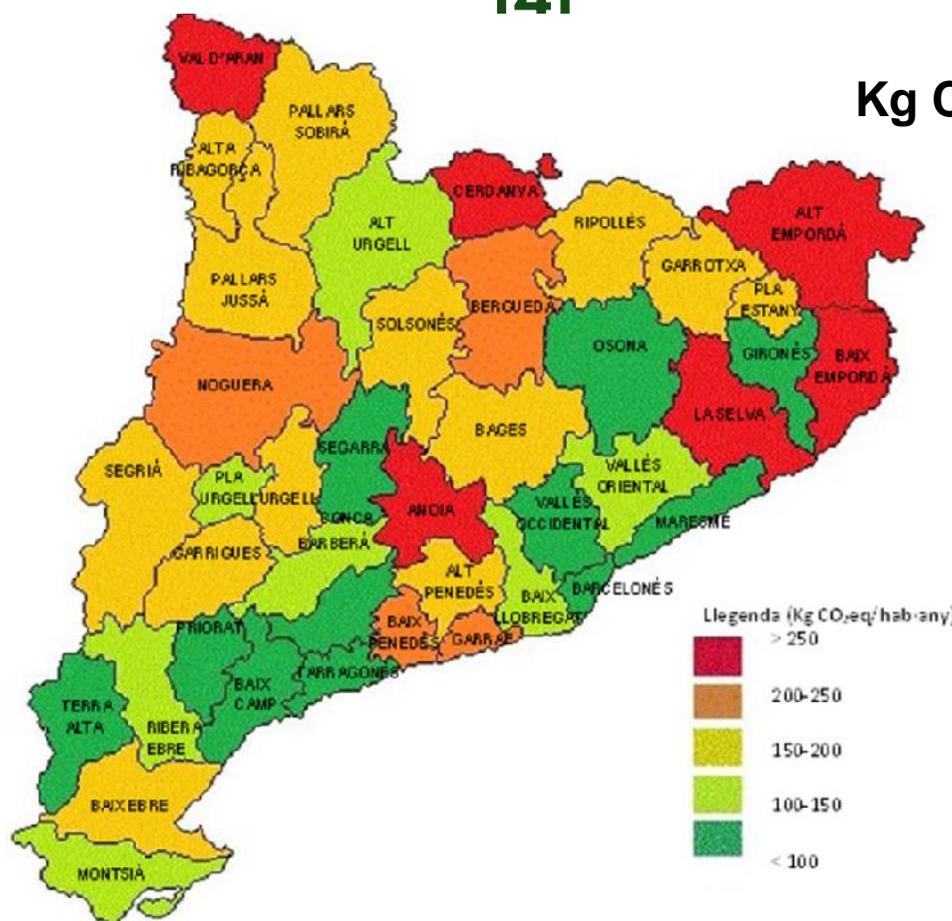




Carbon Footprint of MSW Management in Catalonia. 2012

[4]

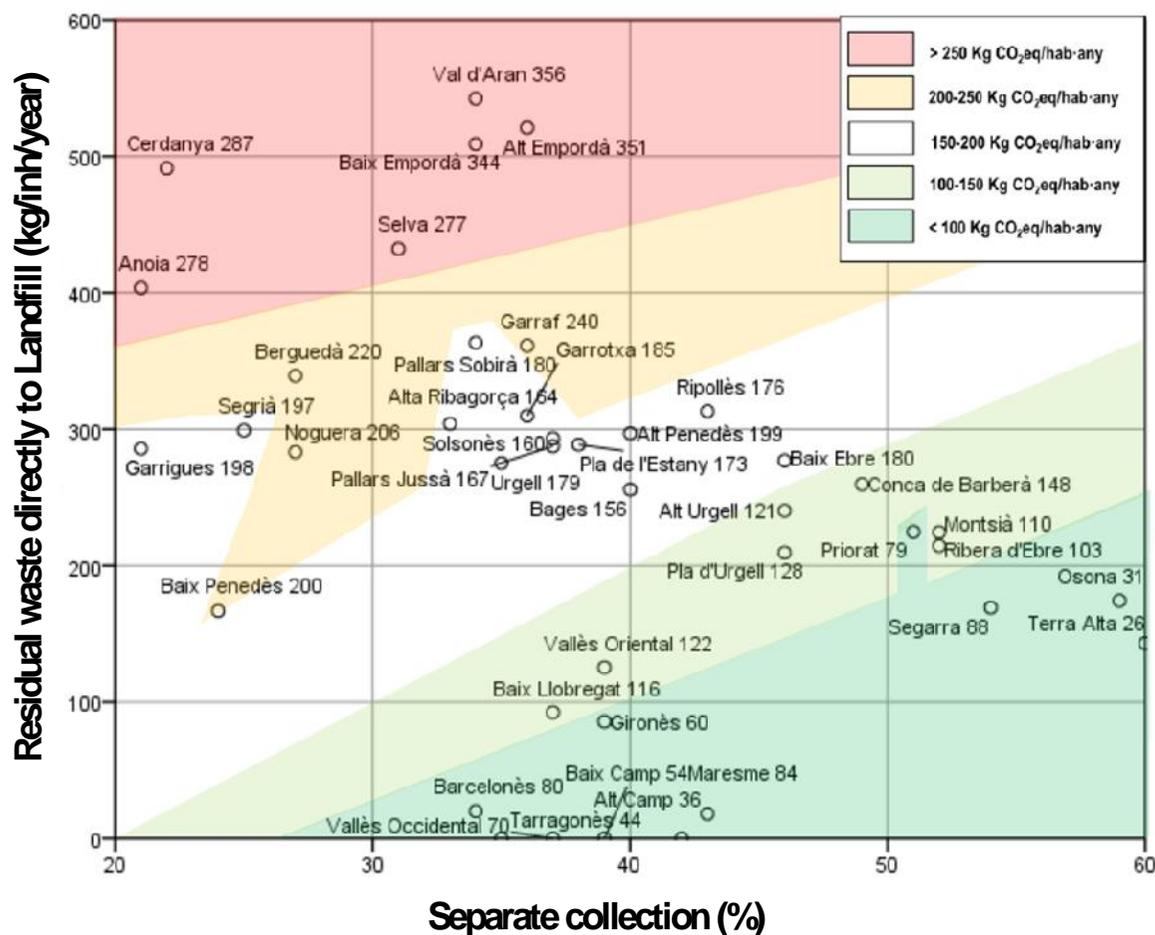
Kg CO₂ eq / inh-year





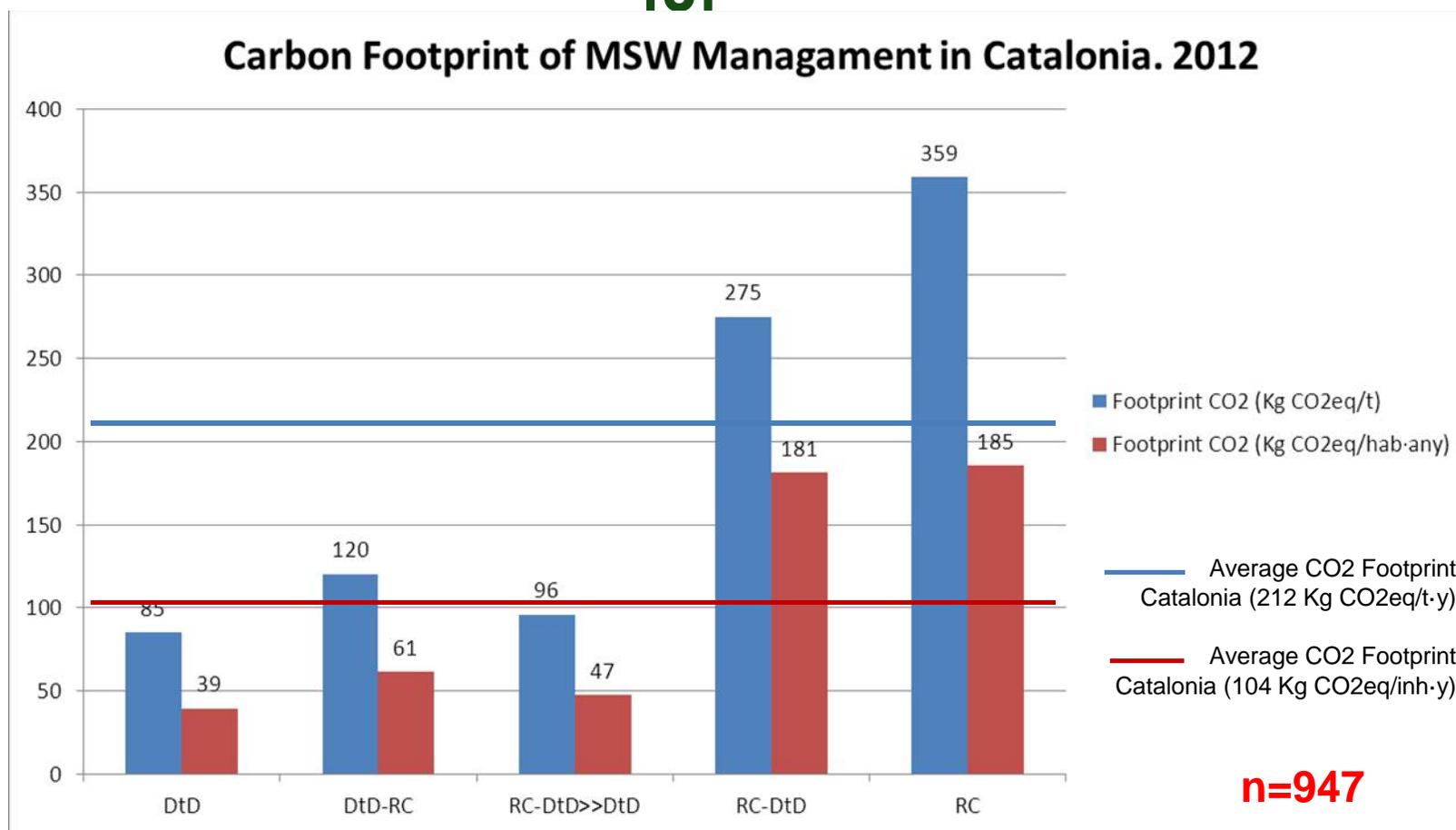
Carbon Footprint of MSW Management in Catalonia. 2012

151



Carbon Footprint of MSW Management in Catalonia. 2012

[61]





THANK YOU FOR YOUR ATTENTION !

www.regions4recycling.eu

