

THE EXPERIENCE OF THE BARCELONA METROPOLITAN AREA

**The cost of Water supply,
Wastewater and Municipal Waste
treatment**

Carles Conill i Vergés

Civil engineer

Environmental Manager of the Barcelona
Metropolitan Area

Torino, September 9th 2011

- **Introduction**
- **Environmental Services of Barcelona Metropolitan Area services:**
 - **Drinking water supply**
 - **Sewage and Wastewater treatment**
 - **Municipal Waste treatment**
- **Drinking Water tariffs**
- **Water Tax**
- **Municipal Waste Treatment Tax**
- **The Water bill**
- **Debate**

Introduction

Introduction

The Barcelona Metropolitan Area (AMB) is the Authority for Urban Planning, Housing, Transportation and Mobility, Environment and Economical Promotion of the Barcelona Metropolitan Area territory. In terms of Environment, the **AMB** is the Local and Public Authority in charge of **the drinking water supply** for the 33 City Halls of the Barcelona Metropolitan Area (BMA) and also **the sewage and wastewater treatment and its reuse**. It manages **the Municipal Waste Treatment and the coordination of the municipal services**, as well.



Introduction

Local Authority created by a Catalan Law in 2010 over the Barcelona Metropolitan Area.

36 City Halls

Surface: 585,4 km²

Inhabitants: 3.192.778 (2009)

Population density: 5.454 inhab/km² (> 15.000 in the city of Barcelona)

Municipal waste produced in 2010: 1.577.203 Tn

Drinking water consumption per inhabitant and day in 2010:

Household: 107,45 l/ inhabit. day

(108l in 2009, 110 l in 2008, 114 l in 2007, 116 l in 2006)

All uses: 165 l/ inhabit. day

Drinking water provided: 231,5 hm³

Wastewater treated: 287 hm³

Staff of the Environment Area: 100 people



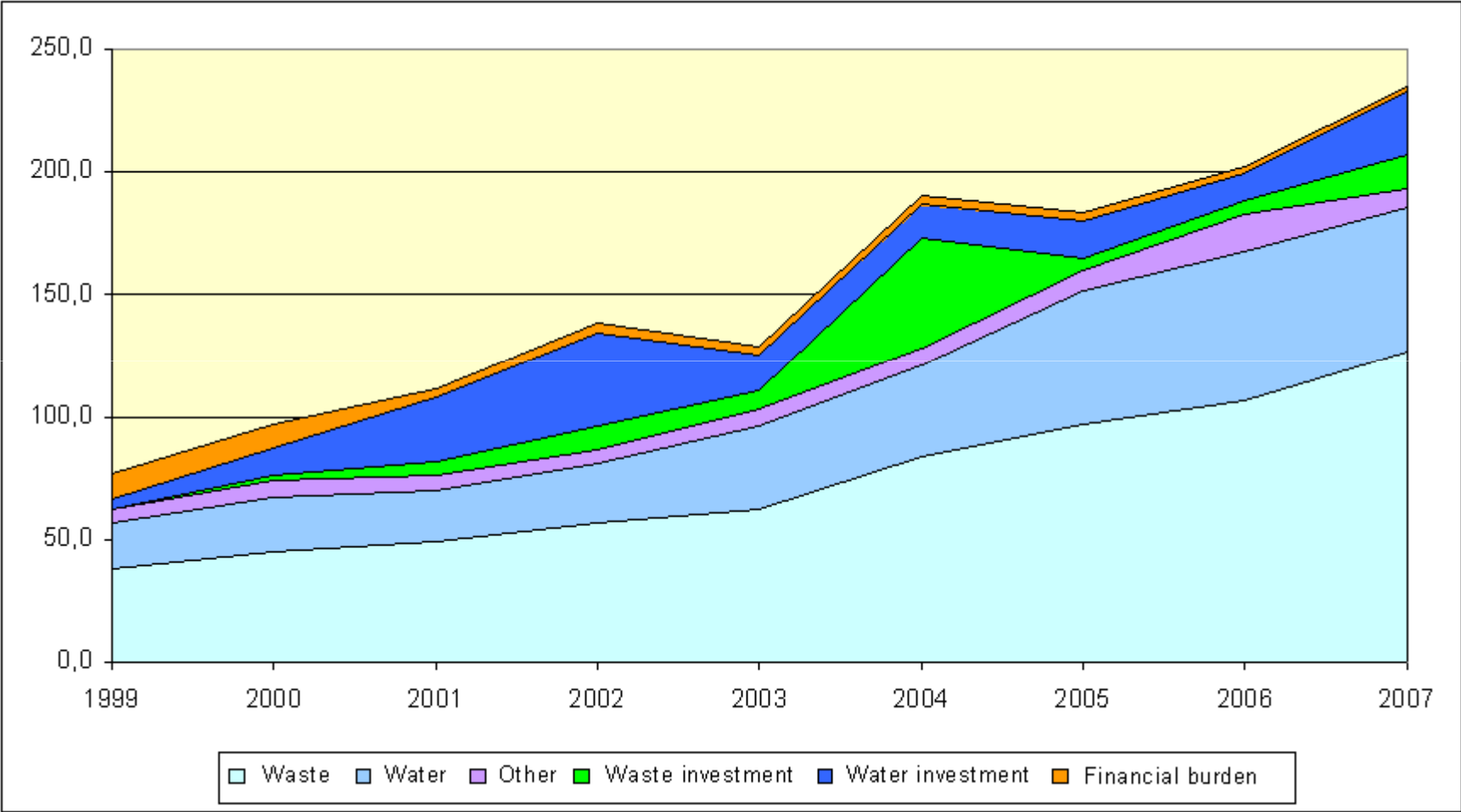
Introduction

2010 Budget: 238,6 million euro

	Waste	Water	General	Total
Current expenses	146,3	70,5	1,6	218,4
Financial expenses	0,4	0,0	0,1	0,5
Fixed expenses	7,4	12,1	0,2	19,7
Total	154,1	82,6	1,9	238,6

Introduction

Expenses



Introduction

WATER TAX:

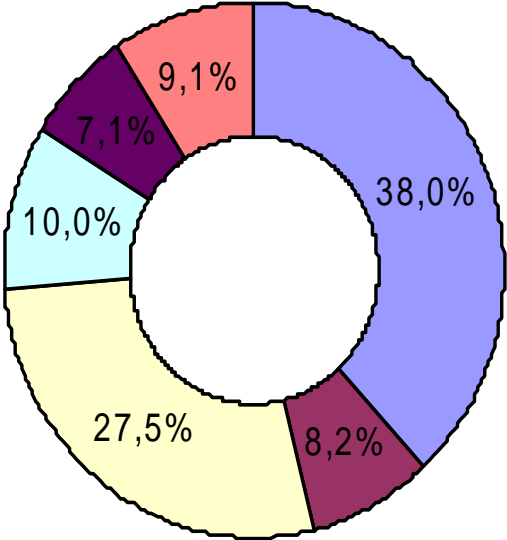
raised by Catalan Regional Government through the **Catalan Water Agency** to finance water cycle services:

- Investment and operating expenses of sewage and wastewater treatment systems.
- Pollution prevention and maintenance of the ecological flow in rivers.
- Drinking water supply, recovery of underground aquifers and reuse of water.
- Hydrological planning and inspection expenses.

Municipal Waste Treatment Tax (TMTR):

raised by **EMA** to finance the services of recycling, treatment, valorization and landfilling of municipal waste and waste prevention campaigns.

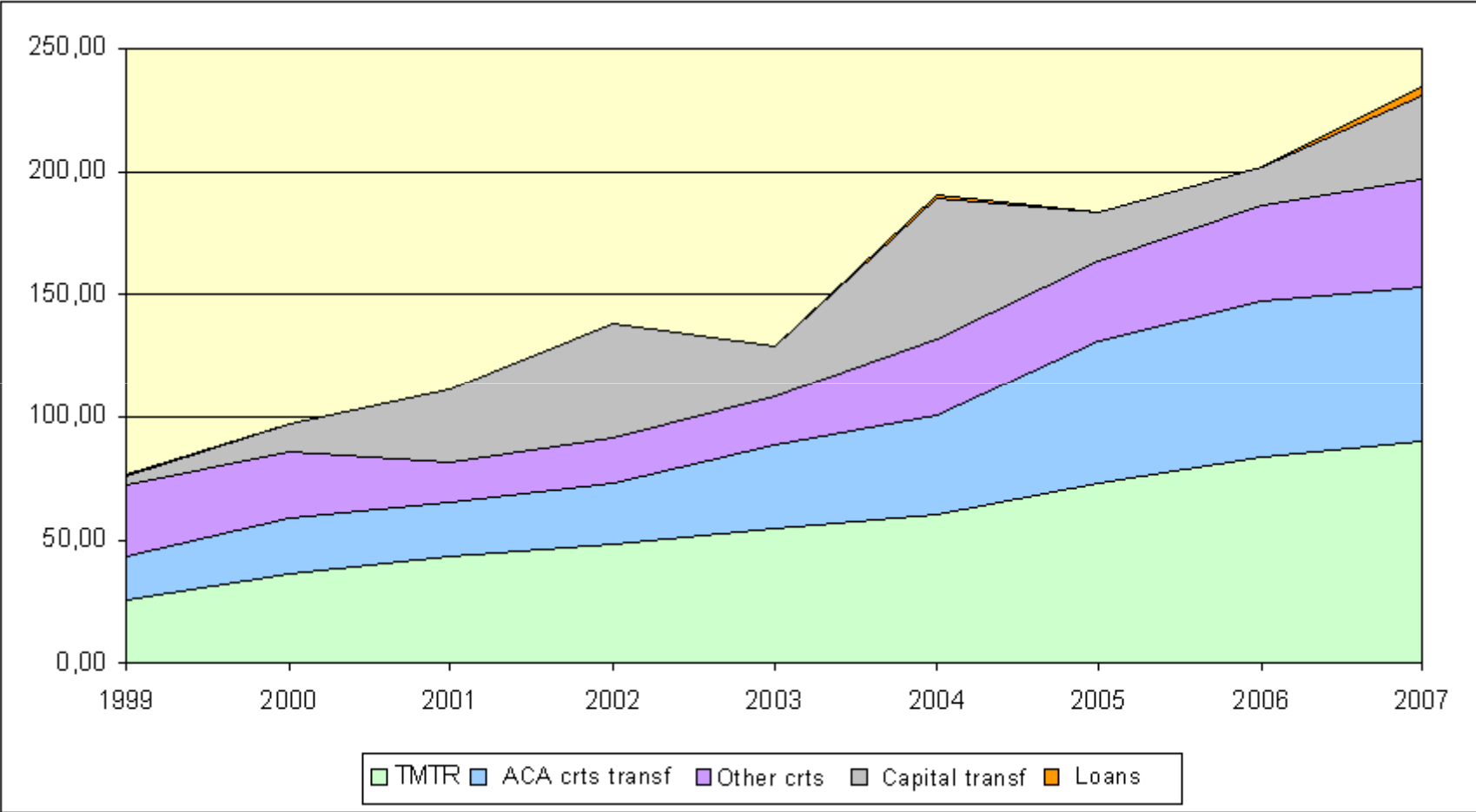
Introduction



- Waste treatment rate
- Integrated systems management
- ACA current transfer
- Other current revenue
- ACA capital transfer
- Other capital revenue

Introduction

Incomes



**Environmental Authority of
Barcelona Metropolitan Area
Services**

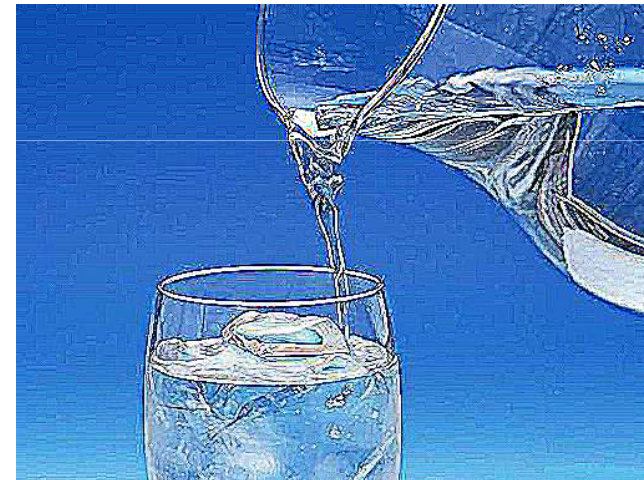
Drinking water Supply

The water cycle services

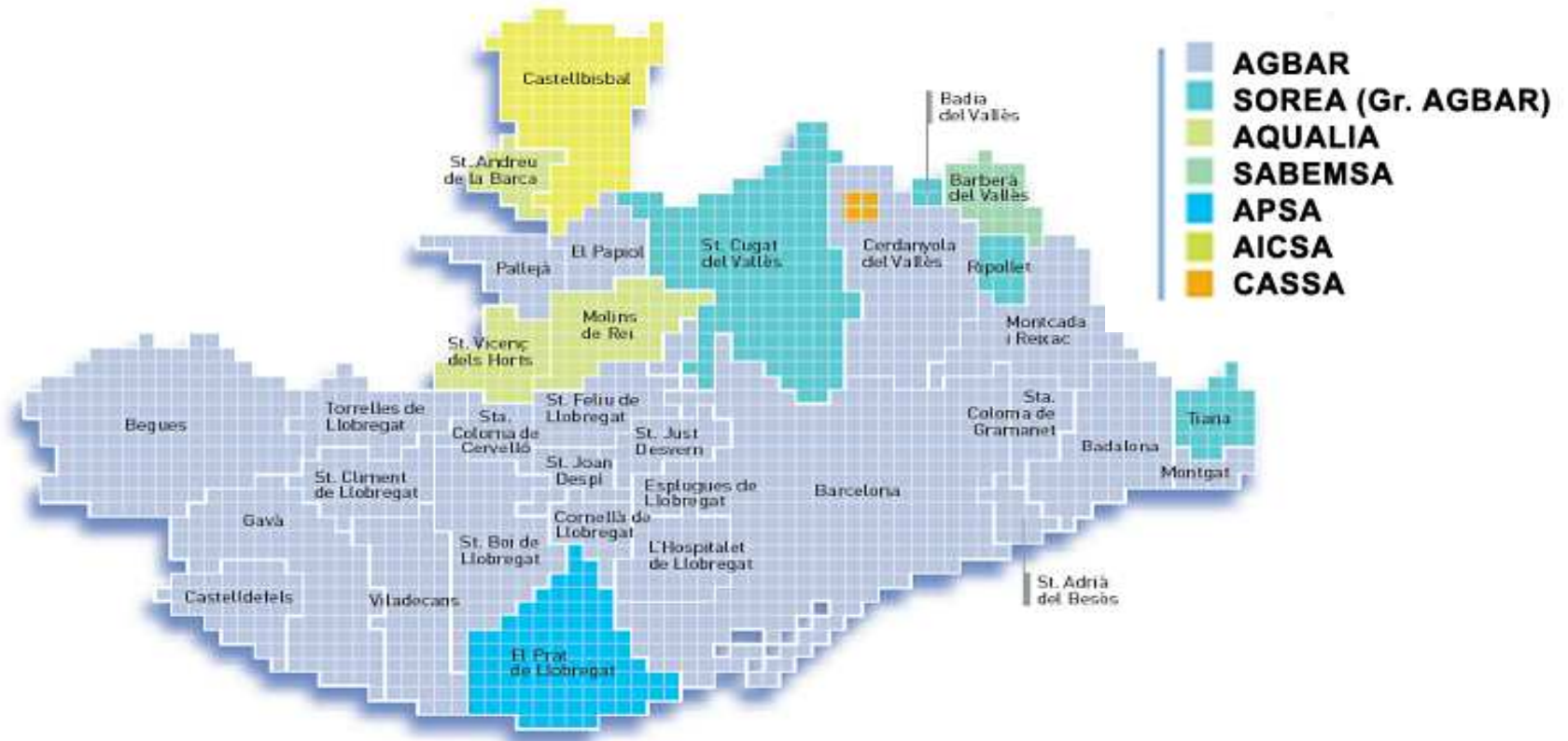
- Drinking water distribution
- Wastewater treatment

On drinking water distribution the AMB is the public administration in charge of regulating and managing:

- Services rules.
- Water tariffs authorization.
- Companies Investment authorization.



Drinking Water Supply



	Water BMA (hm3) 2010
Served	231,5
Consumption	188,2
Household Consumption	107,4 (l/inhabitant per day)

Drinking Water supply

Goals:

- To improve the quality of the services provided to the households and businesses.
- To incorporate new resources from underground water.
- To optimize the service provision.

Sewage and Wastewater treatment

EMA manages 300 Km of main drains or sewers that collect wastewater from the local nets of the 33 Municipalities and does its treatment in 7 metropolitan plants.



Treatment 2010	
Global Flow (hm ³ per an)	287
Besòs plant	50,3%
Prat plant	30,2%

Sewage and Wastewater treatment

The 2010 budget for the management of these services is **82,6** million euro, a **34,4%** of EMA's overall budget. The financing is provided by the Catalan Water Authority that raises the Water Tax.

The planning is done directly by EMA and its management instruments are:

- **The Metropolitan Sanitation Enterprise (EMSSA):** A public company that manages main sewers and wastewater plants
- **Barcelona Sewer Enterprise (CLABSA):** A public-private enterprise that manages main storm drains and the sewer net of Barcelona city

Sewage and Wastewater treatment



Prat de Llobregat plant



Besòs plant

Sewage and Wastewater treatment

The production of regenerated water, meaning water prepared to be reused, was 10 million m³ in 2010, (33,1 in 2008) mainly from the Prat plant. Regenerated water was reused for environmental uses, underground water recharge, irrigation and to watering public parks. The Prat regeneration plant is the most advanced in the south of Europe, and it is equipped with membrane filters, ultraviolet radiation and reverse osmosis.



Sewage and Wastewater treatment

Goals included in the EMA Program 2008 - 2011:

- To improve coordination between local and metropolitan sewer nets.
- To optimize the sanitation service provision.
- To make a constant effort to minimize environmental impacts, mainly bad odours, of our plants.

Municipal Waste Treatment

EMA has also the responsibility for the treatment of waste that is collected in the 33 municipalities of the BMA. In 2010, the amount of waste generated was 1.577.203 T.

We use different ways to provide this service:

- Public enterprise: TERSA
- Joint ventures: Ecoparcs
- Private enterprises: Can Mata (Els Hostalets) landfill.



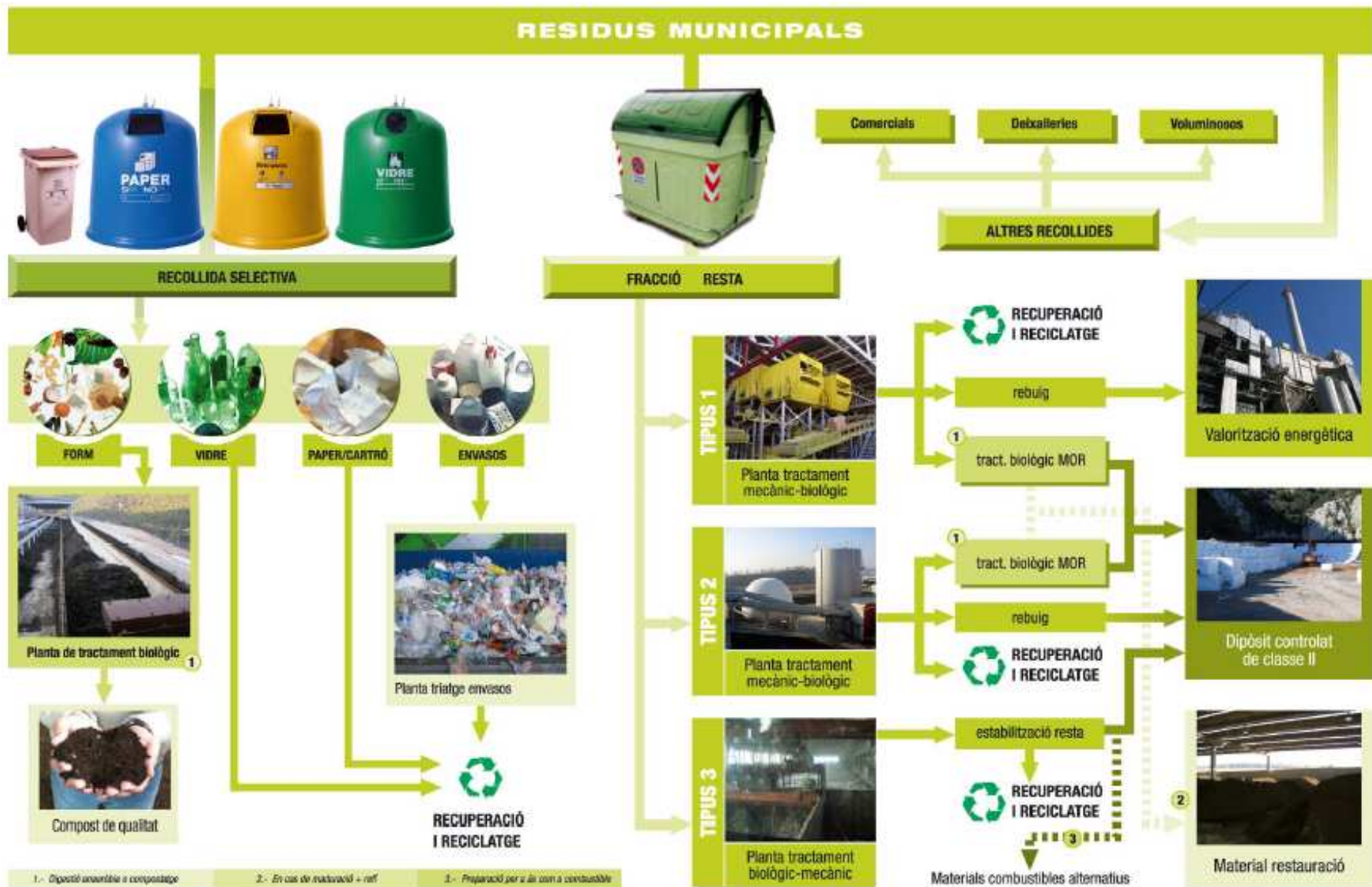
Municipal Waste treatment

The Municipal Waste Treatment budget for 2010 is **154,1** million euro, which is the **64,6%** of the EMA's overall budget.

The financing comes from:

- Municipal Waste Treatment Tax (TMTR) contributes with **117,4 M.€**
- Integrated Management Systems (mainly ECOEMBES) with **26,1 M. €**.





Municipal Waste treatment



Municipal Waste treatment



Municipal Waste treatment

Goals included in the new PMGRM 2009-2016:

- To prevent both the amount and hazardousness of municipal waste (waste prevention strategies).
- To achieve 50% of waste recycling in 2016.
- To treat 100% of municipal waste and to guarantee a stable treatment for the plants refusal through its energetic valorisation (turning waste into energy).
- To reach the economical sustainability of the treatment system.