

# RicicloEcoefficiente

## THE ROLE OF THE RECYCLING INDUSTRY IN THE ROADMAP TOWARDS EUROPE 2050.

RECYCLING, EFFICIENT USE OF RESOURCES,  
LOW CARBON ECONOMY

BRUSSELS - NOVEMBER 28, 2012

FROM 12.30 P.M. TO 3.00 P.M.

THE EUROPEAN PARLIAMENT

**ECO-EFFICIENT RECYCLING – THE RECYCLING INDUSTRY:  
A PERSPECTIVE FOR THE GREEN ECONOMY FACING THE ECONOMIC CRISIS**

**Duccio Bianchi - *Ambiente Italia***



# ECO-EFFICIENT RECYCLING

## THE RECYCLING INDUSTRY: A PERSPECTIVE FOR THE GREEN ECONOMY FACING THE ECONOMIC CRISIS

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### Il riciclo eoefficiente

L'industria italiana del riciclo  
tra globalizzazione e sfide della crisi

A cura di Duccio Bianchi,  
Istituto di ricerche Ambiente Italia  
Con una prefazione  
del Ministro dell'Ambiente Corrado Clini



Rapporto realizzato nell'ambito del  
Kyoto Club e promosso da:  
CIAL | Comieco | Conai | Corepla |  
Consorzio Acetalo | Rilegno |

Edizioni  
Ambiente

Data based on the third (2012) estimate of carbon footprint for Italian recycling industry, performed by Ambiente Italia and published in *Bianchi, Riciclo eoefficiente, Edizioni Ambiente 2012*; [www.edizioniambiente.it](http://www.edizioniambiente.it).

The research was supported by the Kyoto Club's Work Group on Recovery and Recycling and sponsored by packaging consortia Conai, Cial, CNA, Comieco, Corepla, Rilegno.

# Recycling and Resource Efficient Europe

Recycling is a component for the European vision of a smart, sustainable and inclusive economy .

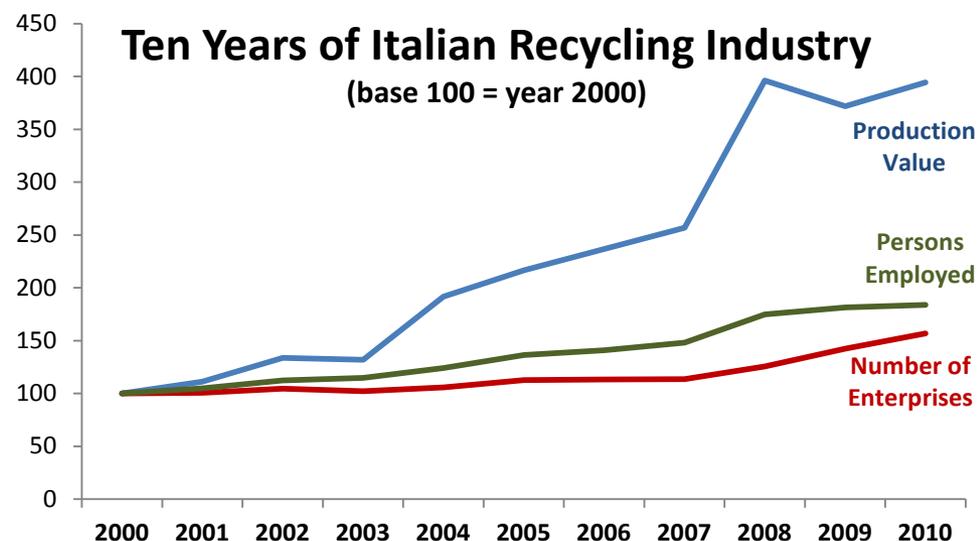
- **Resource Efficient Europe.** *“Increasing resource efficiency will be key to securing growth and jobs for Europe. New products and services, new ways to reduce inputs, minimise waste, improve management of resource stocks, change consumption patterns, optimise production processes.”*
- **Energy Roadmap 2050.** Energy Roadmap 2050 **explore routes towards decarbonisation** of the energy system. *“The EU is committed to reducing greenhouse gas emissions to 80-95% below 1990 levels by 2050 in the context of necessary reductions by developed countries as a group.”*

# The recycling industry a key component of the green economy

In Italy, the recovery and recycling sector is the most important component of eco-industry as turnover and employees.

In EU recycling experienced a turnover growth rate of 17% per year and an employment growth rate of 11% per year.

Recycling is one of the most dynamic components of the european green economy, second only to that of renewable energies.



	Recycling	Collection	Total
Enterprises num	2.890	950	3.840
Production Value mln€)	8.264	5.917	14.181
Employees num	22.311	49.004	71.315
Investments mln€	257	542	799

Fonte istat

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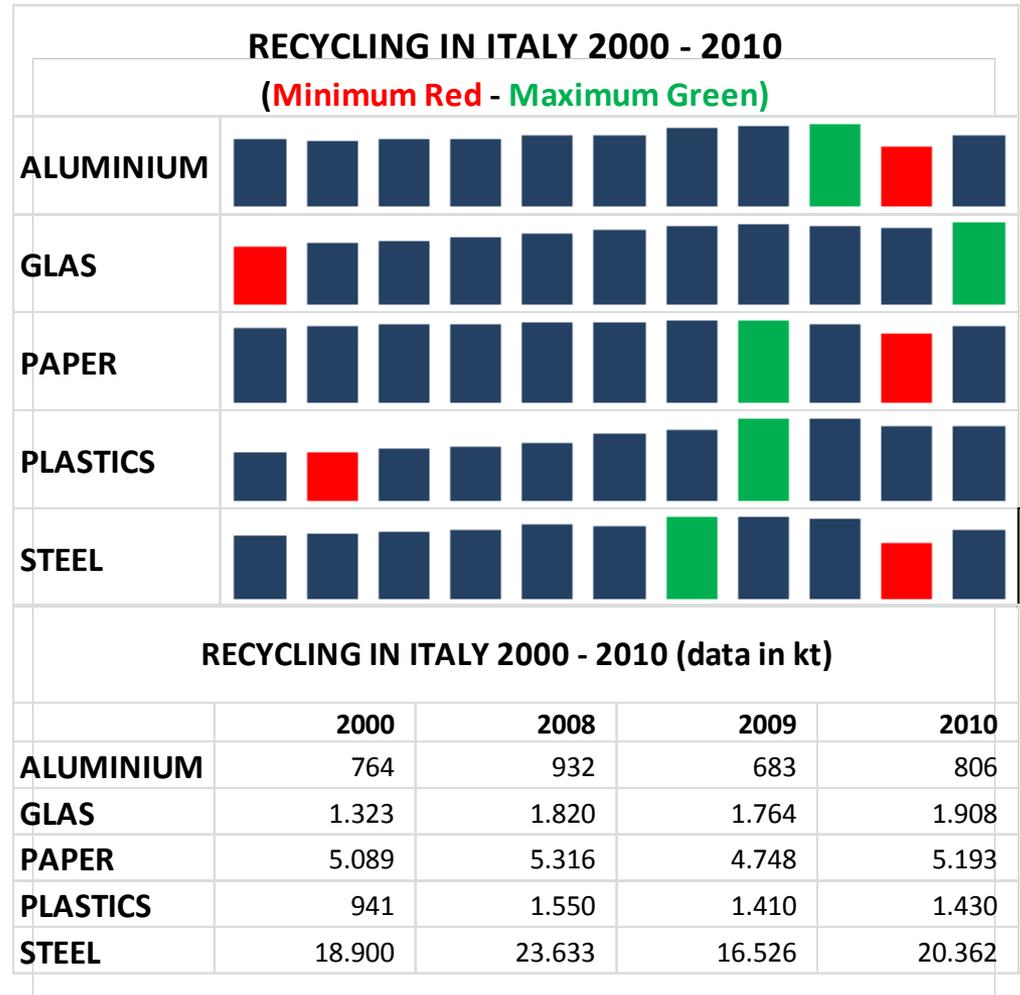
# Recycling in Italy 2000 - 2010

During 2010 Italy recovered for industrial uses 35,3 Mt of secondary materials from domestic sources.

Italy is a net importer of secondary materials (import 7,5 Mt, export 2,5 Mt)

The domestic manufacturing of steel, aluminium, lead, paper is wholly or mainly from secondary materials.

In 2010 Italian industry recycled 38,5 Mt of secondary materials (steel, aluminium, copper, lead, paper and cardboard, wood, plastics, tires, glass and inert aggregates)



# GHG Savings from 2010 recycling

Estimated GHG savings (at global level) from Italian industrial recycling in 2010 were equivalent to about **53** million tons of avoided CO2eq emissions (set within a wide window ranging from 27 to 97 million tons of CO2 equivalent avoided emissions) .

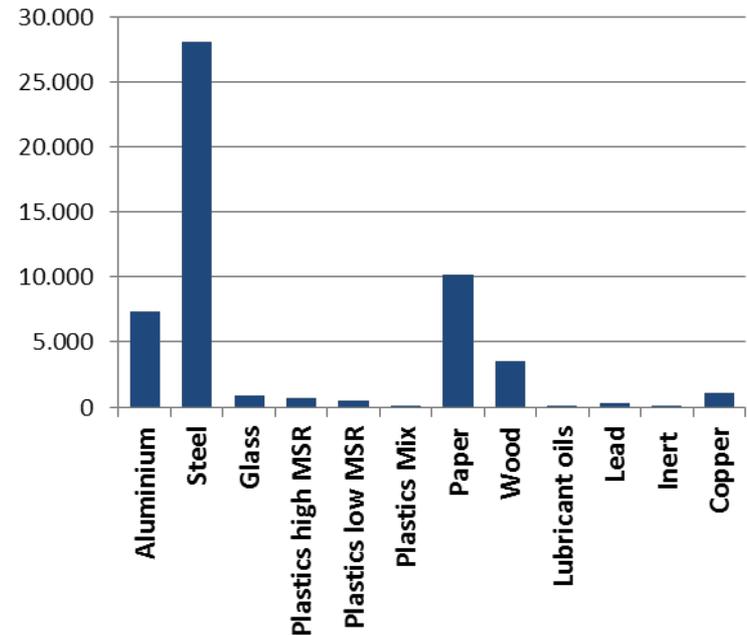
The “potential” substitution of existing primary production processes located in Italy corresponds to approximately 33-38 million tons representing 62-72% of total avoided emissions.

Considering the 494 million tons of CO2 equivalent emissions for Italy in 2010, the potential savings generated by industrial recycling in the Italian economy for 2010 were equivalent to 10.7% of actual emissions.

## GHG SAVINGS – ITALY 2010

(kt CO2eq)

	<i>minimum</i>	<i>maximum</i>	<b>Reference value</b>
<b>Steel</b>	10.332	47.794	<b>28.100</b>
<b>Paper</b>	9.428	22.786	<b>10.209</b>
<b>Aluminium</b>	4.020	15.578	<b>7.392</b>
<b>Wood</b>	372	5.072	<b>3.490</b>
<b>Plastics</b>	488	2.009	<b>1.223</b>
<b>Copper</b>	521	1.571	<b>1.046</b>
<b>Glass</b>	794	964	<b>907</b>
<b>Lead</b>	167	459	<b>313</b>
<b>Tires</b>	49	460	<b>298</b>
<b>Lubricants</b>	64	137	<b>92</b>
<b>Inerts</b>	-10	50	<b>8</b>



# GHG Accounting: Methodology in brief

The greenhouse gas emission accounting considers:

**Aluminium, Copper, Lead, Lubricants oil, Glass, Inert aggregates, Paper** and cardboard, **Plastics** divided between polymers with **high MSR** [material substitution rate], **low MSR** and **plastics mix, Steel, Tires, Wood** (as wood panels).

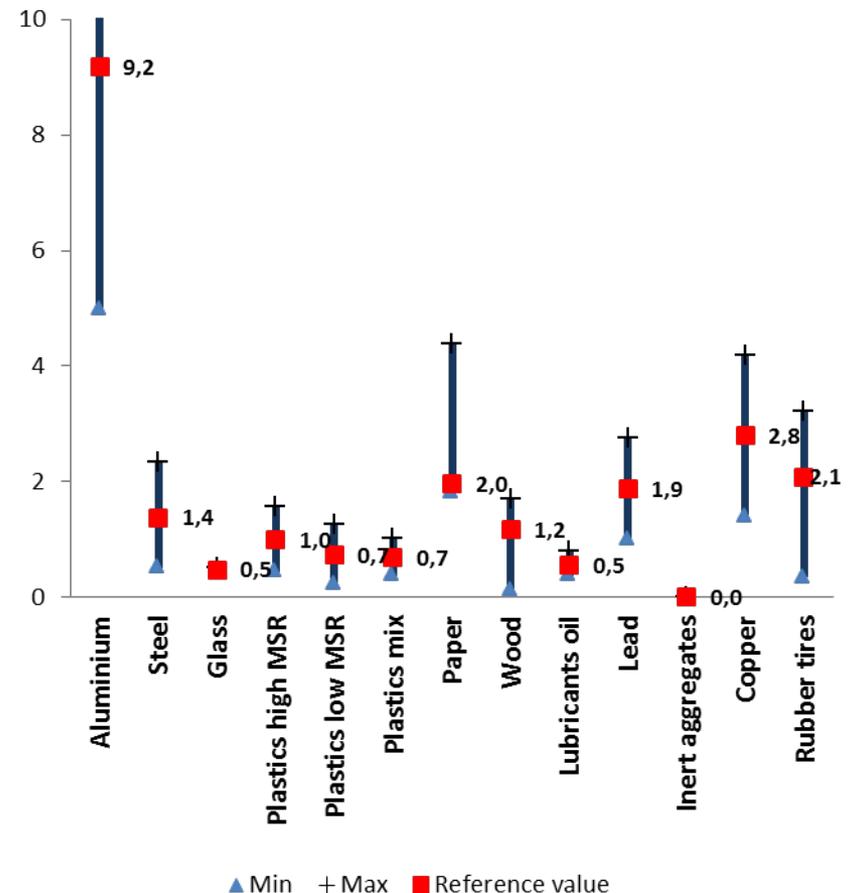
For each material, it includes : the **indirect upstream, direct operational** and **indirect downstream activities** and their related GHG emissions.

The **life stages** considered are: **collection, sorting or treatment** before recycling, **transportation** to recycling industries, **industrial reprocessing, waste disposal, avoided primary production processes**.

The material substitution rate differs according to materials and is generally less than 1:1.

The avoided industrial processes (and related energy system) are designed to be representative for Italian case.

This study assumes that the saved biomass (in paper or wood recycling) is used to generate electrical energy substituting the Italian actual mix of energy sources.



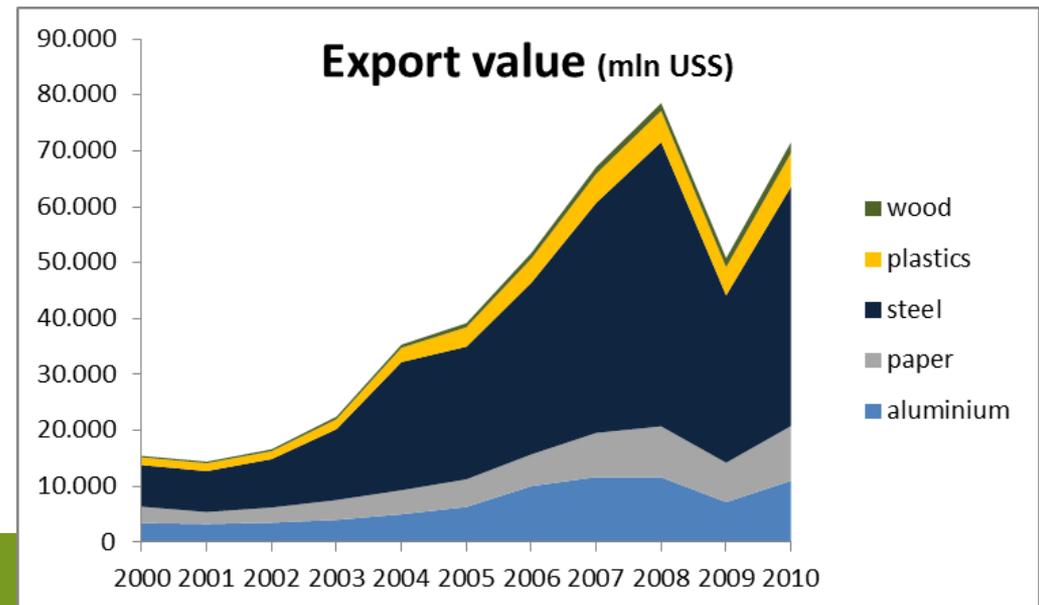
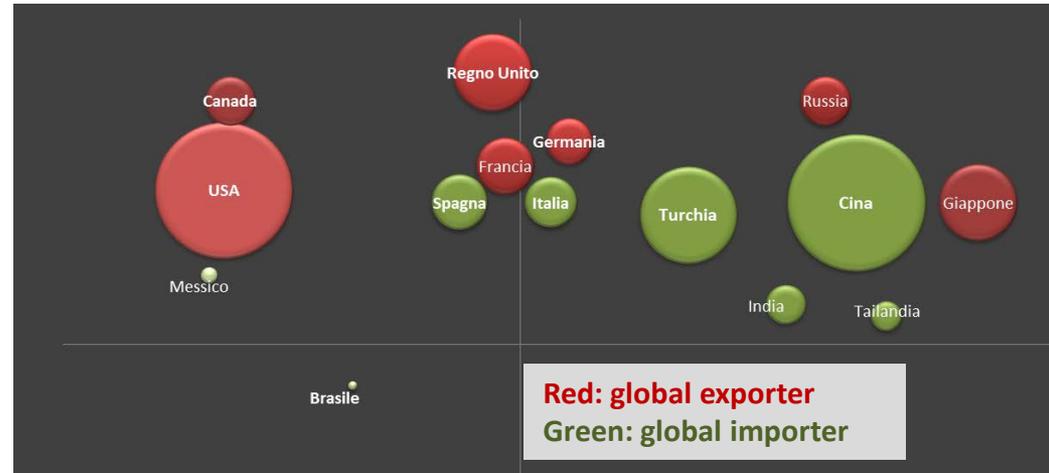
# The globalization of secondary material markets

## advanced economies depend on emerging economies

Between the year 2000 and 2010, the export value of the principal five secondary raw materials has increased by 422%. A greater rate than that of goods and services.

Demand is generated by the new geography of industrial production

China and emerging economies dominate the import; United States and most European States – except Italy- are big exporter



# Exporting secondary materials: environmental effect

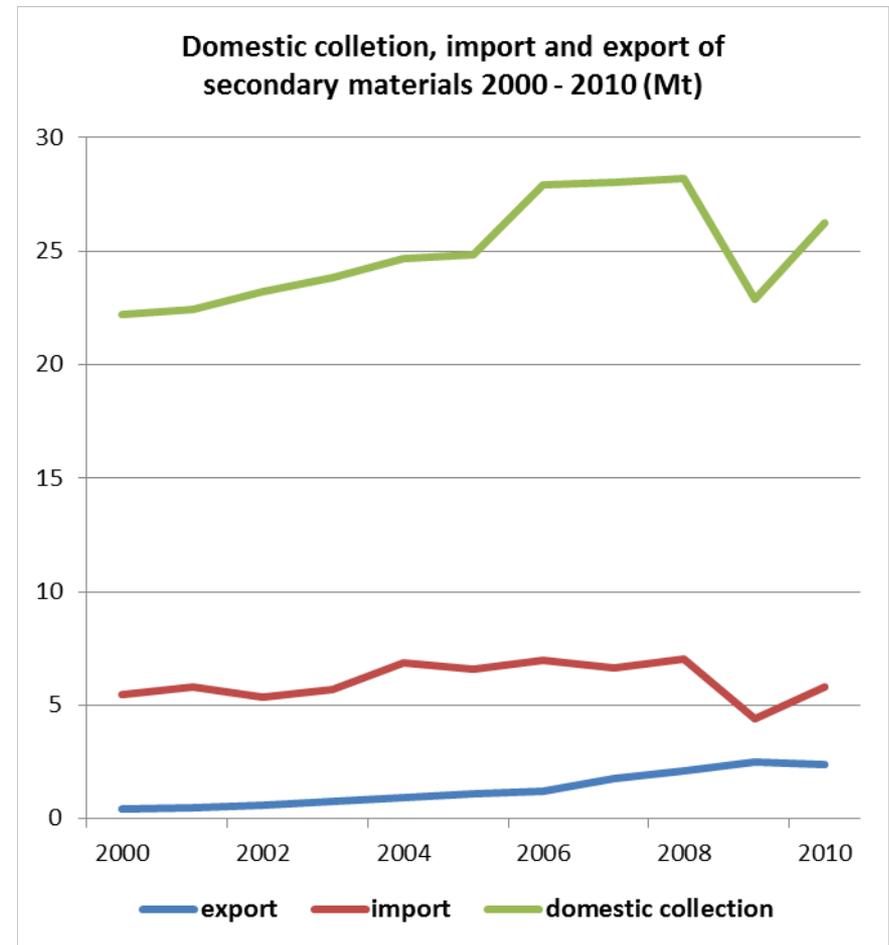
Italy is a recycler country, but increasing amounts of secondary raw materials are recycled in foreign countries.

During 2010, over 1,6 million tons of scrap paper collected in Italy were exported (while 500,000 tons were imported) and nearly 260,000 tons of plastic wastes left the country (as compared to 140,000 tons of imports).

This means a net export rising to 18% of collected paper and to 8% of collected plastics.

The principal export market for paper and plastics collected in Italy is China, which absorbs respectively 34% and 45% of exported quantities.

It is legitimate to wonder if to collect paper or plastic in Italy, in order to send it off towards China for recycling, makes any sense.



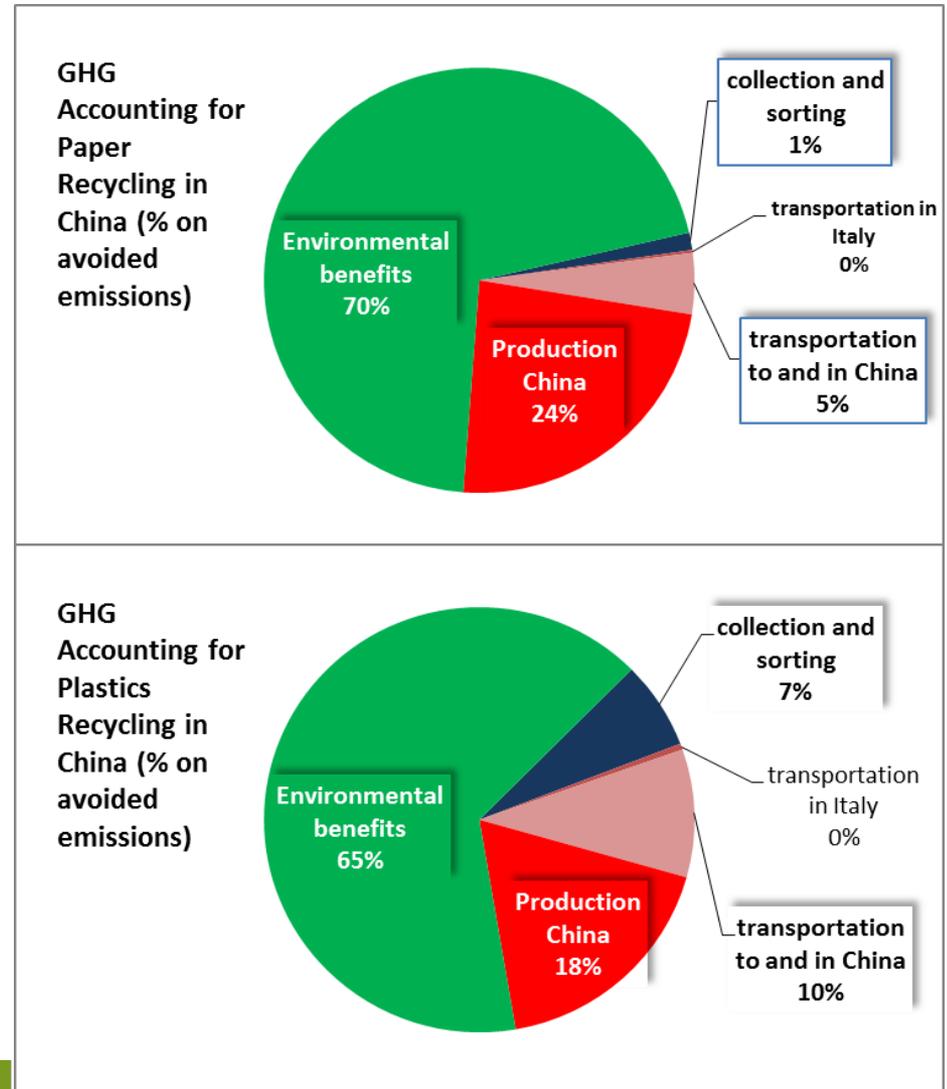
Data for steel, aluminium, paper, plastics, glass

# GHG impact of Recycling Exports

Emissions generated during the phases of collection and transportation, including emissions originated in Italy, impact less than 8% of avoided emissions for paper and 18% in the case of plastics [which is here assumed to be PET).

The additional emissions for export sums to 6% of avoided emissions for paper and to 12% for plastics.

The secondary materials **export doubles the impacts from recycling preparation** (collection, sorting, transportation), but **the greater impacts of transportation within China, whether by ship or by truck, do not affect the environmental convenience of recycling**



# Four lines of action to boost the development of the Italian recycling industry

- **Support the development of an effective recycled product market through green procurement.**

Green procurement incentive measures are also useful in more classical sectors such as metals, plastics, glass, wood, but are absolutely essential to support the development of new areas of recycling, as in the case of the building waste and minerals waste stream, or for the treatment of inert scrap industrial refuse materials.

- **System integration to improve the quality of recovered secondary raw materials.**

The emphasis put on achieving objectives set as percentages of recovered materials through collection, rather than accounting for actual quantities of materials collected for recycling, may have a perverse effect and lead to low-quality collection and lack of focus on recovered material quality.

- **Fair competition between recycling and energy recovery, considering energy recovery as least preferable, while still useful option.**

Full compliance with the priorities outlined in the Community hierarchy, avoiding incentives that could alter a fair allocation of resources. Creation of a real market for alternative fuels from waste that the recycling industry is still unable to absorb, to replace fossil fuels.

- **Research and innovation.**

New recycling technologies are essential to progress towards the green economy and to improve efficiency in the use of natural resources. New technologies are necessary to improve traditional materials, new materials and waste streams. Opportunities appear in a variety of fields ranging from the selection of different types of paper to the extraction of rare metals from electronic products, from the use of contaminated glass to the recycling of diapers or to finding alternative reuse of textile wastes.