



From waste management to resource management

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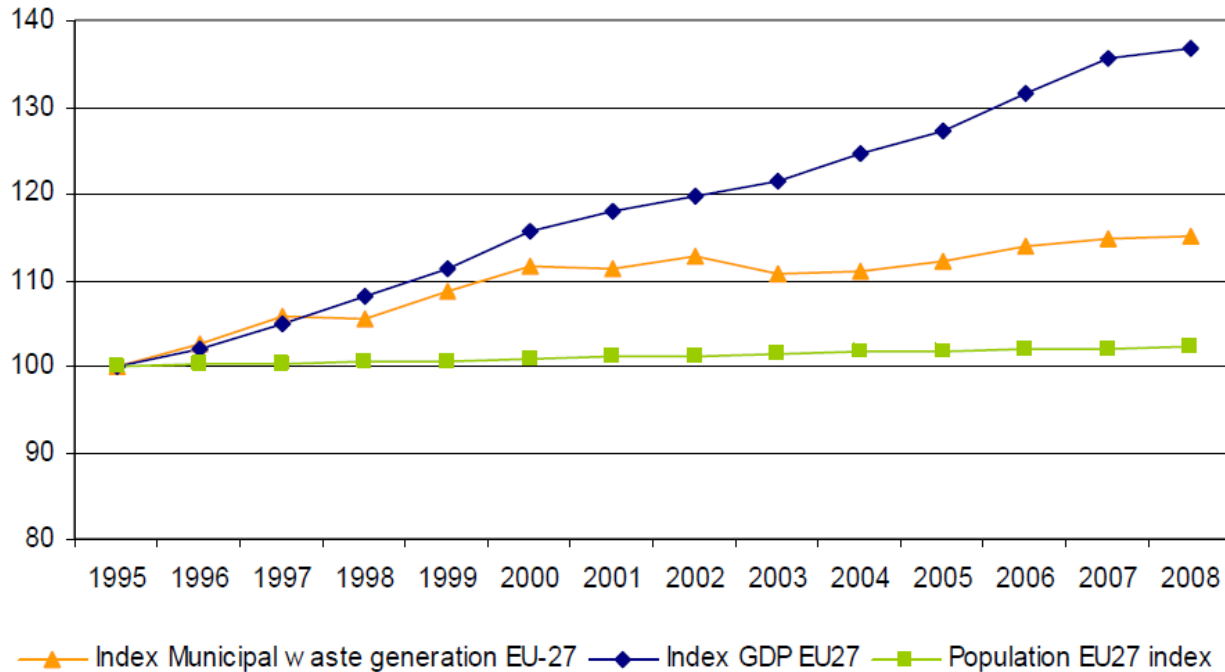
Waste production in EU - 2008

European Commission estimates that **every year** in Europe:

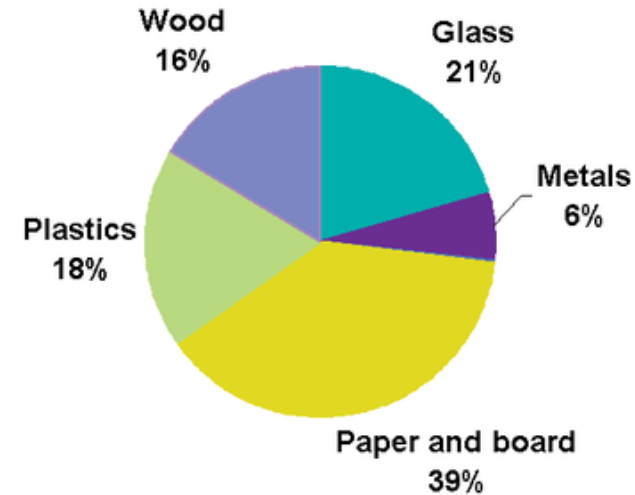
16 tons of goods are **consumed** for each person

6 of which are **wasted**

3 tons of which are **landfilled**

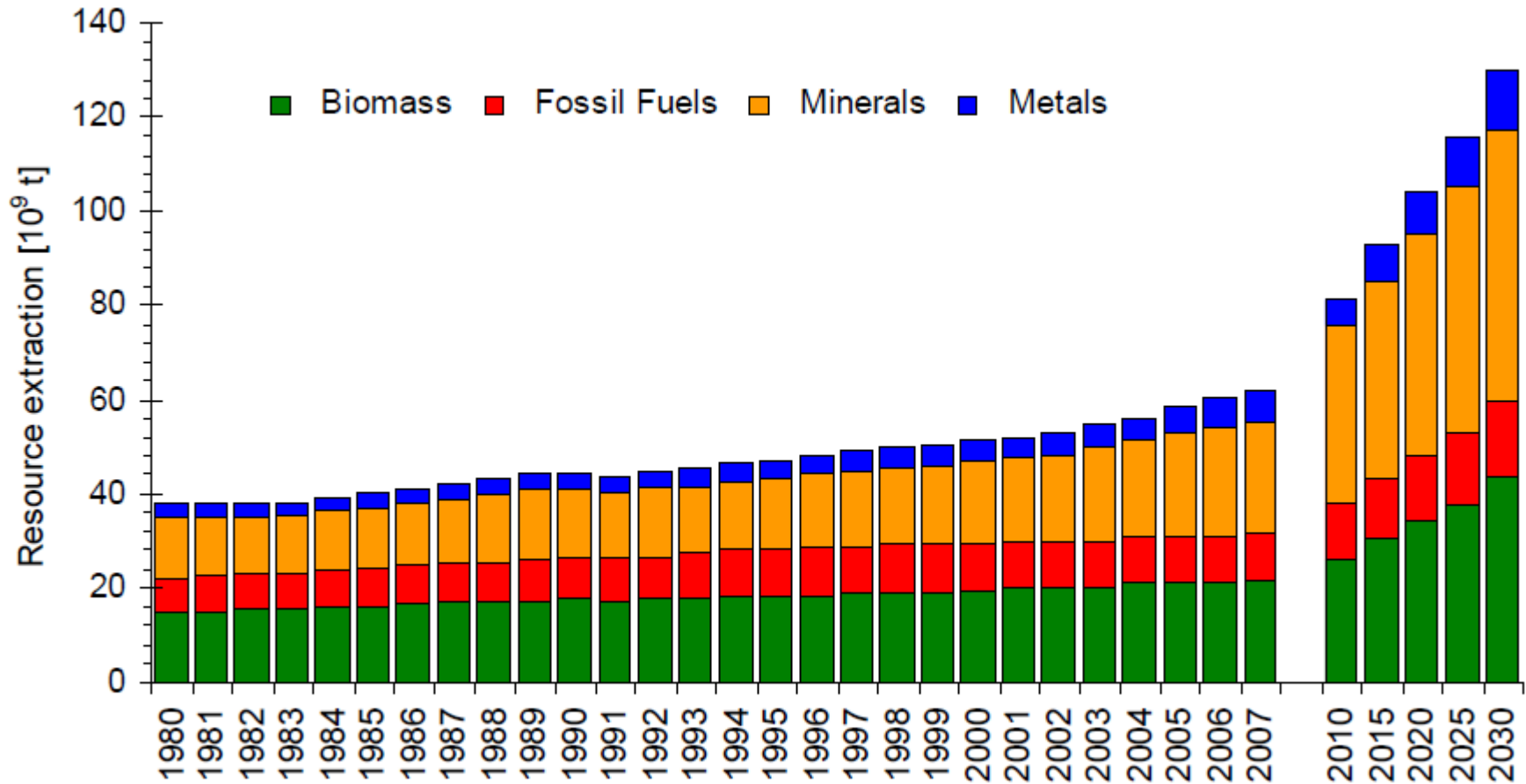


Packaging waste produced



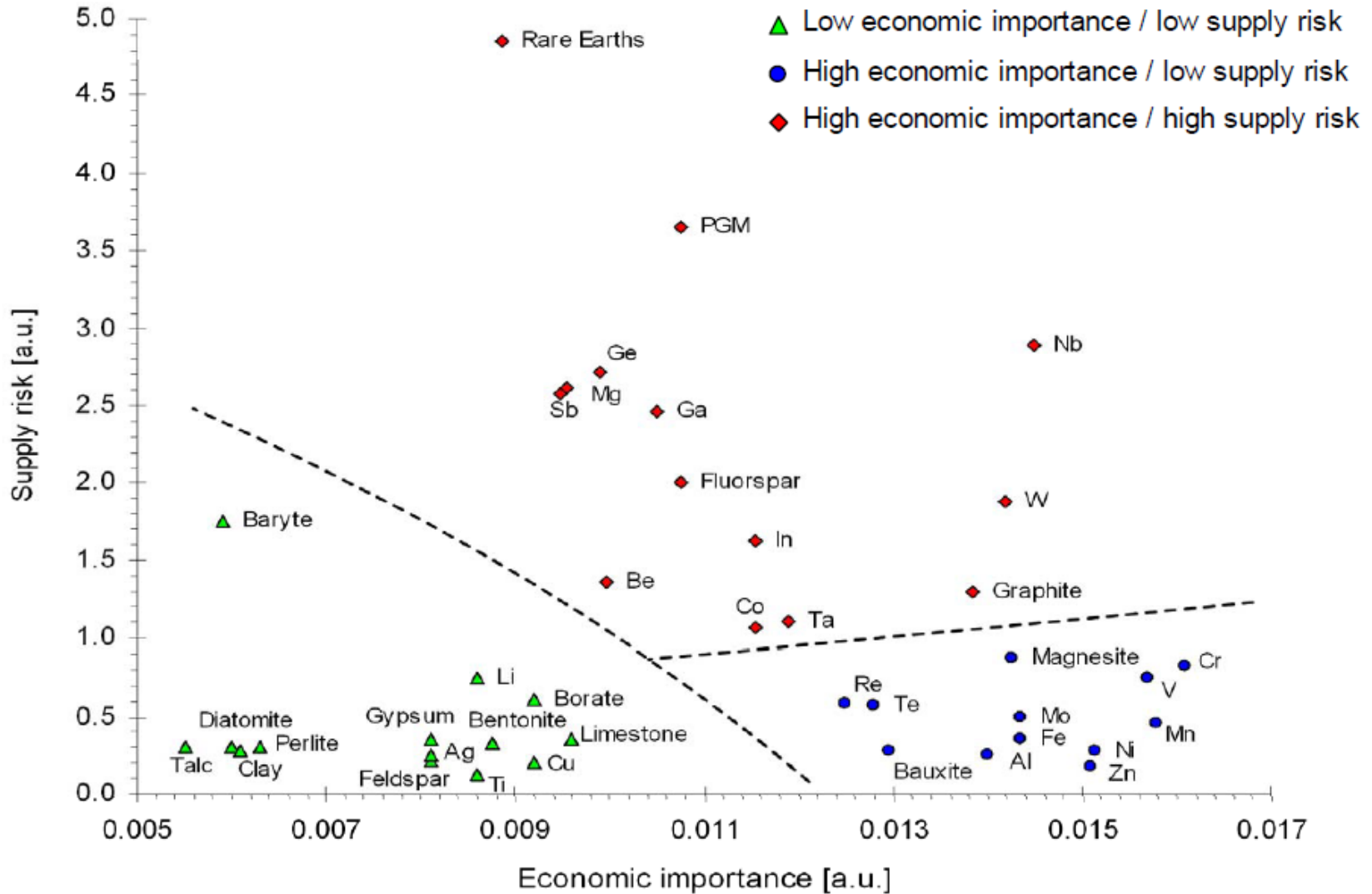
Source: Eurostat - Data Centre on Waste

Resource extraction



UN figures - 2010

Economic importance and supply risk



Waste in European legislation

			Min Recovery	Min. Recycling	Collection rate
Packaging	1994/62/EC	2002	50%	25%	
	2004/12/EC	2008	60%	55%	
WEEE	2002/96/EC	2006	70%	50%	4 kg/inh/y
Tires	1999/31/EC	2006	Zero Landfill		
Biowaste	1999/31/EC	2006	75% less than 1995		
		2009	50% less than 1995		
		2016	35% less than 1995		
WFD	2008/98/EC	2015	Separate collection of plastic, metal, paper, glass		
		2020	50% of HH waste		
		2020	70% demolition waste		

Extended Producer Responsibility

OECD definition

“Extended Producer Responsibility is a concept where manufacturers and importers of products should bear a significant degree of responsibility for the environmental impacts of their products **throughout the product life-cycle.**”

Producers accept their responsibility when designing their products to **minimise life-cycle environmental impacts**, and when accepting legal, physical or socio-economic responsibility for environmental impacts that cannot be eliminated by design.

European legislation has applied this principle to: hazardous waste (RoHS), electric and electronic waste (WEEE) and vehicles (ELV); also Packaging Directive and Waste Framework Directive are inspired to this principle.

Packaging regulation

Directive 2004/12/EC of the Parliament and of the Council of 11 February 2004:

④ Plastic target at 2008 → **22,5%**

WFD

④ Waste hierarchy

④ **Recycle target 50% for all materials by 2020**



Stimulate Eco design
Enhance separate collection and recycling
Polluter pays principle
Green Public procurement

Compliance Schemes



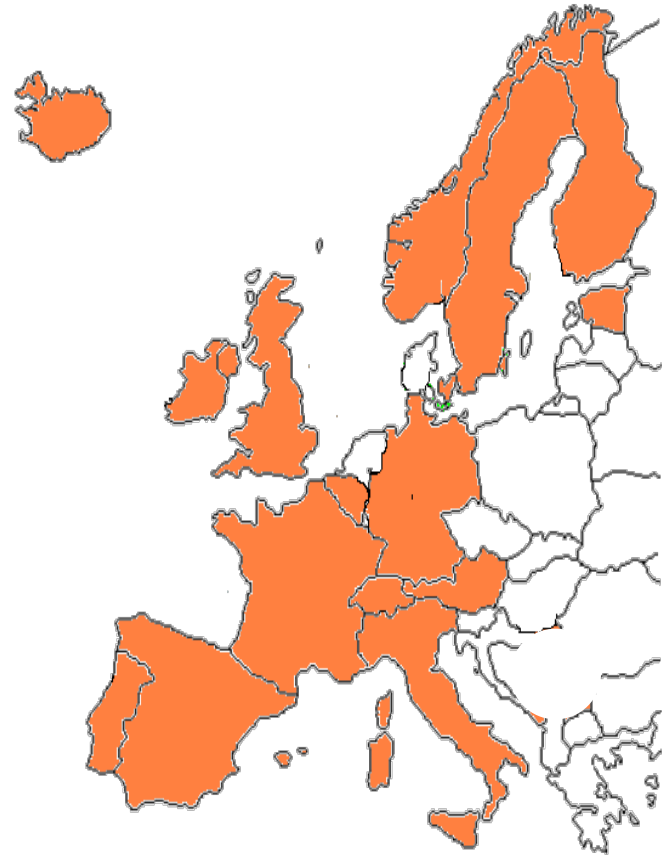
Source: Pro Europe - 2010

European countries have different compliance schemes; 33 of them are member of PRO EUROPE 26 using the Green Dot System.

- Dual model (Germany – Austria)
full responsibility for collection, sorting and recycling; separate collection systems besides local authorities collection.
- Shared model (France, Italy, Spain ...)
shared responsibility between industry and local authorities, common agreements for collection.
- Free Market (UK)
No link between collection and industry at local level – PRN system in place

Managing plastic packaging waste - EPRO Association

- EPRO, European Association of Plastics Recycling and Recovery Organisations
- Members have to give in their country guarantee on recycling of plastic packaging waste
- 17 members – 15 countries
- Aim: To exchange experiences and thus optimise national effectiveness through international co-operation



www.epro-plasticsrecycling.org

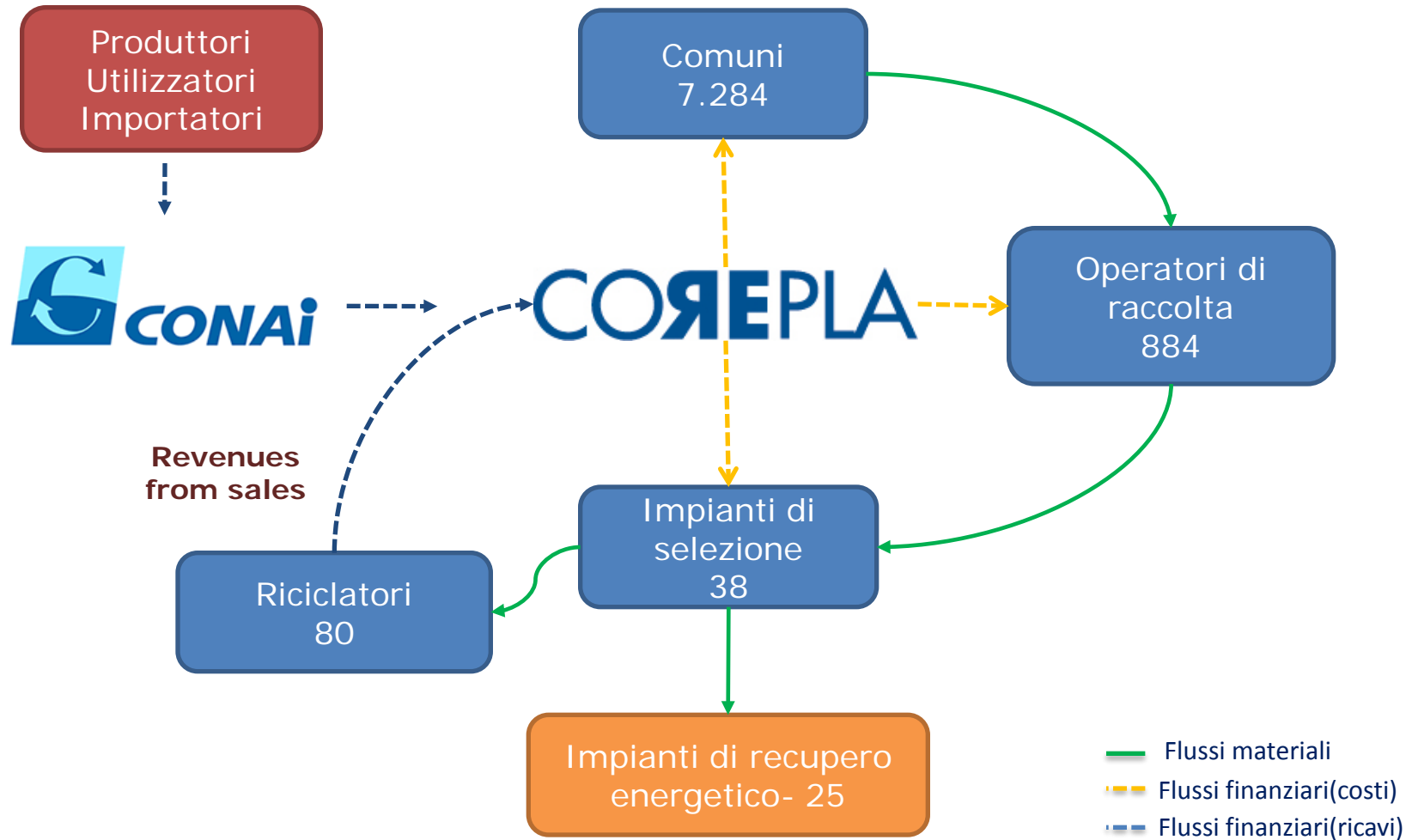
Prevention as stage of resource management

- Light weighting activities
- Consumers awareness
- Sustainability and carbon footprint
- Recyclability by design guidelines
- Activities with brand owners



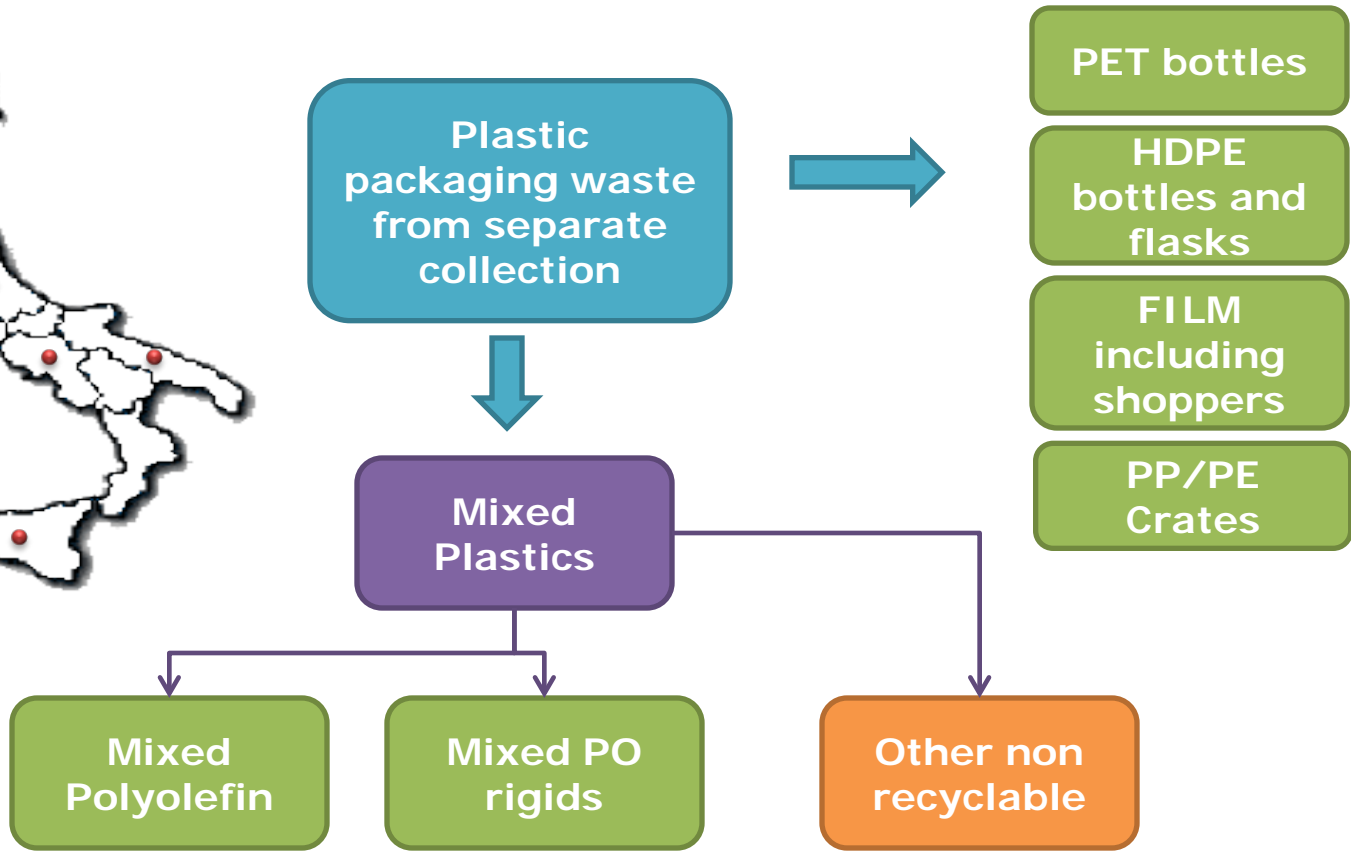
YES	CONDITIONAL	NO
<p>Generally the material is compatible with or separable from the main material and is acceptable in industrialised recycling processes in large volumes.</p>	<p>Use of material in general is undesirable and could cause severe recycling issues if used in large volumes. Under certain specific conditions the material may be recyclable, but this would need to be confirmed with the appropriate recycling organisations and / or recyclers.</p>	<p>Material is generally not compatible with or separable from the main material in current industrialised recycling processes and will therefore cause severe recycling issues / cause rejection of recycleate if present even at low volumes.</p>

Le attività di Corepla



Dati al 31/12/2010

- Corepla operates through about 40 sorting plants all over the country
- Material from separate collection are sorted into fractions that can be recycled or recovered in energy recovery plants.



Recycle
 Energy recovery

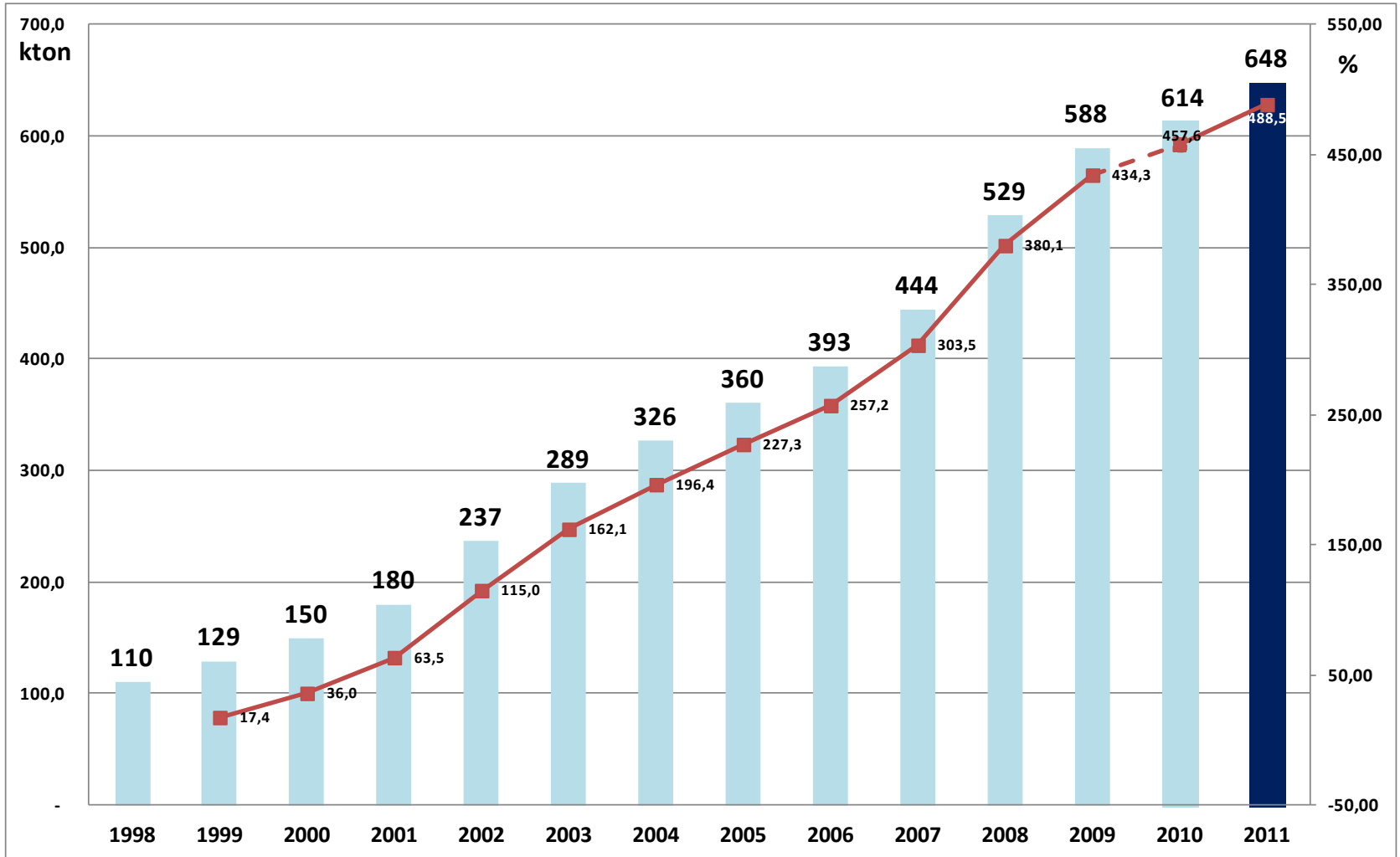
Collection System

Each Municipality can decide how to collect plastic packaging waste within a national agreement called “Accordo ANCI/CONAI”.

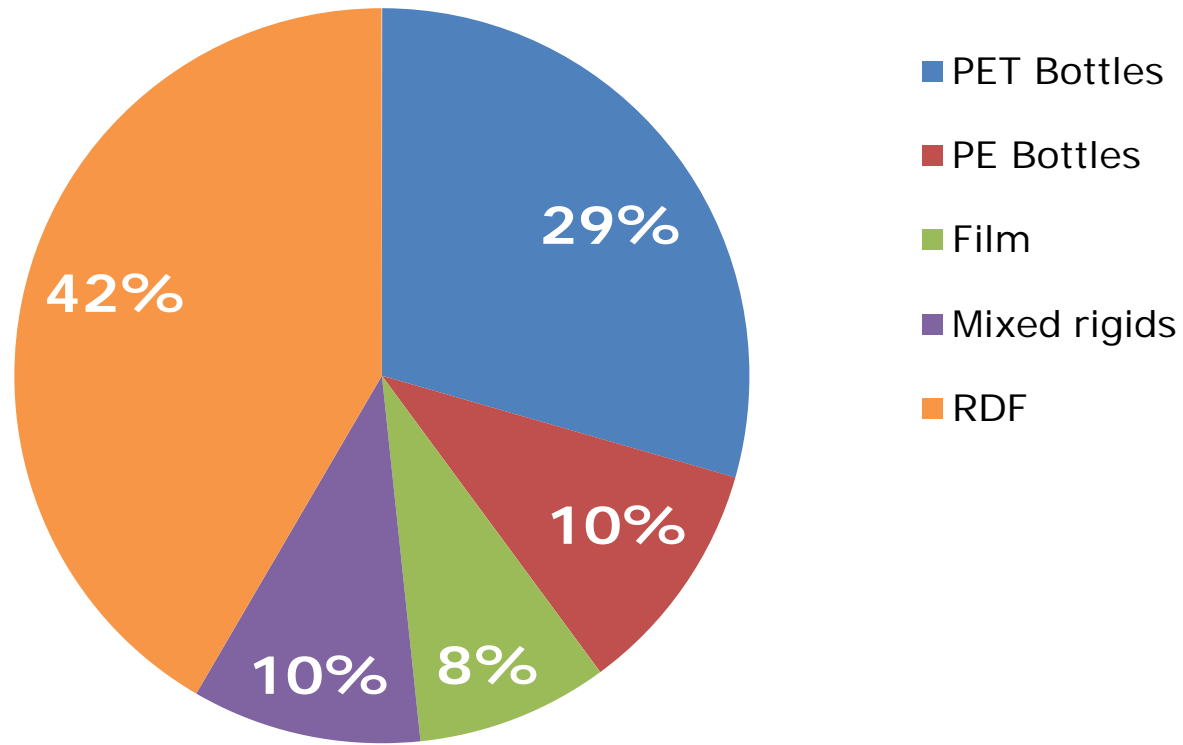
Most common collection schemes are:

- ④ **Mono – material:** in yellow bag bottles, films and other rigids; Corepla just recommends to clean packs (as far is possible), to separate lids from blisters and to press bottles without reducing size too much (as is difficult to separate small dimension waste)
- ④ **Multi – material lightweight:** in yellow bag bottles, films, other rigids, cans and steel packaging.
- ④ **Multi – material with glass:** bottles, films, other rigids, cans, steel and glass (packaging only).
- ④ **Multi – material with paper:** bottles, films, other rigids, cans, steel and paper including beverage cartons.

HH collection growing



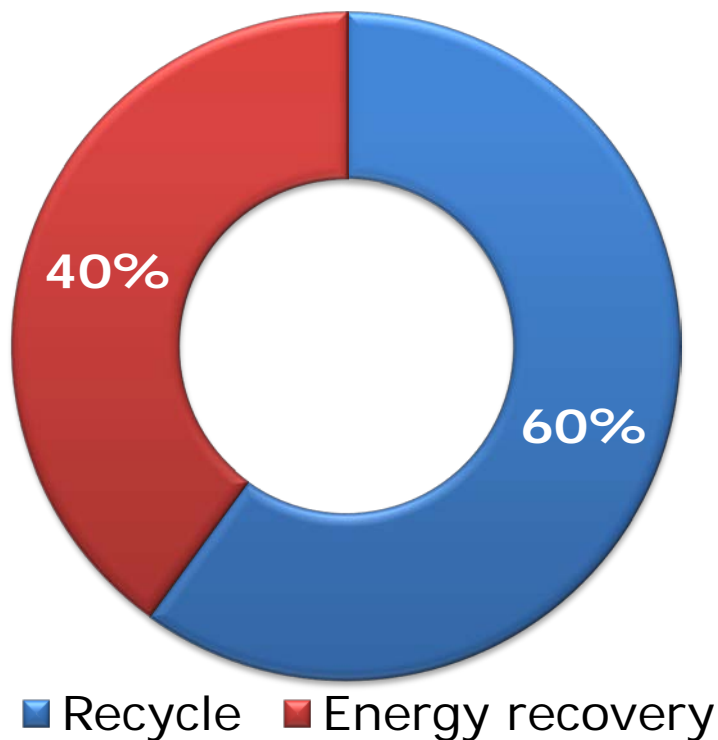
HH Collection composition



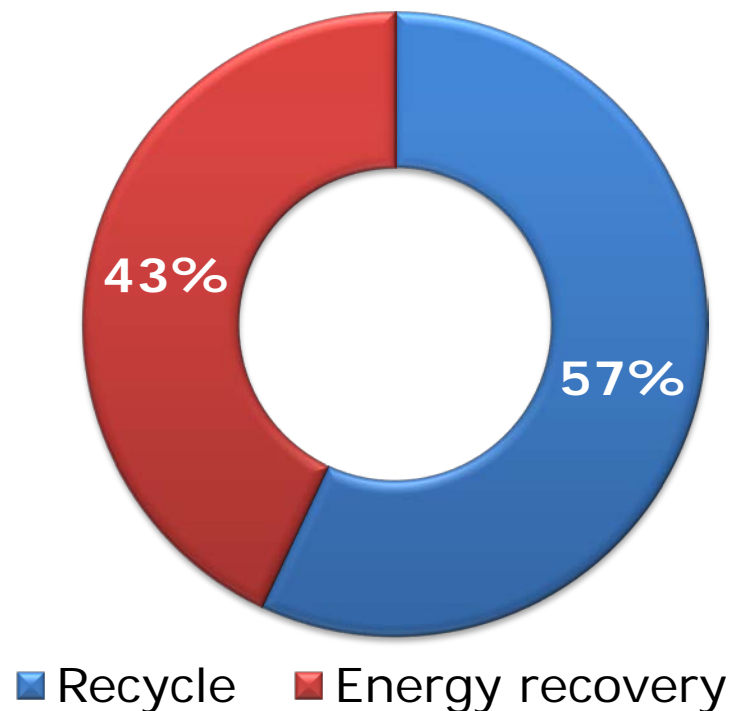
Figures 2010

Recycled quantities from HH collection

2011 expected

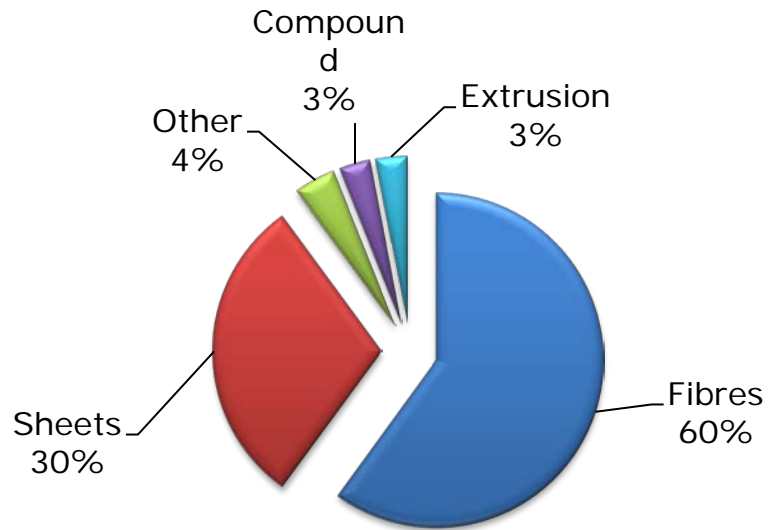


2010

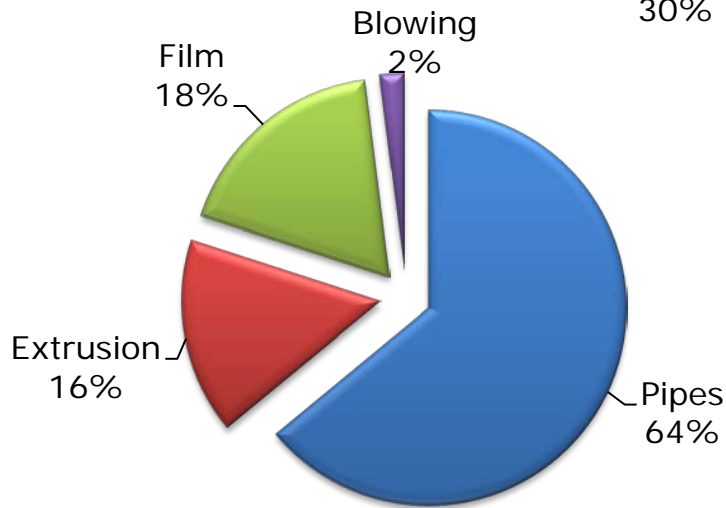


Applications

PET



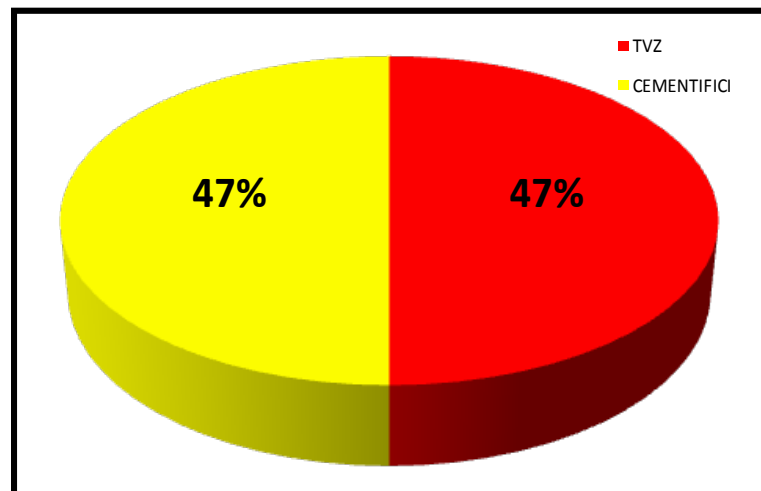
PE



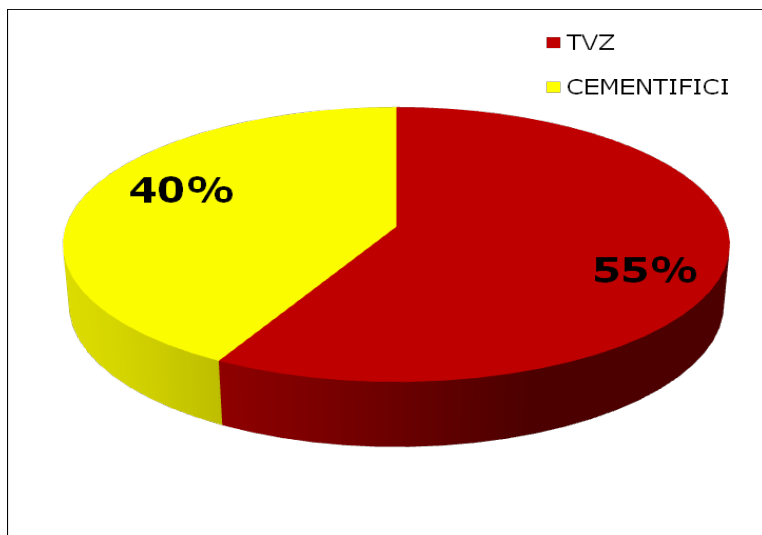
Energy recovery as a chance for non recyclable fractions

- WTE plants
- Cement kilns

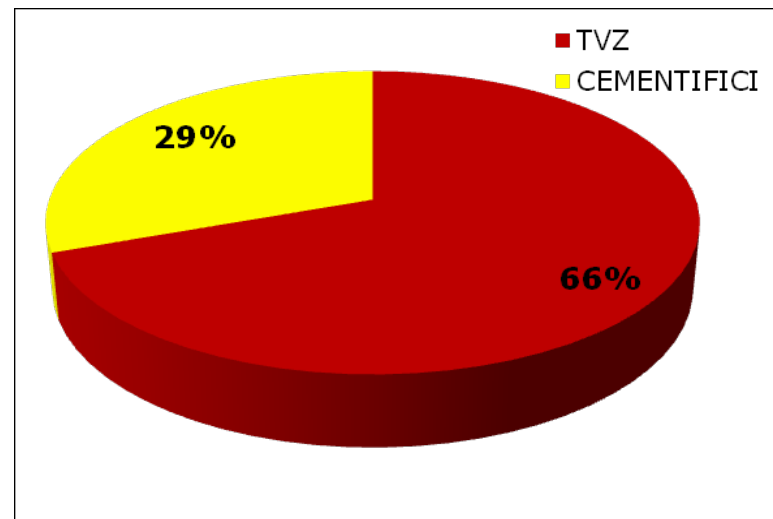
2011



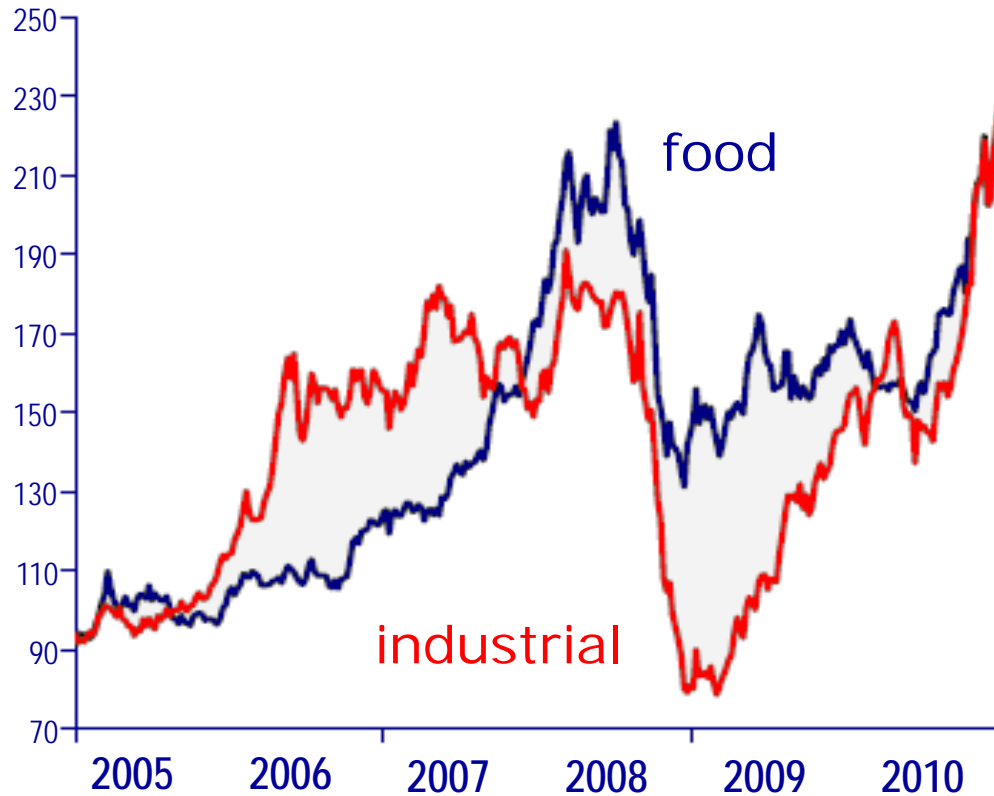
2010



2009



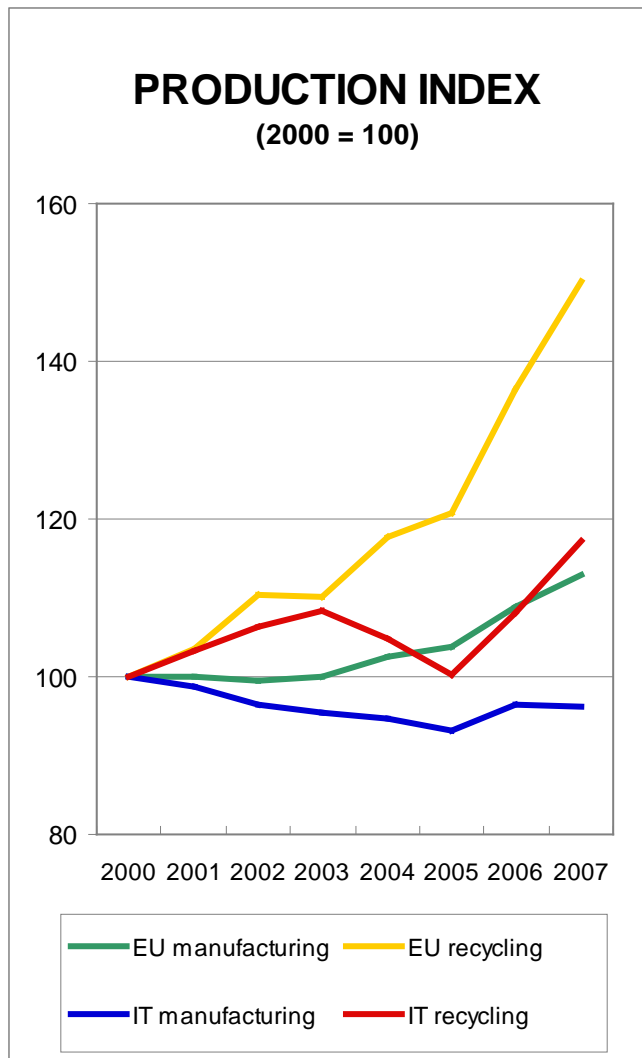
Raw material prices increasing since 2005 (2005 = 100 in \$)



cereals
cotton
Synthetic fibers
wood
paper
rubber
copper
metals
Raw material
Basic chemicals

Source: Confindustria

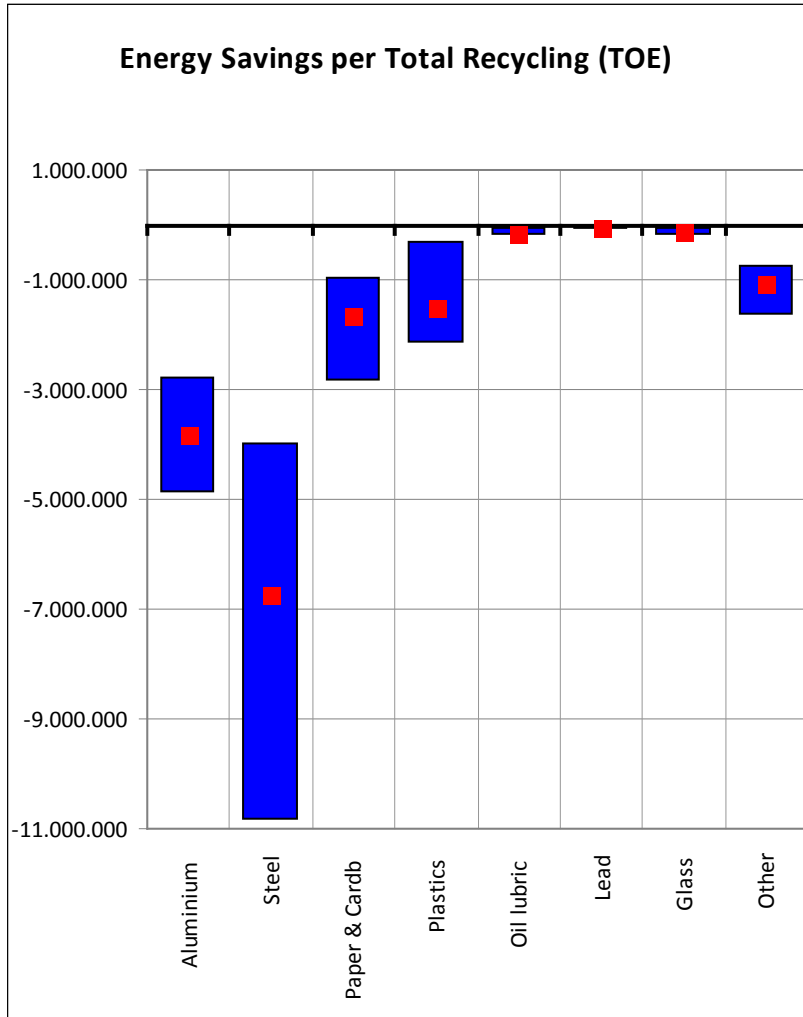
The Recycling Industry



Source: Ambiente Italia

- ④ The recycling industry has become an economic sector characterized by high innovation content, outperforming most of the manufacturing industry both in terms of investment per employee and in terms of value-added per employee management of resources is a cornerstone of sustainable development.
- ④ Between 2000 – 2007 the recycling sector has experienced greater growth rates than the overall industrial system
- ④ Expansion of recycling has a positive impact on occupation

Actual benefits of recycling in Italy: energy savings

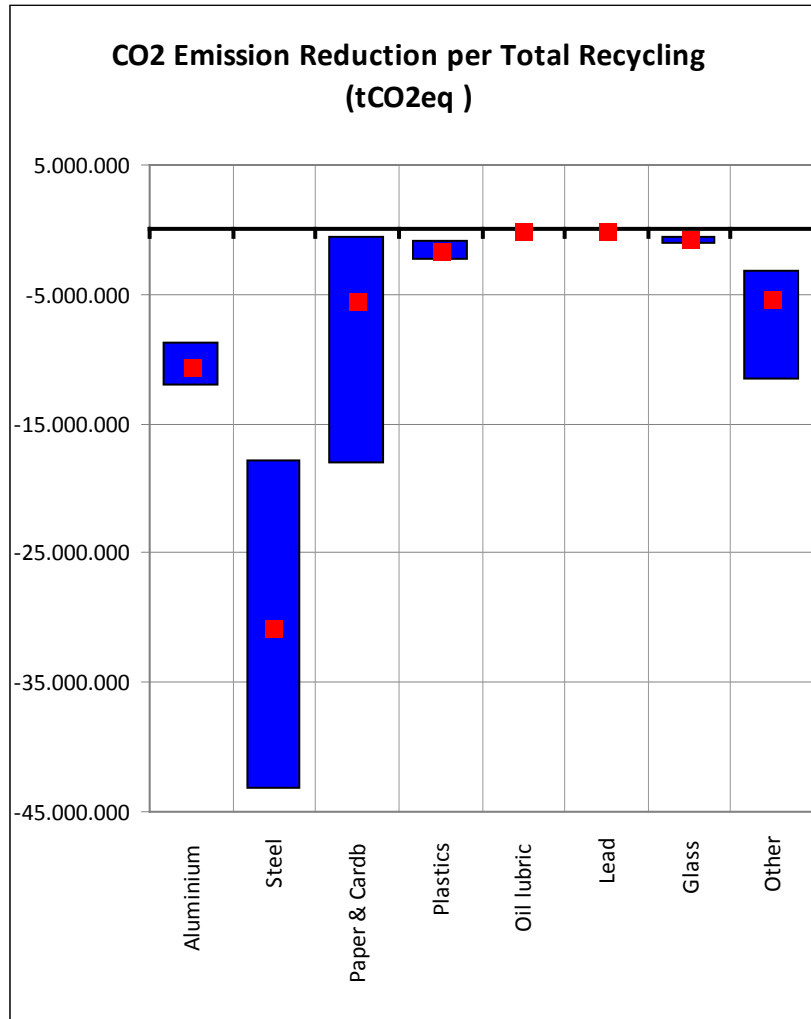


☺ In 2006, energy savings achieved through recycling are estimated to be worth 15 million TOE of primary energy.

☺ This figure represents 8% of total domestic energy consumption (approx 196 million Toe) 38% of the industry sector's consumption (approx 40 million Toe).

☺ Part of the energy savings is achieved abroad, i.e. upstream from the industrial processes that take place in Italy.

Actual benefits of recycling in Italy: greenhouse gas emissions reduction



☺ In 2006, achieved reduction of green-house gas emissions through recycling are estimated to be worth 55 million tons of CO2

☺ This figure represents 9.5% of domestic gross emissions (which stand at 581 million tons) 44% of emissions generated by energy consumption and specific industry emissions (126 million tons).

☺ As is the case for energy savings, part of the emission reductions are achieved upstream from the industrial processes that take place in Italy.

Plastic recycling has a positive impact on climate change – Corepla results

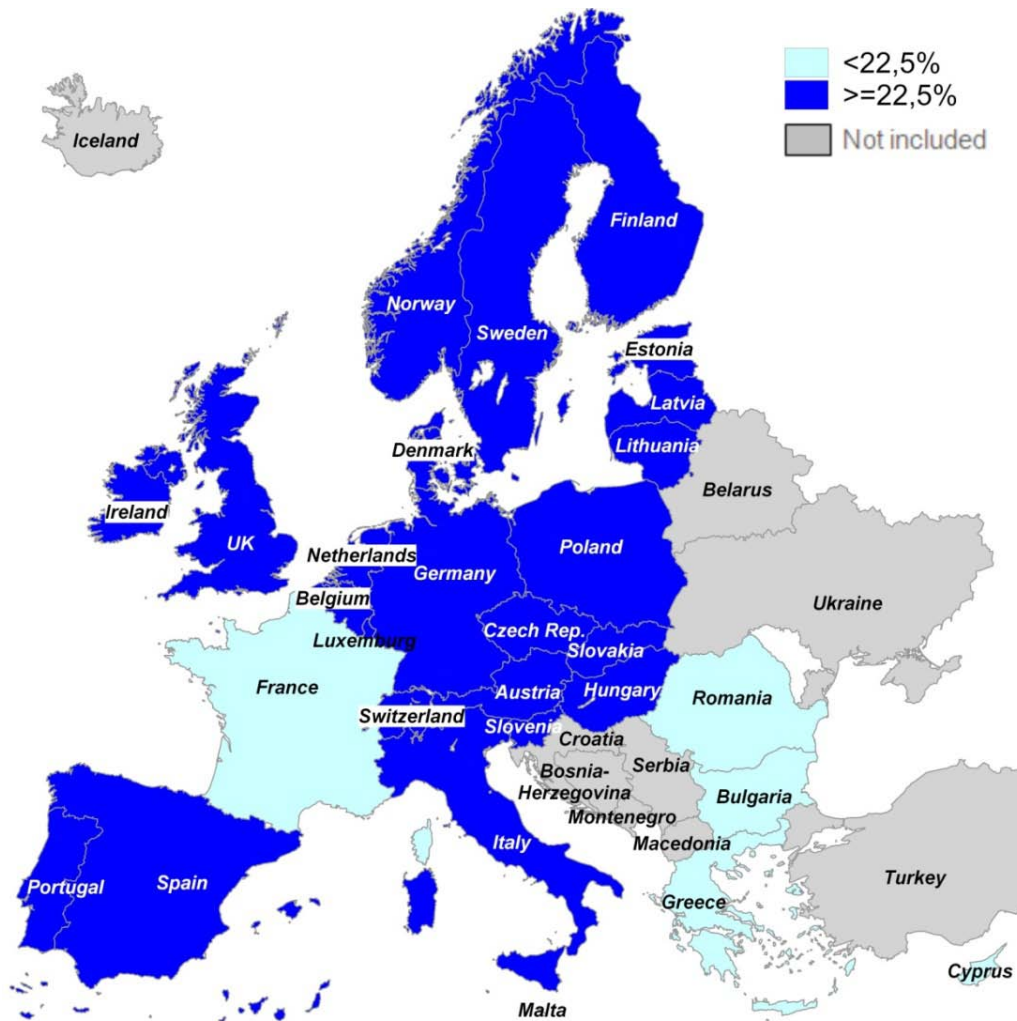


Saved more than 6 MWh
of energy

3 million tons of CO₂
Emissions avoided

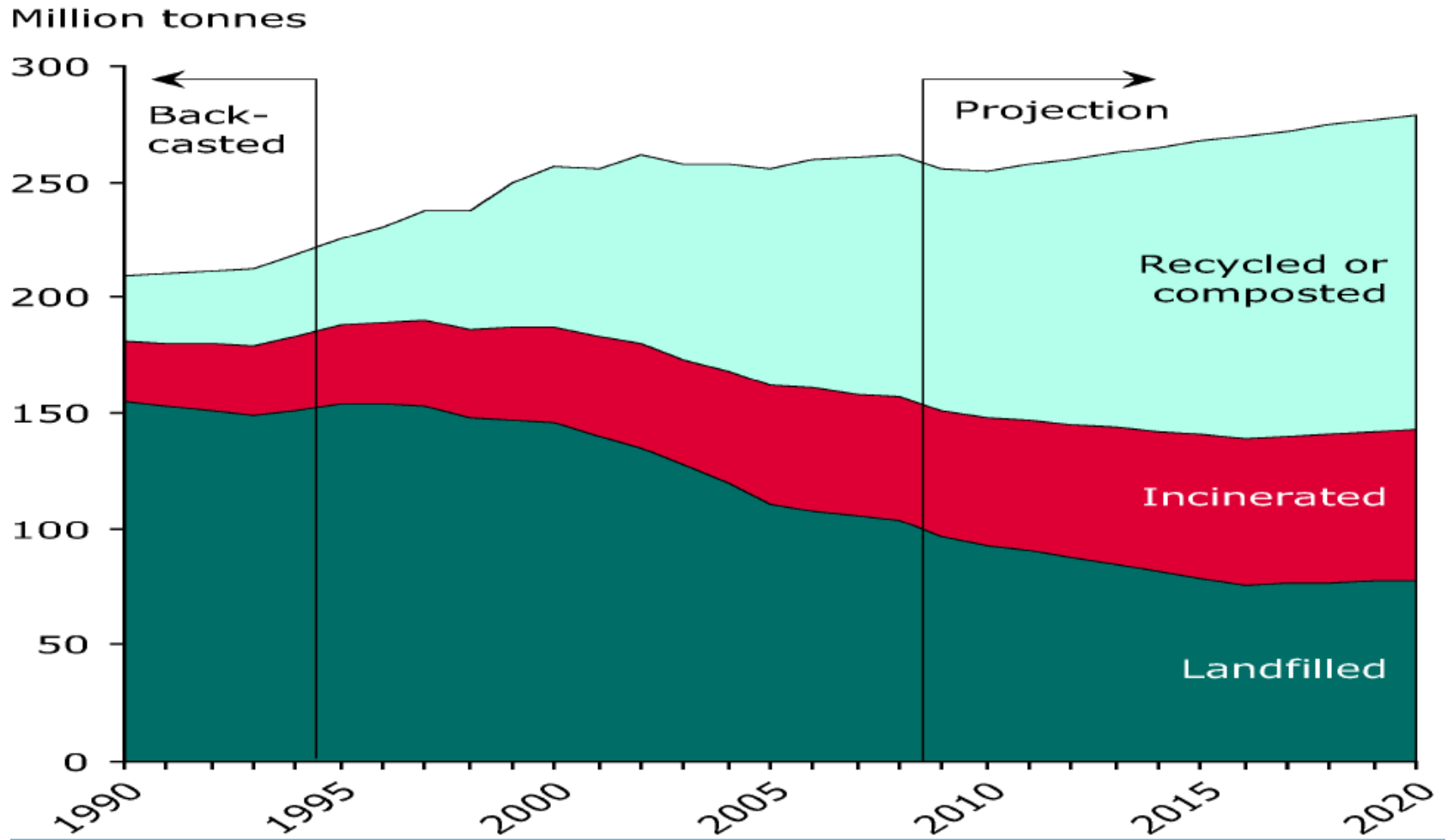
19 million m³ of waste not
landfilled

Total recycling of plastic packaging waste by country - 2009



- Total Europe is accomplishing the target for plastic packaging recycling of 22,5% with 30,5% in 2009 significantly (29% in 2008).
- 23 countries with total recycling rates for packaging waste of $\geq 22,5\%$.
- The following countries did not achieve the targets of the packaging directive: France, Romania, Bulgaria, Cyprus, Malta and Greece.
- Hungary, Lithuania and Portugal achieved the 22,5% for the first time.

Our future?



Figures EEA - 2010

Conclusion

Plastics' recycling is a young industry and there are many challenges still to be overcome. Co-operation and the successful exchange of good practices and technical experiences provide the foundation to meet current and future challenges most efficiently.

www.corepla.it