Paper and Board
Collection, Recycling, and Recovery

13th Report

2007

July 2008

comieco
Consorzio Nazionale Recupero e Riciclo
degli Imballaggi a base Cellulosica

Index


Increase in the quantity of
paper and board collected in 2007:
+3.8%

Preface

Readers that set out to browse through the 13th Report on separate paper and board collection in Italy are recommended to adopt four different, complementary reading approaches.

The first, tied to the present, concerns the status of separate collection in the South of the Country: improvements have been significant, with about 25,000 tons of new collections performed under the agreements entered into by Comieco pursuant to the ANCI-CONAI agreement. As much as 70 percent of this quantity results from enhanced collection in the Campania Region. This is a clear sign of the pursuit of a solution to be promptly implemented to solve the waste emergency, albeit still too poor to prevent the frequently observed accumulation of waste in the streets. That the South is lagging behind is still obvious when yields per inhabitant are considered instead of absolute values (21.1 kg/inhabitant/year vs. a country average of 44.7 kg), and particularly considering the still inappropriate level of collection services for households. Promoting collection in the South and, particularly, in Campania, where an important industrial district of paper exists, was and still is a priority for Comieco. Upon agreement with CONAI, the Consortium is implementing an action plan with dedicated resources. I stress, in particular, activities in Naples, which allowed to expand board collection, in co-operation with the commissarial facility and the Italian Army, the launch of paper and packaging collection in public and private offices, and the activities, including training, developed within the framework of the Virtuous Cities' Club, which gathers small and medium Cities in the Region. This commitment is continuing upon agreement with Undersecretary Bertolaso and the Regional Authority.

This report contains an assessment of the extent of collection of paper and board packaging in the three macro-areas, which shows that public and private collection is homogeneous in the South as it is in the North, and therefore that the gap of the South, at least as far as paper and board are concerned, can be attributed to deficiencies in the household collection service that, as known, collects other kinds of paper in addition to packaging.

Another issue concerns the role of the Consortium vis-à-vis the market of recovered paper, which constitutes an important raw material for the paper industry, increasingly focused on using secondary raw materials

with significant benefits in terms of material and energy consumption. The rate of collection managed by the Consortium decreases as collection and the inhabitants subject to the agreements increase.
This phenomenon is clearly highlighted by the data of the early months of 2008 and stresses the ability of the consortium system to adjust to the market while always ensuring collection and remuneration of the relevant service, as well as support in terms of communication in regions where collection is weaker, particularly in the South.
Promoted by separate municipal collection, the supply of recovered paper grew even further in 2007. Exports have been consolidated and – along with use by the Italian paper industry – represent an important outlet for recovered paper, also in economic terms.

The third reading approach concerns the outcome of the ANCI-CONAI Agreement, whose second stage will end this year.
The first implementation stage saw a 2.3 million ton growth of paper and board packaging collected during the reference period.
For the second stage, estimates point out to almost 5 million tons of packaging and the economic commitment in favour of the Cities and of the companies subject to the agreements should amount to almost 400 million EUR, also for packaging alone. Significant benefits are tied to early sorting activities, with an estimated 230 million EUR turnover in the 2004-2008 period. The recycling target of paper and board packaging has been perfectly achieved with a recycling rate close to 70%, much higher than provided for by the law.
This is a solid foundation for the phase of renewal of the Agreement, whose objectives should be both quantitative and qualitative, and where the pursuit of efficiency in collection services is a prerequisite to maintain the results achieved and ensure the development of separate collection in the South, in view of cost-effectiveness and competitiveness of the packaging production, use, collection, and recycling system.

The last reading approach I suggest is a macroeconomic one and concerns the analysis of the economic and environmental costs and benefits of overall municipal paper and board collection in Italy. The Report provides an update at 2007 of the balance calculated as of 1999. The balance is definitely positive and amounts to 1.6 billion EUR – a net benefit for the Country, its collection and recycling companies, the Cities, and the Italian citizens. The potential growth of collection and, therefore, of economic and environmental benefits is still significant and I trust the current costs of not performing separate collection, especially in the South, can turn into the benefits of doing through the implementation and enhancement of the collection service.

Claudio Romiti
President, Comieco

Paper and board recycling from 1998 to 2007 equalled the volume of 144 landfills that were not built locally thanks to separate collection

Introduction

The following 9 sections describe the status of separate paper and board collection and recycling in Italy in 2007.
The resulting scenario shows that paper and board collection is significant in the North as it is in the South, offers an economic opportunity to the Cities, is an important practice to preserve a healthy environment, and provides a source of raw materials to the national paper industry.

1. Separate collection: an expanding practice

Separate paper and board collection continues to grow in Italy. This trend develops hand in hand with other urban waste flows subject to separate collection.
Estimates for 2007 (see note on the method) point out to a total national value of 2.62 million tons, with a 3.8% increase over the past year.
This figure confirms a decade-long growth, whose trend is influenced both by national factors (e.g. perviousness of parameters ranking special waste together with urban waste) and by international ones (demand/supply and subsequent recovered paper quotations), which are reviewed in-depth below.
In absolute terms, the overall increase was above 96 thousand tons, including 31,443 (+2.1%) in the North, 41,649 (+7%) in the Centre, and 23,546 (+5.7%) in the South.
The performance of the South is worth stressing in the light of a significant leap forward, in spite of a decline in Puglia (-4,974.3 tons, moving outside the framework of municipal separate collection), offset by the results of regions that show the highest national growth rates in 2007: Sardinia (+23.1%) and, despite cyclic waste management crises, Campania (+14.7%). The growth rate is still moderate if compared against potentials, particularly for household services.
Separate collection is most widespread in Lombardy: 524,801.8 tons, equal to 20% of total national separate collection, followed by Tuscany, Piedmont, Emilia Romagna, and Veneto.
An interesting trend is recorded in Latium, with 238 thousand tons (+12.0%), an increase primarily due to the city of Rome.
Paper and board collection accounted for 28.7% of separate collection in 2007, vs. 30% last year. This decline can be attributed to the development of collection in all the other areas (glass, plastics, aluminium, etc.), which resulted into an overall 8.4% increase.
A recovery of the upward trend of paper and board collection is expected for the current year, at a rate of 4.5%.

2. The outcome of the ANCI-CONAI agreement

The year 2007 can be defined as a time of full awareness and maturity of collection operators with respect to the opportunities of the Comieco system, after the 2004/2005 period, experienced as a time of "transition" from the old system (1999-2003 Agreement) to the new one, and the year 2006, which saw a "training" in the implementation of the mechanisms provided for by the General Agreement and the Comieco Technical Annex. (See, in this respect, the Implementation Summary and the corrections to the quality control procedures defined by the Supervisory Board). Separate paper and board collection in the 2004/2007 period saw a 24% increase at a national level and a 40% increase in the South, where agreements for collection allow to make up for the gap with the Centre and the North of the Country.

The recycling rate of packaging increased in the same period too, from 62.4% to 69.7% in 2007.

3. The role of Comieco

The share managed under the agreements in 2007 showed a very small decline vs. total separate paper and board collection (-0.1%).

While a decline in the collection of paper and board managed under the agreements with Comieco was observed in the Centre (-3.5%), collection under the agreements was 1.3% higher in the North and 0.6% in the South.

Early signs of gradual reduction of the quantities managed by the Consortium have been observed since 2001, due to a wider exploitation by the parties to the agreements of the recycling opportunities offered by the market for mixed paper and board collection. By the same token, based on early data, 2008 will see a significant decline in the quantities of mixed paper and board collection managed by the Consortium with respect to the market.

The number of agreements signed with the Cities/Operators has resumed its growth after a decline in 2006 (646 in 2007, +30 compared to the previous year). This figure, alone, is not significant, but points out to a waste collection management style that is still far from optimal at a super-municipal level. This is even more evident in the south of the country (+29 agreements), where examples of development of collection services, even to a level of excellence, are still confined to individual cities and hardly spreading to wider regions. At a regional level, Vallée d'Aoste stands out with 100% of collection managed under the agreements due to the decision of the Local Administrations to rely on a unitary

management system for the entire region. Puglia (98%), Calabria (97.5%), and Campania (96.2%) follow.
The Comieco agreements have spread to cover 78.2% of the Italian Cities and 88.2% of their inhabitants. The number of inhabitants under the agreements increases by 0.8% annually.
This national figure is the result of a growth in the number of inhabitants involved in separate collection under the agreements, which amounted to 1.1% in the North and 1.2% in the Centre, vs. a mere 0.3% in the South.
As stated above, while the inhabitants under the agreements increase in number, the share managed by the Consortium does not.

4. Citizen collection is increasing

The average yield per inhabitant of separate paper and board collection in Italy amounted to 44.7 kg in 2007. The average yield was 58.1 kg per inhabitant in the North, 56.3 kg in the Centre, and 21.1 kg in the South.
For the areas under the Comieco agreements, the figure was 41.7 kg per inhabitant, with a 5.3% growth vs. 2006 (+5.9% in the South), however with widely different average values in the local macro-areas: 54.5 kg in the North, 51.2 kg in the Centre, and 21.5 kg in the South.
This difference can be attributed to the fact that the Consortium only manages part of the collected quantities in some areas, and the management level is greater in the Centre and South, where the average yield per inhabitant is higher.
At a regional level, the highest per-capita yield was recorded in Trentino Alto Adige (78.1 kg), followed by Vallée d’Aoste (68.6 kg) and Piedmont (68.2 kg). Sicily and Molise ranked last, with 14.2 kg and 17.3 kg respectively.
The greatest increase in per-capita yields was recorded in Sardinia (+39.4%), but some decline was also observed – the most significant value being recorded in Veneto, where such decline was -10.9% due to the use of recycling channels outside the agreements and to a decrease in the collected quantities.

5. The collection quality

The organization of separate collection services in the Cities and the extent of door-to-door collection vs. traditional road systems can hardly be reviewed.
In general terms, road and door-to-door systems, both for the collection of paper and of other materials, coexist in the cities – except in very small ones – due to the technical need to differentiate the service offering by types of users.
The development of the quality of the

paper collected separately, on the other hand, can be assessed, based on a few years' history.
During 2007, 1971 samples were taken (+27.1% compared to 2006) for a total quantity of more than 400 tons of analyzed materials.
The average data confirms a gradual increase in the quality of the materials gathered both through 1.01+1.02 collection systems (foreign fractions equal to 2.8%) and through 1.04+1.05 collection (foreign fractions equal to 0.8%). These values, together, point out to substantial compliance with the requirements set by the Technical Annex.
In a generally comforting picture, there are cases where the performed analyses highlighted significant criticalities.
Based on the performed sampling, non conformities also provide important information, which allow to carry out a detailed study of the collection circuits and systems to identify the causes for poor collection and adopt specific correction measures.
Qualitative analyses fall within the framework of a wider annual auditing and check scheme aimed at ensuring the proper implementation of the procedures set by the subscribed agreements and the corresponding contract relations by all the parties involved (cities, operators, sorting plants, paper mills, and processors).
In 2007 these audits involved 183 parties, including 70 under the agreements, 41 sorting plants, 42 paper mills, and 30 processors.

6. Compensations: important resources

Comieco's dedication to support separate collection activities in the Cities grew by a further 6.5% in 2007. The compensations paid in accordance with the subscribed agreements amounted to over 88 million EUR, equal to an average of 1.70 EUR per inhabitant under the agreements. In 2006, the economic investment was just below 83 million EUR.
The contribution of recyclers to the management of similar product fractions gathered through 1.01+1.02 collection also increased to over 4 million EUR in 2007.
A preliminary outcome of the ANCI-CONAI 2004/2008 agreement vs. the first General Agreement highlights that:

- 204.2 million EUR were paid in the 1998/2003 period (this includes the amounts paid according to the former mechanism and compensations for the agreements for energy recovery);
- for the 2004/2007 period, the total investment amounts to 311 million EUR. Assuming a value for 2008 similar to the value for 2007, the second general agreement will have trans-

ferred about 400 million EUR locally to support paper and board collection, thus doubling the amount transferred under the "old" agreement.

7. An overview of the cities

An analysis of the cities sees Trento rank first in terms of yield of per-capita paper and board collection under the agreements with 94.5 kg per year, followed by Florence with 85.6 kg and Brescia with 77.7 kg. Palermo and Catanzaro rank last with 14.5 kg/ inhabitant and 16.1 kg/ inhabitant respectively.

Readers should not be deceived by the figure of Bologna, where paper and board collection is only partially operated through the Consortium.

The example of Bologna allows to stress an important point, which applies at a national level but, particularly, in the centre and north of the country.

Among the parties that signed agreements with Comieco, those that exploit the opportunity, provided for by the Technical Attachment, to only entrust some of the materials collected separately to the Consortium while also using other recycling channels are increasing in number. These quantities amount to 172,800 tons, with a 17.2% increase compared to 2006. Metropolitan areas deserve some focus.

Management data has been monitored for some years now, in close co-operation with the local operators.

The five cities under study (Florence, Milan, Naples, Rome, Turin) have about 6.1 million inhabitants (approximately 10.3% in terms of covered user base).

With reference to the global national APAT data, processed by Comieco, the concerned Cities produce 12.1% of total waste. Weight vs. the quantities collected separately, on the other hand, amounts to 10.7%. In other terms, big cities, including Rome, but particularly Naples (which still collects only one third of the national average), still show significant growth margins.

The overall situation shows a general decline of about 1.4% of waste as such (disposed of in landfills or processed otherwise).

In 2007 such decline was more obvious than in the previous three years.

The total figure for the sample cities is slightly below the values that could be obtained through processing based on the total national figures (APAT and Comieco estimate for 2007), for which a 2.3% reduction of the waste disposed of in landfills is estimated for the 2004/2007 period.

Overall, separate collection circuits are growing by 28% (equal to 215,000 tons); such growth absorbs the entire greater production of waste in the urban areas considered and takes, at the same time, more than 43,000 tons from the total non-separate waste.

8. Recovered paper as a raw material

Paper and board recycling operated by Comieco is ensured by a consolidated and widespread network of operators that covers the whole national territory (326 sorting plants and 67 paper mills, plus 149 facilities for the collection of secondary and tertiary packaging), which perform short-distance collection and the processes required for subsequent use in production cycles.
Raw materials in the Italian paper industry – a total of 11.4 million tons in 2007 – mostly include recovered paper (48.8%), as well as new fibres (34.5%) and non-fibrous raw materials (16.7%).
The recovered paper originating from separate collection (in public and private areas) provides a significant economic value, which gradually grew during 2007. As of the first quarter, in fact, recovered paper quotations recorded at the Chamber of Commerce of Milan showed a sharp increase due to the international demand, particularly from China.
The prices of selected recovered graphic paper reached their highest level of 2002 last year. This occurred starting from January last year, after a period of substantial price stability that had been in place since mid-2004.

9. Packaging management

When focus is made on the specific issue of packaging, 2007 was a year of confirmation, or even of further growth of packaging recycling and recovery.
The recycling rate is 69.7%, or 77.8% if the share of packaging whose final destination is energy recovery is considered.
A more detailed analysis was attempted this year in view of checking, both at a national level and by macro-areas – North, Centre, and South – the collection rates of paper and board packaging and of other paper-based materials. The study concerned the whole range of paper and board products and their subsequent waste, rather than just urban collection.
The survey used a number of indicators (e.g. newspaper sales, number of trade operators, etc.) representing at best, for the different types of paper materials (packaging, hygienic-sanitary paper, printing paper, graphic paper, etc.) the usage rate, the availability and collection levels and, as a consequence, the channels and the possible growth rates.
The results obtained point out to an all but surprising picture.
The collection rate vs. the actual recovered paper availability for packaging can be deemed homogeneous

all over Italy, thus confirming the national recycling data. The average national figure is 74%, ranging from a maximum value of 77% in the Centre to 71% in the South.

Carlo Montalbetti
General Manager, Comieco

Economic resources for

88.3 million EUR

were paid by Comieco

to the Italian Cities in 2007

Charts and tables

Acronyms

SPF	**similar product fractions** (non-packaging paper and board)	**t**	tons
SC	separate collection	**inh**	inhabitants
UW	urban waste	**1.01**	classification of recovered paper according to UNI EN 643
%	percent rate	**1.02**	
n	number	**1.04**	
		1.05	

Sardinia continues its progress
As in 2006, Sardinia is the region where the collected paper and board volumes grew to the greatest extent in 2007 (+23.1%), followed by Campania (+14.7%) and Trentino Alto Adige (+13.8%).

Toscana ranks first, Molise is last
Tuscany ranks first in Italy with 81.9 kg/inh, followed by Trentino Alto Adige with 79.8 kg/inh. Molise is last with 11.2 kg/inh, following Sicily with 16.1 kg/inh. At macro-area level, 58.1 kg/inh in the North and 21.1 kg/inh in the South, while the Centre is in line with the result of the North (56.3 kg/inh).

Table 1
Trend of total separate paper and board collection by regions. 2006-2007 period.

(Source: Comieco)

Region	2006 t	2007 t	Δ 2006-2007 %	Δ 2006-2007 t	Total per-capita 2007 kg/inh-year
Emilia Romagna	249,210.7	279,814.5	12.3%	30,603.8	66.6
Friuli Venezia Giulia	64,531.3	60,958.7	-5.5%	-3,572.7	50.4
Liguria	66,566.7	54,016.0	-18.9%	-12,550.7	33.6
Lombardia	518,524.5	524,801.8	1.2%	6,277.3	55.3
Piemonte	302,188.0	285,824.5	-5.4%	-16,363.5	65.7
Trentino Alto Adige	69,269.9	78,841.9	13.8%	9,571.9	79.8
Valle d'Aosta	7,855.5	8,522.9	8.5%	667.3	68.6
Veneto	244,496.1	261,306.3	6.9%	16,810.2	55.0
North	**1,522,642.7**	**1,554,086.5**	**2.1%**	**31,443.7**	**58.1**
Lazio	212,480.8	238,024.8	12.0%	25,544.0	44.8
Marche	58,640.7	62,578.3	6.7%	3,937.6	40.9
Toscana	286,787.6	297,148.8	3.6%	10,361.2	81.9
Umbria	38,663.9	40,471.0	4.7%	1,807.1	46.5
Centre	**596,572.9**	**638,222.8**	**7.0%**	**41,649.9**	**56.3**
Abruzzo	32,351.7	36,675.5	13.4%	4,323.8	28.1
Basilicata	12,768.6	12,337.1	-3.4%	-431.5	20.8
Calabria	37,164.9	36,436.5	-2.0%	-728.4	18.2
Campania	102,893.1	118,065.6	14.7%	15,172.5	20.4
Molise	3,880.1	3,600.5	-7.2%	-279.6	11.2
Puglia	107,894.9	102,920.6	-4.6%	-4,974.3	25.3
Sardegna	37,719.9	46,440.0	23.1%	8,720.1	28.0
Sicilia	78,990.1	80,733.6	2.2%	1,743.5	16.1
South	**413,663.4**	**437,209.4**	**5.7%**	**23,546.1**	**21.1**
Italy	**2,532,879.0**	**2,629,518.7**	**3.8%**	**96,639.7**	**44.7**

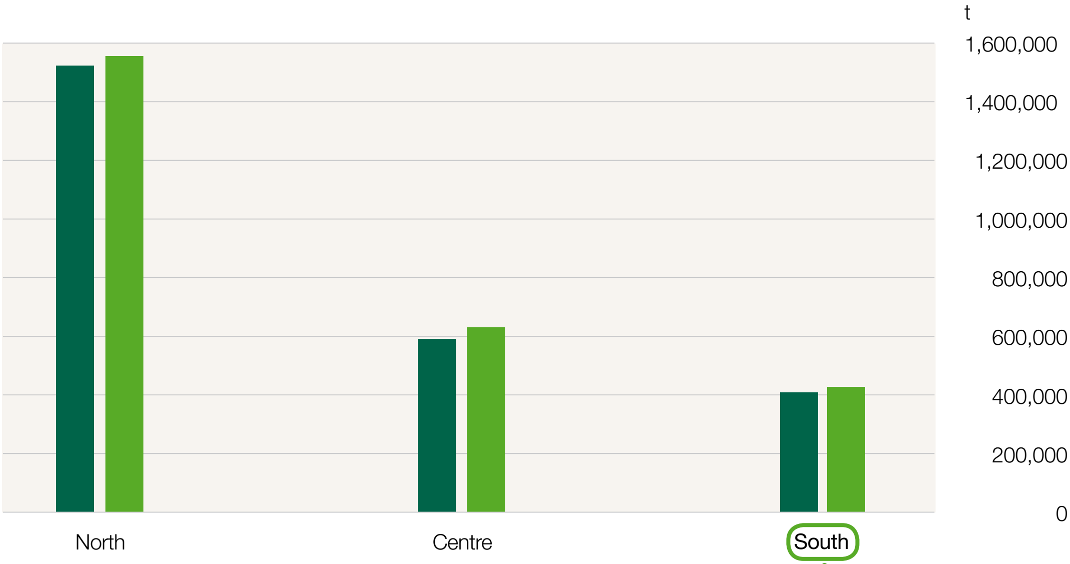


Figure 1
Comparison of separate paper and board collection between macro-areas. 2006-2007 period.

2006
2007

(Source: Comieco)

Collection is expanding in the Centre and South
Separate paper and board collection grew by 3.8% at a national level in 2007. The highest growth rate is recorded in the Centre (+7.0%), vs. 2.1% in the North. The growth rate is 5.7% in the South.

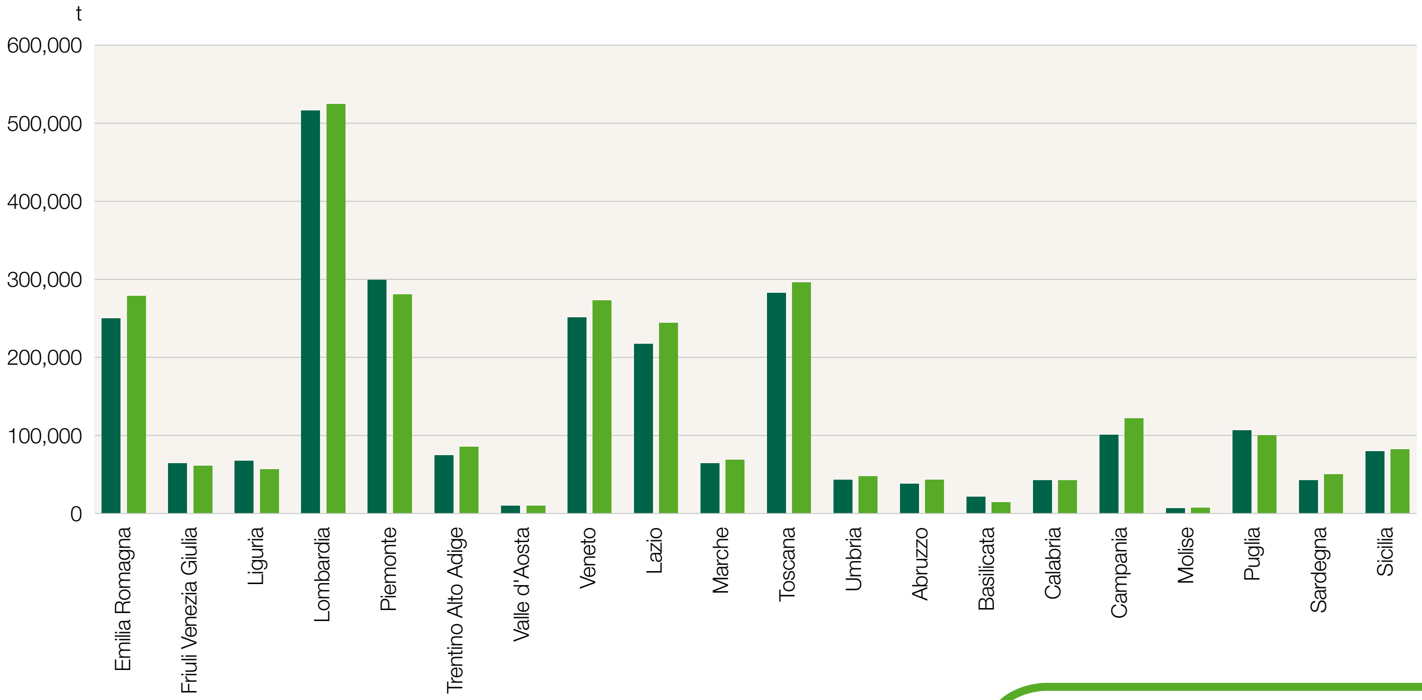


Figure 2
Comparison of separate paper and board collection by regions. 2006-2007 period.

2006
2007

(Source: Comieco)

Separate collection: +160% in ten years
In ten years of separate collection, the collected quantities of paper and board grew by 160%. While roughly 75% of separate collection was performed in the North in 1998, this share, following the development of collection in the country, amounts to about 59% in 2007. The Centre, that collected 19%, totals 24% today, whereas the South has grown from 5% to 17%.

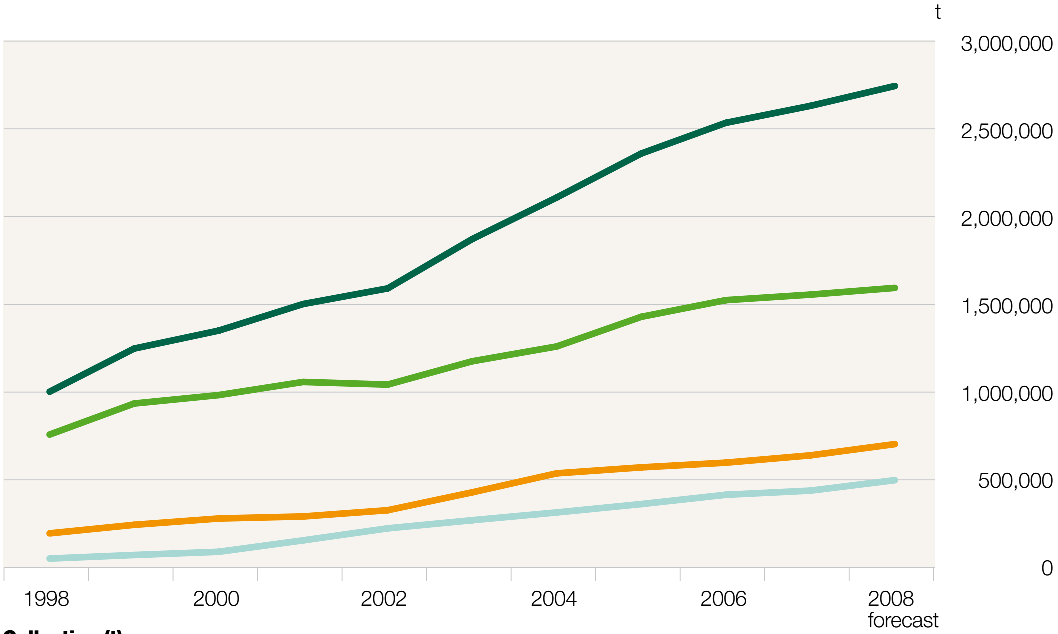


Figure 3
Separate paper and board collection. 1998-2007 trend and forecasts for 2008.

Noth
Centre
South
Italy

(Source: Comieco)

Collection (t)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008 forecast
North	756,813	933,687	981,687	1,056,582	1,041,535	1,174,418	1,258,786	1,427,627	1,522,643	1,554,087	1,592,473
Centre	193,958	242,497	278,472	290,074	325,625	427,490	535,827	569,772	596,573	638,223	669,973
South	50,222	70,587	88,794	153,985	222,390	268,729	312,979	360,695	413,663	437,209	480,370
Italy	**1,000,993**	**1,246,771**	**1,348,953**	**1,500,641**	**1,589,550**	**1,870,637**	**2,107,592**	**2,358,094**	**2,532,879**	**2,629,519**	**2,742,816**

Variation (t)

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008 forecast
North	176,874	48,000	74,895	-15,047	132,883	84,368	168,841	95,016	31,444	38,387
Centre	48,539	35,975	11,602	35,551	101,865	108,337	33,945	26,801	41,650	31,750
South	20,365	18,207	65,191	68,405	46,339	44,250	47,717	52,968	23,546	43,161
Italy	**245,778**	**102,182**	**151,688**	**88,909**	**281,087**	**236,955**	**250,503**	**174,785**	**96,640**	**113,297**

Table 2
Comparison of the production of urban waste, overall separate collection, and separate paper and board collection in Italy. 2006-2007 period. (Source: Comieco)

		Year 2006 (APAT data)	Year 2007 (Comieco estimate)	Δ % '06-'07 (APAT 06/Comieco 07)
UW	t	32,522,650	32,695,015	0.5%
Total SC	t	8,377,572	9,168,700	9.4%
Paper & board SC	t	2,529,465	2,629,519	4.0%
% total SC vs. total generated UW	%	25.8	28.0	
% paper and board SC vs. total SC	%	30.2	28.7	

Separate collection grows at a rate four times as high as for urban waste
According to Comieco estimates, urban waste in Italy increased by 2.1% in volume in 2007.
Overall separate collection grew by 8.4%, and paper and board collection grew by 3.8%. While the incidence of separate collection on total waste collection was 28.0%, the incidence of paper and board on total separate collection was 28.7%, with a 1.3% decline compared to the previous year following the increased collection of other materials.

Figure 4
Rate of separate paper and board collection vs. the overall separate collection estimated for 2007.
(Source: Comieco)

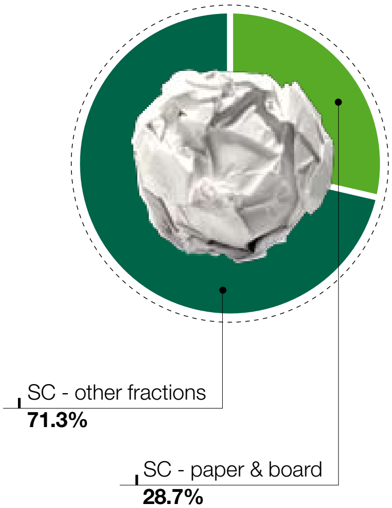


Table 3
Comparison of separate paper and board collection under the agreements and total separate paper and board collection.

(Source: Comieco)

An unchanging role for Comieco
A 74% share of collection managed by the Consortium is confirmed at a national level. However, differences are observed between regions. While the paper and board share managed under the agreements decreased by 3.5% in the Centre, rates in the North and South are increasing, albeit to a widely varying extent. The rate of managed separate collection is 71.7% in the North, vs. 93.1% in the South.

Region	Under agreements 2006 t	Total 2006 t	Under agreements vs. total 2006 %	Under agreements 2007 t	Total 2007 t	Under agreements vs. total 2007 %
Emilia Romagna	182,990.0	249,210.7	73.4	197,025.4	279,814.5	70.4
Friuli Venezia Giulia	50,879.7	64,531.3	78.8	46,427.1	60,958.7	76.2
Liguria	29,808.3	66,566.7	44.8	31,053.4	54,016.0	57.5
Lombardia	371,890.1	518,524.5	71.7	379,103.0	524,801.8	72.2
Piemonte	221,938.8	302,188.0	73.4	236,659.8	285,824.5	82.8
Trentino Alto Adige	60,573.3	69,269.9	87.4	64,927.2	78,841.9	82.4
Valle d'Aosta	7,855.5	7,855.5	100.0	8,522.9	8,522.9	100.0
Veneto	149,322.1	244,496.1	61.1	150,600.7	261,306.3	57.6
North	**1,075,257.9**	**1,522,642.7**	**70.6**	**1,114,319.4**	**1,554,086.5**	**71.7**
Lazio	121,248.8	212,480.8	57.1	132,278.9	238,024.8	55.6
Marche	41,161.3	58,640.7	70.2	42,690.2	62,578.3	68.2
Toscana	234,271.1	286,787.6	81.7	227,602.8	297,148.8	76.6
Umbria	24,371.3	38,663.9	63.0	25,528.1	40,471.0	63.1
Centre	**421,052.5**	**596,572.9**	**70.6**	**428,100.0**	**638,222.8**	**67.1**
Abruzzo	28,554.5	32,351.7	88.3	32,983.1	36,675.5	89.9
Basilicata	7,506.3	12,768.6	58.8	8,687.4	12,337.1	70.4
Calabria	36,052.1	37,164.9	97.0	35,513.3	36,436.5	97.5
Campania	94,843.8	102,893.1	92.2	113,565.8	118,065.6	96.2
Molise	2,025.4	3,880.1	52.2	2,301.1	3,600.5	63.9
Puglia	105,170.9	107,894.9	97.5	100,813.2	102,920.6	98.0
Sardegna	32,119.1	37,719.9	85.2	43,908.1	46,440.0	94.5
Sicilia	76,405.4	78,990.1	96.7	69,431.4	80,733.6	86.0
South	**382,677.4**	**413,663.4**	**92.5**	**407,203.3**	**437,209.5**	**93.1**
Italy	**1,878,987.8**	**2,532,879.0**	**74.2**	**1,949,622.8**	**2,629,518.8**	**74.1**

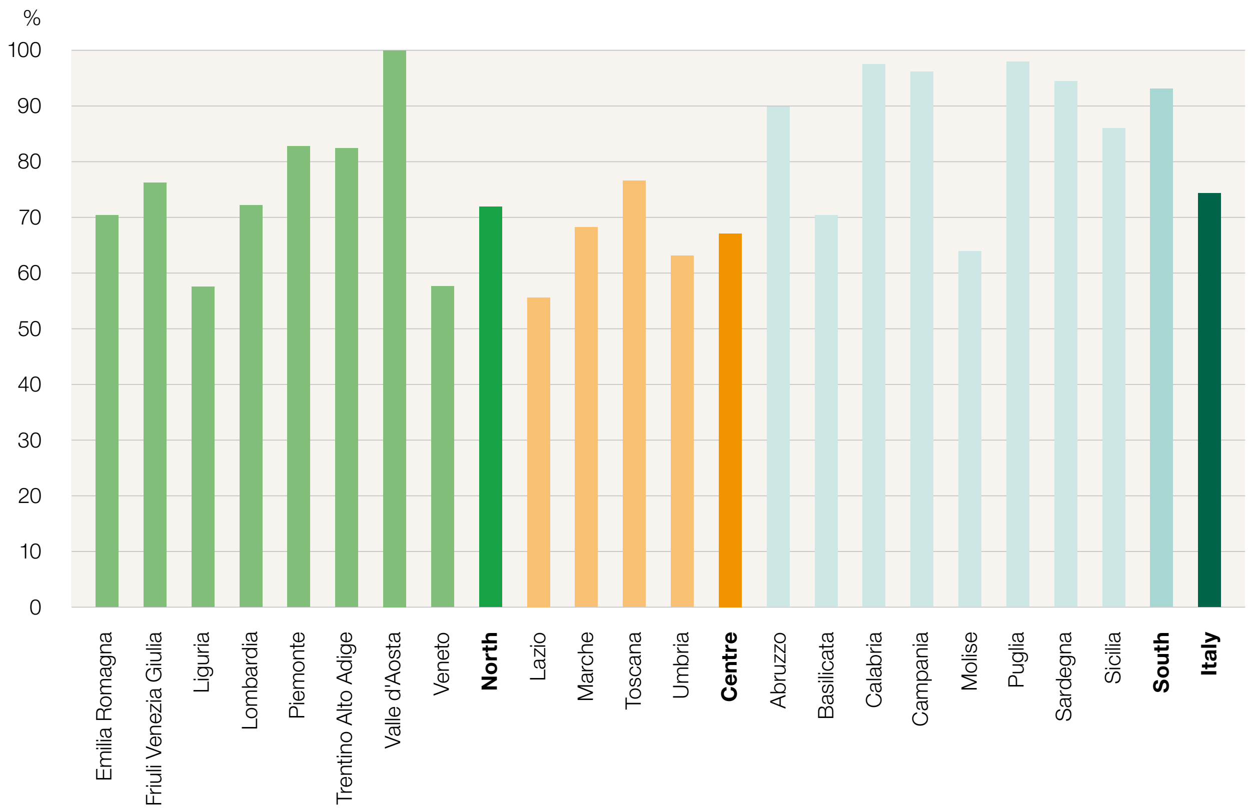


Figure 5
Incidence of separate paper and board collection managed under the agreements in 2007 on total separate paper and board collection in the same year. Detailed data by Regions and Areas. (Source: Comieco)

Year 2007

Area	Parties under the agreements		No agreements	Total
	Managed under agreements	Managed outside agreements (*)		
	t	t	t	t
North	1,114,319.4	96,247.0	343,520.1	1,554,086.5
Centre	428,100.0	117,448.1	92,674.8	638,222.8
South	407,203.3	2,561.3	27,444.8	437,209.5
Italy	**1,949,622.8**	**216,256.4**	**463,639.7**	**2,629,518.8**

(*) partial figure

Table 4
Summary of separate paper and board collection management.

(Source: Comieco)

Larger and larger quantities are managed outside the agreements
The parties subject to the agreements selected the Consortium as a partial operator of their collection flows in 2007. Almost 173 thousand tons were managed through different recycling channels, particularly in the centre and north. The increase is above 17%.

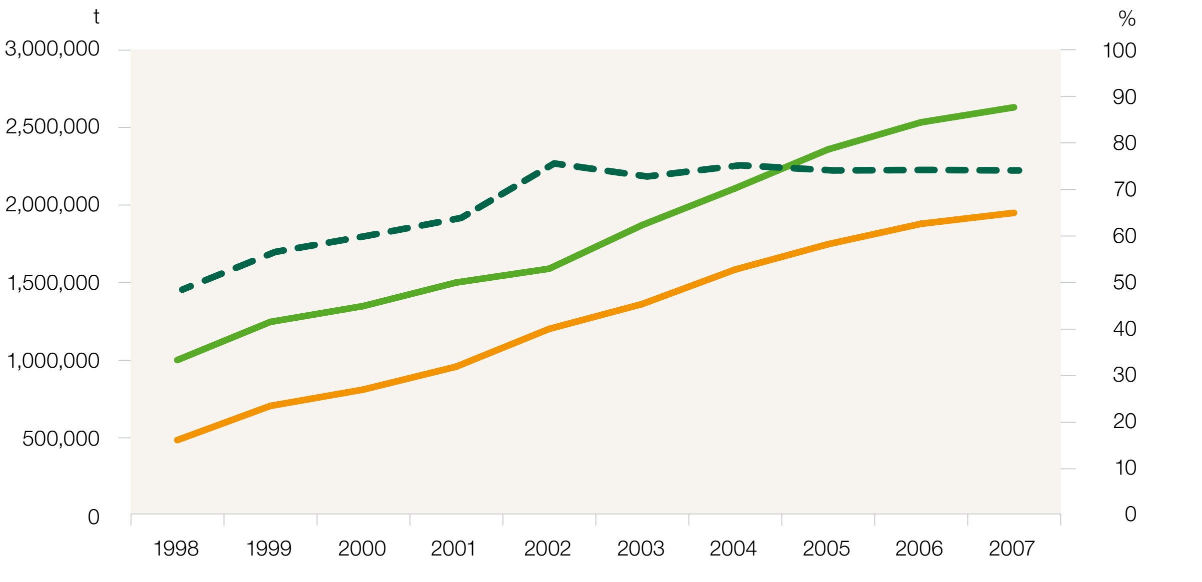
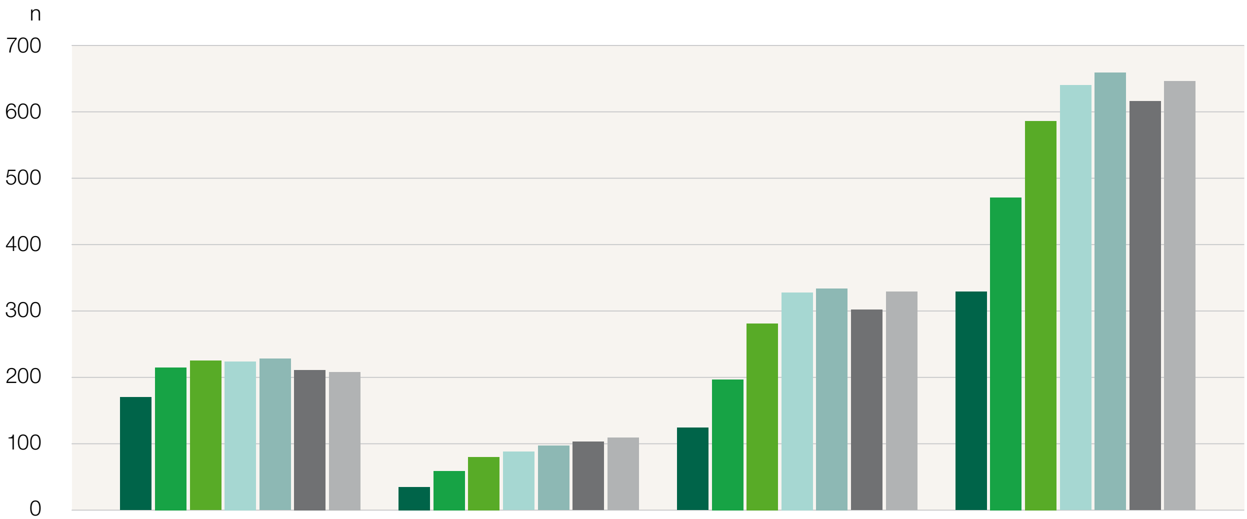


Figure 6
Share of management by the Consortium vs. total separate collection of paper and board from urban waste.

(Source: Comieco)



	North	Centre	South	Italy
2001	170	35	124	329
2002	215	59	197	471
2003	225	80	281	586
2004	224	88	328	640
2005	228	97	334	659
2006	211	103	302	616
2007	208	109	329	646

Figure 7
Agreements signed
in the 2001-2007 period.

(Source: Comieco)

Separate collection under the agreements: growing territorial coverage
Until 2007 Comieco signed 646 agreements to operate separate paper and board collection (+5% vs. 2006). These currently cover 78.2% of the Italian Cities (6,339) and 88.2% of the Italian citizens. While the service reached 100% of both the Cities and the citizens in Vallée d'Aoste, the coverage rates amount to 72,5% and 77.4% respectively in Veneto.

Table 5
Territorial coverage
by regions at
December 31, 2007.

(Source: Comieco)

Region	Inhabitants	Inhabitants under the agreements		Cities	Cities under the agreements	
	n	n	%	n	n	%
Emilia Romagna	4,199,669	4,094,513	97.5	341	330	96.8
Friuli Venezia Giulia	1,209,698	999,763	82.6	219	166	75.8
Liguria	1,609,288	1,344,412	83.5	235	126	53.6
Lombardia	9,497,939	7,026,142	74.0	1,548	1,036	66.9
Piemonte	4,347,344	4,088,315	94.0	1,206	1,087	90.1
Trentino Alto Adige	988,338	872,452	88.3	339	306	90.3
Valle d'Aosta	124,263	124,263	100.0	74	74	100.0
Veneto	4,749,799	3,674,002	77.4	581	421	72.5
North	**26,726,338**	**22,223,862**	**83.2**	**4,543**	**3,546**	**78.1**
Lazio	5,317,017	4,858,916	91.4	378	249	65.9
Marche	1,531,248	1,395,598	91.1	246	209	85.0
Toscana	3,626,558	3,549,870	97.9	287	269	93.7
Umbria	869,968	850,701	97.8	92	76	82.6
Centre	**11,344,791**	**10,655,085**	**93.9**	**1,003**	**803**	**80.1**
Abruzzo	1,306,487	1,141,627	87.4	305	191	62.6
Basilicata	592,948	373,265	63.0	131	53	40.5
Calabria	1,999,791	1,977,115	98.9	409	402	98.3
Campania	5,788,644	5,369,856	92.8	551	489	88.7
Molise	320,466	133,215	41.6	136	24	17.6
Puglia	4,069,202	3,725,296	91.5	258	202	78.3
Sardegna	1,656,266	1,397,858	84.4	377	250	66.3
Sicilia	5,014,927	4,902,103	97.8	390	379	97.2
South	**20,748,731**	**19,020,335**	**91.7**	**2,557**	**1,990**	**77.8**
Italy	**58,819,860**	**51,899,282**	**88.2**	**8,103**	**6,339**	**78.2**

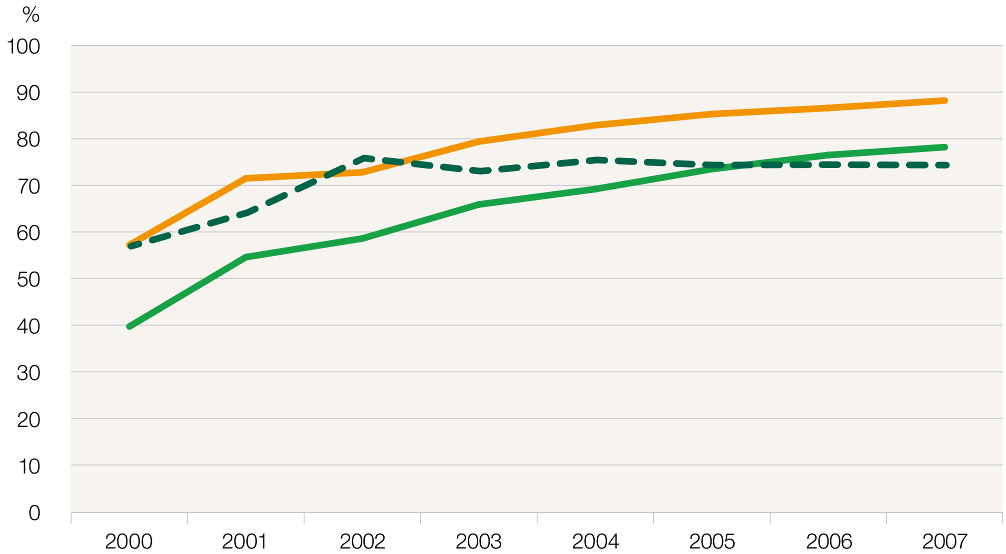
Figure 8
Coverage rates
of management
by the Consortium.

Share managed by Comieco (%)

Covered cities (%)

Covered inhabitants (%)

(Source: Comieco)



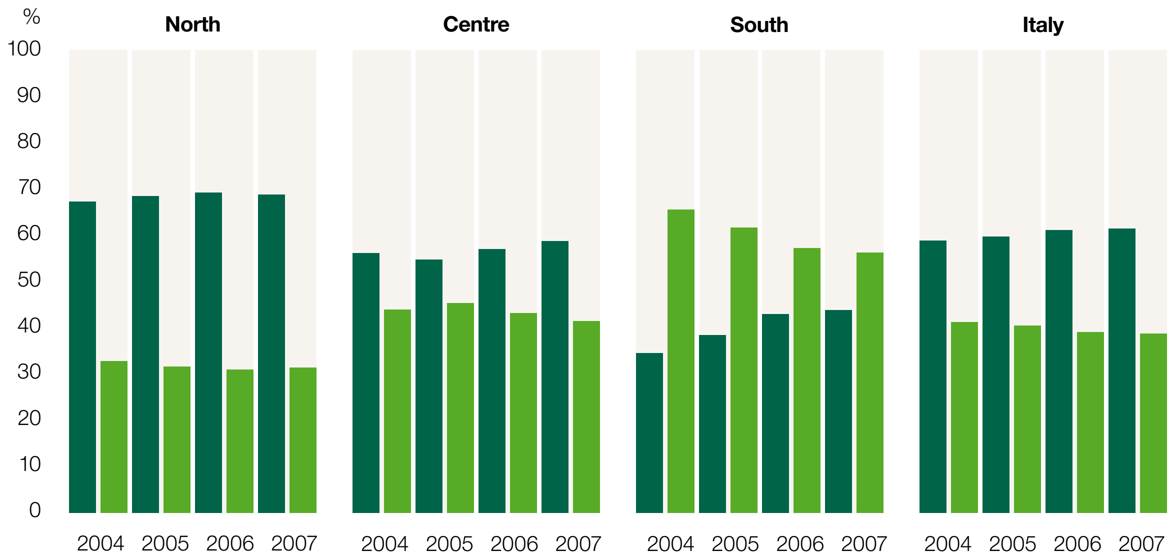
	2000	2001	2002	2003	2004	2005	2006	2007
Share managed by Comieco (%)	56.7	63.9	75.6	72.8	75.2	74.1	74.2	74.1
Covered cities (%)	39.7	54.6	58.6	65.9	69.2	73.5	76.5	78.2
Covered inhabitantsi (%)	57.2	71.5	72.8	79.4	82.9	85.3	86.6	88.2

Table 6
Amounts managed under the agreements – Broken down by materials originating from 1.01+1.02 and 1.04+1.05 collection and comparison vs. 2006. (Source: Comieco)

Piedmont as the leader of household separate collection. Agreements promote collection in Sardinia
Regions with the highest rates of 1.01+1.02 (household) collection include Piedmont (81.9%) and Lombardy (76.2%). The figure for Sardinia stands out among the Central-Southern regions, thus confirming the dedication of citizens with a 68.1% 1.01+1.02 separate collection. The different ratio of 1.01+1.02 to 1.04+1.05 collection in the regions is attributable to a still poor organization of services and to different waste ranking criteria.

	Inhabitants under agreements	Total managed quantities	1.01+1.02		1.04+1.05		Managed packaging	SPF
	n	t	t	%	t	%	t	t
Year 2007								
Emilia Romagna	4,094,513	197,025.4	110,613.4	56.1	86,411.9	43.9	114,065.3	82,960.1
Friuli Venezia Giulia	999,763	46,427.1	24,788.7	53.4	21,638.4	46.6	27,835.5	18,591.5
Liguria	1,344,412	31,053.4	13,180.1	42.4	17,873.3	57.6	21,168.3	9,885.1
Lombardia	7,026,142	379,103.0	289,010.4	76.2	90,092.6	23.8	162,345.2	216,757.8
Piemonte	4,088,315	236,659.8	193,761.9	81.9	42,897.9	18.1	91,338.3	145,321.5
Trentino Alto Adige	872,452	64,927.2	35,728.6	55.0	29,198.7	45.0	38,130.8	26,796.4
Valle d'Aosta	124,263	8,522.9	4,190.4	49.2	4,332.5	50.8	5,380.1	3,142.8
Veneto	3,674,002	150,600.7	94,353.3	62.7	56,247.4	37.3	79,835.7	70,765.0
North	**22,223,862**	**1,114,319.4**	**765,626.9**	**68.7**	**348,692.6**	**31.3**	**540,099.3**	**574,220.2**
Lazio	4,858,916	132,278.9	81,456.9	61.6	50,822.0	38.4	71,186.2	61,092.7
Marche	1,395,598	42,690.2	21,769.8	51.0	20,920.4	49.0	26,362.8	16,327.4
Toscana	3,549,870	227,602.8	130,222.2	57.2	97,380.6	42.8	129,936.1	97,666.6
Umbria	850,701	25,528.1	17,125.1	67.1	8,403.1	32.9	12,684.3	12,843.8
Centre	**10,655,085**	**428,100.0**	**250,574.0**	**58.5**	**177,526.0**	**41.5**	**240,169.5**	**187,930.5**
Abruzzo	1,141,627	32,983.1	19,401.7	58.8	13,581.4	41.2	18,431.8	14,551.3
Basilicata	373,265	8,687.4	3,953.0	45.5	4,734.3	54.5	5,722.6	2,964.8
Calabria	1,977,115	35,513.3	11,900.3	33.5	23,613.0	66.5	26,588.1	8,925.2
Campania	5,369,856	113,565.8	49,242.8	43.4	64,322.9	56.6	76,633.6	36,932.1
Molise	133,215	2,301.1	1,280.2	55.6	1,020.9	44.4	1,340.9	960.1
Puglia	3,725,296	100,813.2	40,549.3	40.2	60,264.0	59.8	70,401.3	30,412.0
Sardegna	1,397,858	43,908.1	29,890.5	68.1	14,017.6	31.9	21,490.2	22,417.9
Sicilia	4,902,103	69,431.4	20,051.8	28.9	49,379.6	71.1	54,392.6	15,038.8
South	**19,020,335**	**407,203.3**	**176,269.7**	**43.3**	**230,933.6**	**56.7**	**275,001.1**	**132,202.3**
Italy	**51,899,282**	**1,949,622.8**	**1,192,470.6**	**61.2**	**757,152.2**	**38.8**	**1,055,269.8**	**894,353.0**
Year 2006								
North	21,992,226	1,075,257.9	743,023.1	69.1	332,234.8	30.9	510,560.4	564,697.5
Centre	10,525,726	421,052.5	239,652.4	56.9	181,400.1	43.1	238,916.7	182,135.8
South	18,970,703	382,677.4	164,264.1	42.9	218,413.4	57.1	257,836.7	124,840.7
Italy	**51,488,655**	**1,878,987.8**	**1,146,939.5**	**61.0**	**732,048.3**	**39.0**	**1,007,313.7**	**871,674.1**

Figure 9
Managed quantity breakdown between 1.01+1.02 and 1.04+1.05 collection systems. 2004-2007 trend.



(Source: Comieco)

	North				Centre				South				Italy			
	2004	**2005**	**2006**	**2007**	**2004**	**2005**	**2006**	**2007**	**2004**	**2005**	**2006**	**2007**	**2004**	**2005**	**2006**	**2007**
1.01+1.02	67.2	68.4	69.1	68.7	56.1	54.7	56.9	58.6	34.5	38.4	42.9	43.8	58.8	59.6	61.0	61.3
1.04+1.05	32.8	31.6	30.9	31.3	43.9	45.3	43.1	41.4	65.5	61.6	57.1	56.2	41.2	40.4	39.0	38.7

Valle d'Aosta, more resources to performing collectors
Comieco paid compensations for over 88.3 million EUR to the Cities for packaging collection in 2007, equal to 1.70 EUR per inhabitant under the agreements. Recyclers participating to the system invested a further 4 million EUR locally for FMS collection. Valle d'Aosta is the most virtuous region: citizens received a 4.02 EUR per-capita contribution.

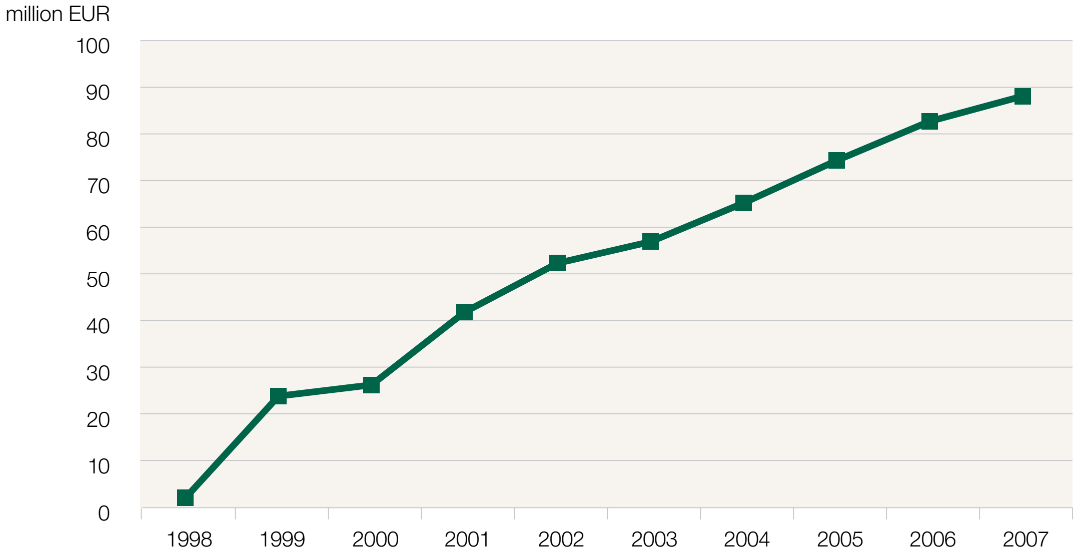
Table 7
Resources granted to parties under the agreements in 2007.

(Source: Comieco)

Region	Inhabitants under agreements	Comieco's investment (packaging)		Recyclers' investment (similar product fractions)	
	no.	EUR	EUR/inh under agreements	EUR	EUR/inh under agreements
Emilia Romagna	4,094,513	9,224,232.77	2.25	373,320.32	0.09
Friuli Venezia Giulia	999,763	2,444,528.48	2.45	83,661.93	0.08
Liguria	1,344,412	1,814,483.99	1.35	44,482.91	0.03
Lombardia	7,026,142	14,311,979.40	2.04	975,410.10	0.14
Piemonte	4,088,315	7,616,046.51	1.86	653,946.53	0.16
Trentino Alto Adige	872,452	3,316,995.09	3.80	120,583.97	0.14
Valle d'Aosta	124,263	486,303.62	3.91	14,142.60	0.11
Veneto	3,674,002	6,514,302.91	1.77	318,442.37	0.09
North	**22,223,862**	**45,728,872.77**	**2.06**	**2,583,990.73**	**0.12**
Lazio	4,858,916	6,069,655.14	1.25	274,917.16	0.06
Marche	1,395,598	2,328,905.80	1.67	73,473.12	0.05
Toscana	3,549,870	11,314,014.66	3.19	439,499.91	0.12
Umbria	850,701	1,098,548.38	1.29	57,797.08	0.07
Centre	**10,655,085**	**20,811,123.98**	**1.95**	**845,687.28**	**0.08**
Abruzzo	1,141,627	1,646,331.01	1.44	65,480.91	0.06
Basilicata	373,265	474,120.36	1.27	13,341.51	0.04
Calabria	1,977,115	1,911,202.84	0.97	40,163.55	0.02
Campania	5,369,856	6,099,478.50	1.14	166,194.61	0.03
Molise	133,215	104,108.94	0.78	4,320.57	0.03
Puglia	3,725,296	5,841,149.47	1.57	136,853.78	0.04
Sardegna	1,397,858	1,607,412.73	1.15	100,880.53	0.07
Sicilia	4,902,103	4,124,744.06	0.84	67,674.82	0.01
South	**19,020,335**	**21,808,547.91**	**1.15**	**594,910.28**	**0.03**
Italy	**51,899,282**	**88,348,544.66**	**1.70**	**4,024,588.28**	**0.08**

Figure 10
Doubling of the transferred resources – the economic investment of Comieco in 1998-2007.

(Source: Comieco)



Economic investment (million EUR)

	Transferred resources	% variation
1998	2.2	-
1999	24.0	993.1
2000	26.4	9.9
2001	42.0	59.1
2002	52.5	24.9
2003	57.1	8.9
2004	65.4	14.4
2005	74.5	14.1
2006	82.9	11.2
2007	88.3	6.5
Total	**515.4**	**-**

Note:
including 31 million EUR for energy recovery in the 1999-2002 period

An important contribution to collection
Compensations for over 515 million EUR were paid for collection from 1998 to 2007 vs. 7.24 million tons of managed packaging.

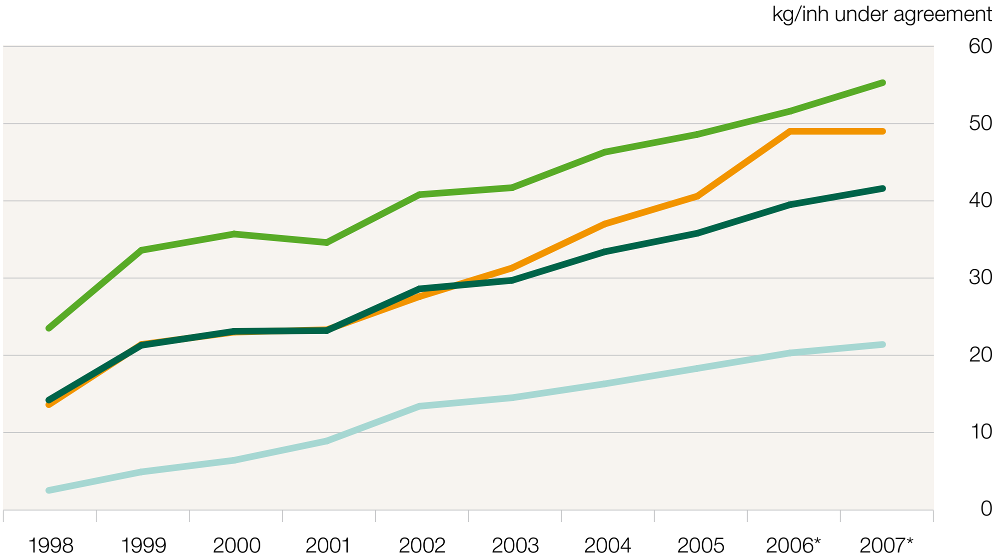


Figure 11
Per-capita collection under the agreements. 1998-2007 trend.

North
Centre
South
Italy

(Source: Comieco)

*pop. 2007

	Per-capita collection (kg/inh under agreements)									
	1998	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006***	**2007***
North	23.6	33.7	35.8	34.7	40.9	41.8	46.4	48.7	51.7	55.4
Centre	13.7	21.5	23.1	23.4	27.7	31.4	37.1	40.7	49.1	49.1
South	2.6	5.0	6.5	9.0	13.5	14.6	16.4	18.4	20.4	21.5
Italy	**14.3**	**21.4**	**23.2**	**23.3**	**28.7**	**29.8**	**33.5**	**35.9**	**39.6**	**41.7**

A steady ten-year growth
In 10 years the per-capita separate collection by parties under the agreements increased from 14.3 to 41.7 kg/inh. It grew from 23.6 kg/inh in 1998 to 55.4 kg/inh in 2007 in the North, from 13.7 to 49.1 kg/inh in the Centre, and from 2.6 to 21.5 kg/inh in the South. The Cities and the Operators of the agreements decide which flows and to what extent collection should be managed within the framework of the agreement signed with Comieco.

Table 8
Trend of separate paper and board collection under the agreements in some sample cities.

(Source: Comieco)

Sassari pulls the whole Sardinia region
Sassari stands out for its +89.5% of quantities collected per capita, followed by Viterbo that saw its separate collection per inhabitant grow by 44.9%. In absolute terms, the most significant result is recorded in Trento, which ranks first with 85.6 kg/inh. Some negative results (e.g. Bari or Bologna) can be attributed to the use of recycling channels outside the agreements rather than to a slowing down of collection.

City	Region	Inhabitants n	2004 t	2005 t	2006 t	2007 t	Δ 2006 2007 %	Per-capita 2007 kg/inh year	di cui	1.01+1.02 2007 kg/inh year	1.04+1.05 2007 kg/inh year
Ancona	Centre	101,687	4,469	4,547	4,509	5,396	19.7	53.1		42.4	10.6
Aosta	North	34,583	1,709	1,914	2,238	2,372	6.0	68.6		33.7	34.9
Bari	South	325,929	13,640	16,284	21,572	15,740	-27.0	48.3		19.4	28.9
Bologna	North	374,054	5,573	5,302	6,294	5,695	-9.5	15.2		3.7	11.5
Bolzano	North	99,193	6,048	6,255	6,769	7,265	7.3	73.2		40.0	33.3
Brescia	North	189,862	13,185	13,633	14,414	14,755	2.4	77.7		44.1	33.6
Campobasso	South	51,279	nd	nd	934	1,026	9.9	20.0		15.5	4.5
Catanzaro	South	94,627	1,054	1,396	1,525	1,525	-0.0	16.1		4.8	11.3
Florence	Centre	367,194	29,439	29,990	31,145	31,435	0.9	85.6		71.8	13.8
Genova	North	618,088	16,852	19,385	15,907	19,322	21.5	31.3		20.0	11.3
L'Aquila	South	72,099	2,692	2,581	2,550	2,510	-1.6	34.8		12.2	22.6
Milan	North	1,304,312	83,735	85,148	89,737	93,539	4.2	71.7		56.8	14.9
Naples	South	981,267	14,737	17,492	20,707	28,524	37.8	29.1		13.1	15.9
Palermo	South	669,249	12,332	15,599	16,486	9,726	-41.0	14.5		6.8	7.8
Perugia	Centre	161,816	4,207	4,833	4,054	4,158	2.6	25.7		18.5	7.2
Potenza	South	184,268	1,892	2,011	2,710	3,546	30.9	51.8		24.9	26.9
Reggio Calabria	South	184,268	3,384	4,153	4,856	4,312	-11.2	23.4		13.0	10.4
Rome	Centre	2,548,743	76,525	91,599	99,011	105,408	6.5	41.4		26.4	14.9
Salerno	South	134,173	3,490	3,702	3,744	4,006	7.0	29.9		13.8	16.0
Sassari	South	128,182	558	681	2,180	4,132	89.5	32.2		24.8	7.5
Turin	North	899,652	49,298	52,856	59,187	62,509	5.6	69.5		62.7	6.8
Trento	North	11,257	7,577	8,625	10,166	10,506	3.3	94.4		59.9	34.5
Trieste	North	205,800	6,263	6,573	7,138	7,588	6.3	36.9		25.9	11.0
Verona	North	259,940	12,854	13,484	13,575	14,332	5.6	55.1		46.4	8.8
Viterbo	Centre	60,514	967	1,034	1,301	1,885	44.9	31.1		13.1	18.1

Notes: Data only refers to the quantities managed under the agreements. The operator can use the consortium system to recycle a share (see for example Bologna or Ancona). See specific focus for the highlighted cities.

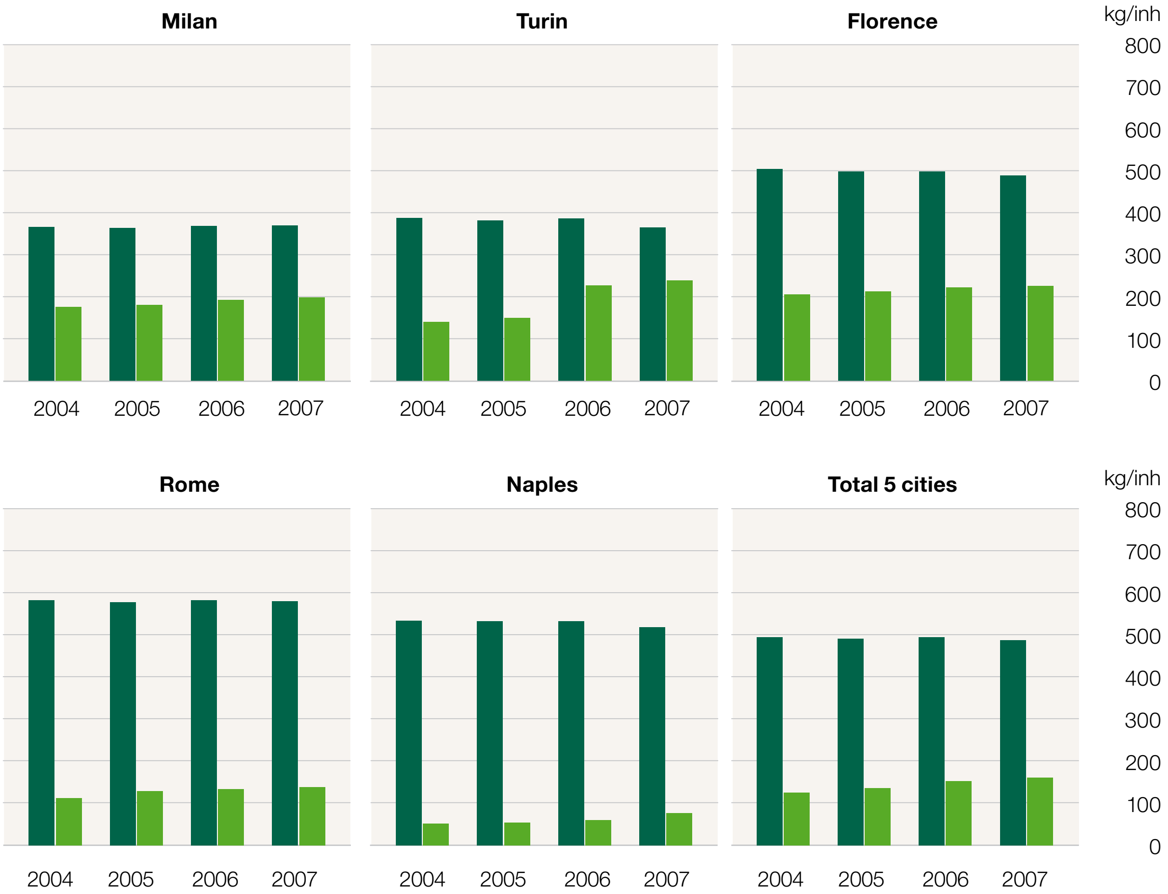


Figure 12
Per-capita waste collection in the sample cities Turin, Milan, Florence, Rome, and Naples. 2004-2007 data.

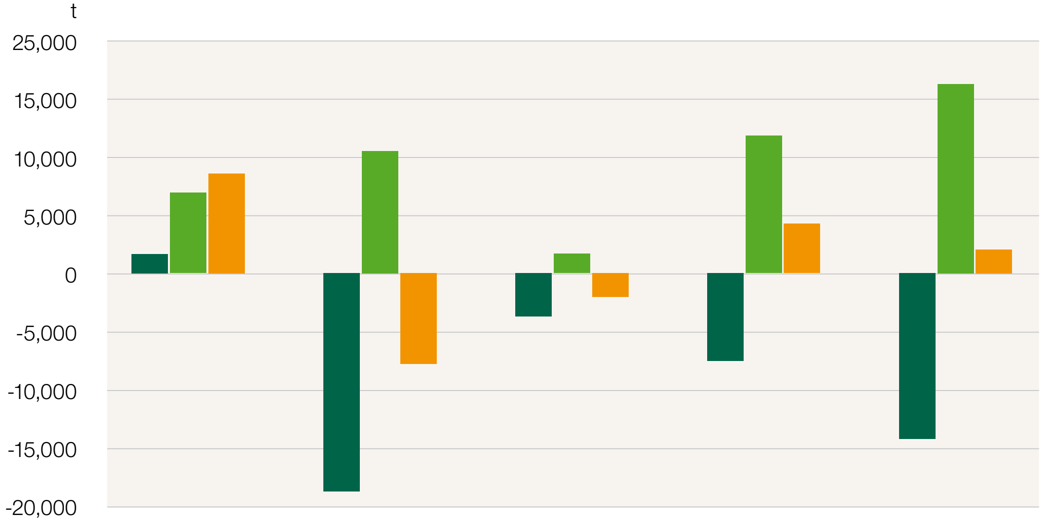
TOT SC kg/inh
TOT udifferentiated SC

(Source: Comieco)

Slow motion in big urban areas
Separate paper and board collection in the 5 large urban areas, vs. total separate collection, grew by 4% on average. The year 2007 generally shows a reduced production of waste as such. The total managed waste is growing, thus confirming the national trends. Separate per-capita collection is maximum in Turin, with 238.4 kg/inh. Naples, with 76.9 kg/inh, grew compared to 2006, when per-capita separate collection amounted to 60.4 kg/inh. It should be noted, however, that these figures are influenced by the different waste ranking and accounting criteria adopted by each city.

Figure 13
Waste collection in the sample cities Turin, Milan, Florence, Rome, and Naples. 2006-2007 changes.

(Source: Comieco)



	Milan	Turin	Florence	Rome-	Naples
TOT undiff. var.	1,634	-18,714	-3,731	7,541	-14,206
TOT SC var.	6,907	10,487	1,673	11,797	16,226
TOT UW var.	8,541	-7,782	-2,057	4,255	2,020

Valori assoluti		Milano	Torino	Firenze	Roma	Napoli	Totale
TOT SC	t	257,759	214,499	83,005	352,422	75,447	983,132
TOT UW	t	739,332	545,834	262,154	1,833,715	585,341	3,966,376
TOT SC/UW	%	34.9	39.3	31.7	19.2	12.9	

Naples: separate collection is expanding but the city collects one-third of the national average
Naples records the maximum increase (+ 2.7%) in the share of separate collection of all materials, but the rate vs. the production of urban waste is 12.9%, still far from the national average of 34%. Of the five cities, Milan is the only one where the quantity of urban waste grew in 2007: for this city, a long-standing leader in separate collection, it is more difficult to expand separate collection any further.

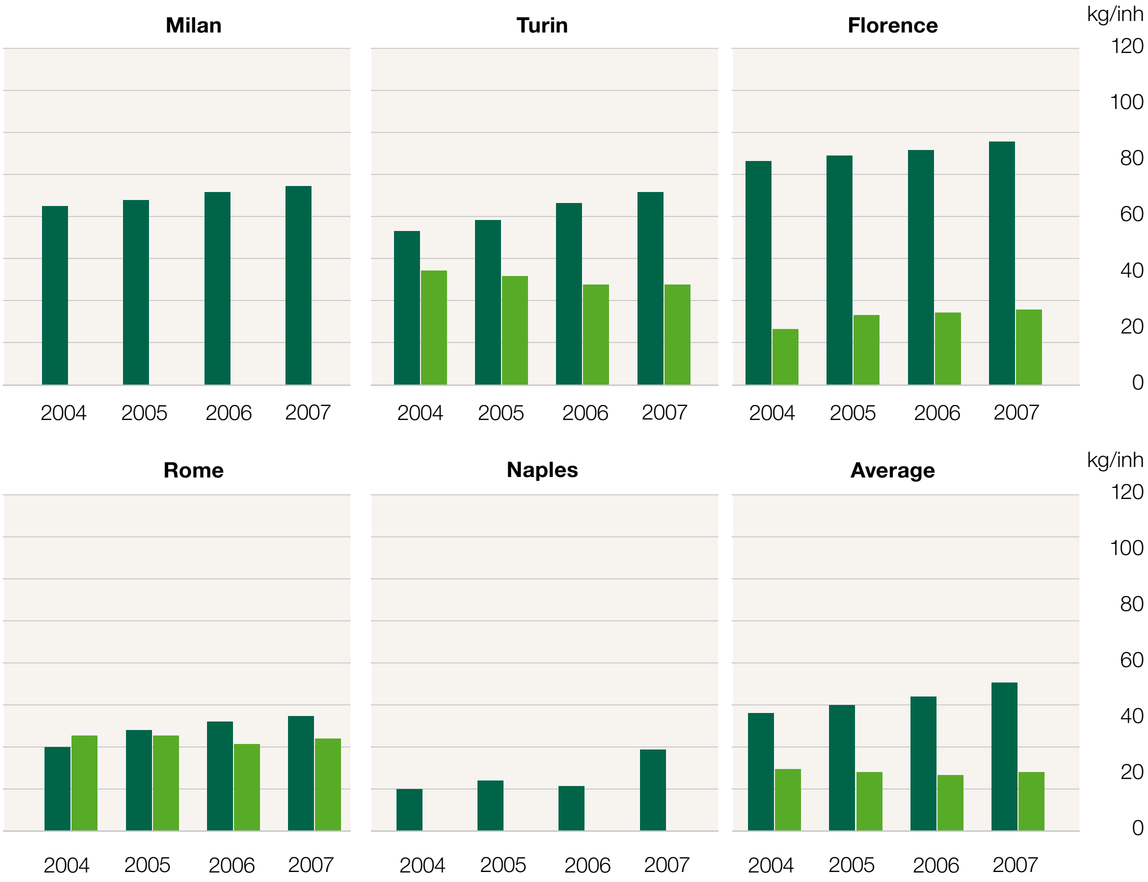


Figure 14
Paper and board collection management – 2004-2007 per-capita trend.

Outside agreements
Under agreements

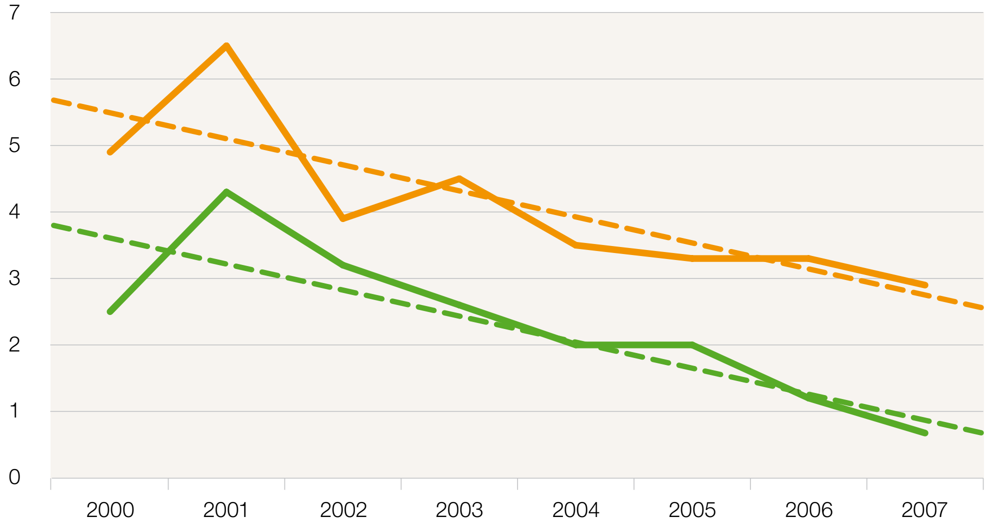
(Source: Comieco)

Paper is confirmed as a main player in separate collection
The scenario of separate paper collection in the 5 sample cities is quite varied. Rome and Naples can still improve; household and small-enterprise collection in Rome totals 41 kg per inhabitant, vs. 29 kg/inh in Naples. Data in Florence points out to a more significant collection rate. Reasons include the tourist character of the city and a more robust ranking mechanism, consistent with a still inhomogeneous regional waste management style that is hardly comparable.

Figure 15
Quality of the collected material (mean trend of foreign fractions). 2000-2007 period.

1.01+1.02
1.04+1.05
1.01+1.02 trend
1.04+1.05 trend

(Source: Comieco)



High-quality recovered paper
The quality of separate collection, both 1.01+1.02 and 1.04+1.05, is improving. The trend of the presence of foreign fractions in recovered paper is constantly declining. In the period under study, the average fell from 4.9% to 2.9% for 1.01+1.02 collection and from 2.5% to 0.8% for 1.04+1.05 collection. This trend shows that the quality of recovered paper will be further improved in 2008.

Collection	Dati	2000	2001	2002	2003	2004	2005	2006	2007
1.01+1.02	Analyzed quantities (kg)	n.a.	26,166	42,657	119,815	103,884	76,609	188,826	227,852
	Foreign fractions (%)	4.9	6.5	3.9	4.5	3.5	3.3	3.3	2.9
	Performed analyses (no.)	27	171	275	533	443	321	772	930
1.04+1.05	Analyzed quantities (kg)	n.a.	25,455	33,181	62,104	119,124	62,936	145,873	183,162
	Foreign fractions (%)	2.5	4.3	3.2	2.6	2.0	2.0	1.2	0.8
	Performed analyses (no.)	26	122	165	281	335	291	779	1,041

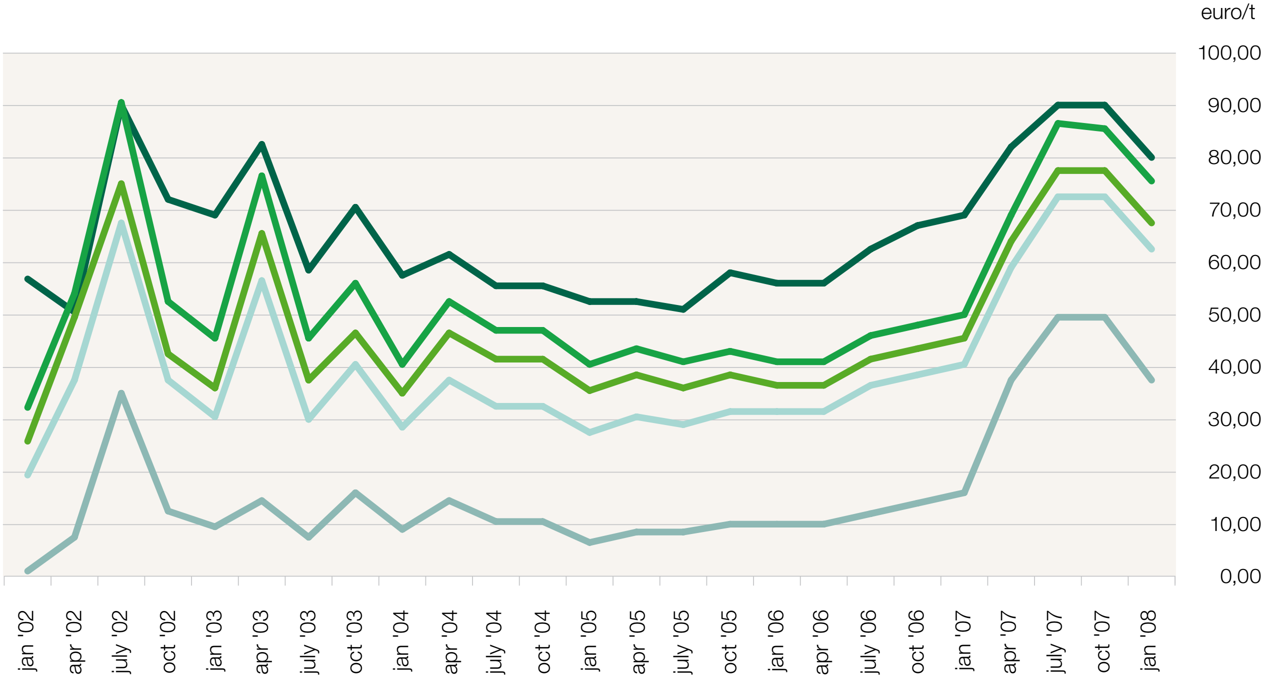


Figure 16
Monthly surveys of mean recovered paper values* (EUR/t) for the January 2002 - January 2008 period.

- mixed non-selected paper and board (1.01)
- mixed selected paper and board (1.02)
- paper and corrugated board (1.04)
- corrugated containers (1.05)
- selected graphic paper for deinking (1.11)

(Source: Chamber of Commerce of Milan)

A valuable resource
The year 2007 saw a renewed upward trend of recovered paper quotations after three decades of substantial stability, back to the levels recorded in 2002. This was a result of growing demand on international markets.

* For selected materials, packed in bales, free of foreign materials, from recoverer to user ex place of origin, VAT and transport excluded. With reference to the types referrable to the materials recovered by means of separate urban and assimilated waste collection

Figure 17
The recycling network in 2007.

(Source: Comieco)

Region	Sorting plants under agreements 2007	Paper mills under agreements	Plants for secondary and tertiary packaging collection
North	161	37	78
Centre	65	22	19
South	100	8	52
Italy	326	67	149

Recovery and recycling assurance
The local sorting plant network ensures collection within 17.2 km on average from the collection area. Paper mills ensure the collection of selected recovered paper throughout the national territory.


10 1 2
7 2 4
0 0 1
52 15 23
32 8 17
24 5 11
6 1 3
30 5 17
26 11 4
11 2 2
6 1 2
10 1 2
22 8 11
2 0 1
21 4 23
19 0 6
6 0 1
11 0 5
7 2 3
24 1 11
Sorting plants under agreements 2007
Paper mills under agreements
Plants for secondary and tertiary packaging collection

Table 9
Production, import, export, and apparent consumption of paper and board.

(Source: ISTAT data processed by Assocarta and Assocarta estimates)

Year 2007

Values in tons	Packaging paper and board				Other paper and board				Total paper production
	Paper and board for corrugated board	Cardboard for boxes	Other wrapping and packaging paper and board	Total packaging	Graphic paper	Hygienic-sanitary paper	Other paper types	Total other paper and board	
Produzione	2,739,942	650,329	1,290,622	**4,680,893**	3,458,278	1,450,963	521,897	**5,431,138**	**10,112,031**
Import	1,376,061	527,177	436,438	**2,339,676**	2,804,244	60,168	92,454	**2,956,866**	**5,296,542**
Export	193,331	468,320	472,192	**1,133,843**	1,607,504	703,731	69,054	**2,380,289**	**3,514,132**
Apparent consumption	3,922,672	709,186	1,254,868	**5,886,726**	4,655,018	807,400	545,296	**6,007,715**	**11,894,440**

Paper production is slightly growing
The year 2007 shows a 1.7% increase of apparent paper and board product consumption.
The change vs. 2006 mainly concerns graphic paper (+2.7%), while packaging is stable (+0.2%).

A confirmed positive balance of exports
For the fourth year in a row, net recovered paper exports are positive for Italy, with a positive balance of almost 600 thousand tons. The by-now consolidated separate collection system is a significant item in the country's economic balance.

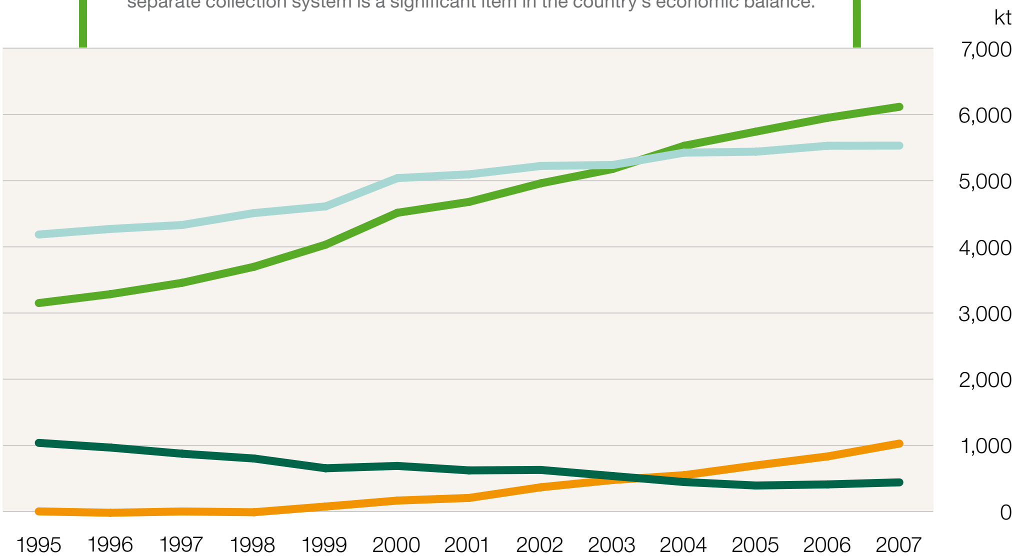
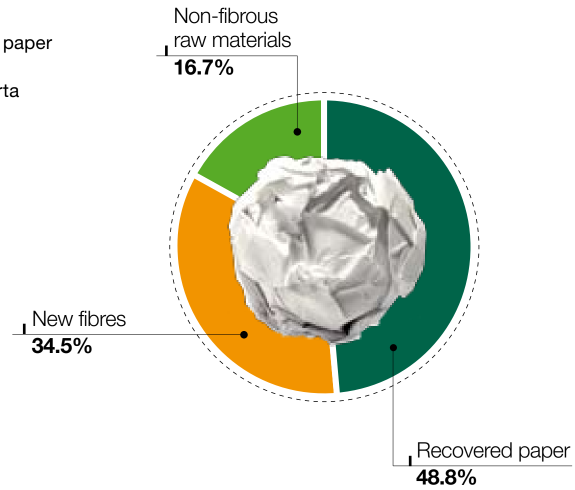


Figure 18
Consumption, apparent collection, import, and export of recovered paper in the 1995-2007 period.

Import
Export
Consumption
Apparent collection

(Source: Assocarta data processed by Comieco)

Figure 19
Raw materials of paper industry in 2007.
(Source: Assocarta and Comieco)



Natural and renewable raw materials
Limited availability in Italy implied a production capacity based on the use of recovered paper, which is confirmed as the main source of pulp-based fibres (48.8%). The quality of recovered paper is still crucial based on the type of product it is meant for. New fibres are increasingly produced using controlled and certified growth resources.

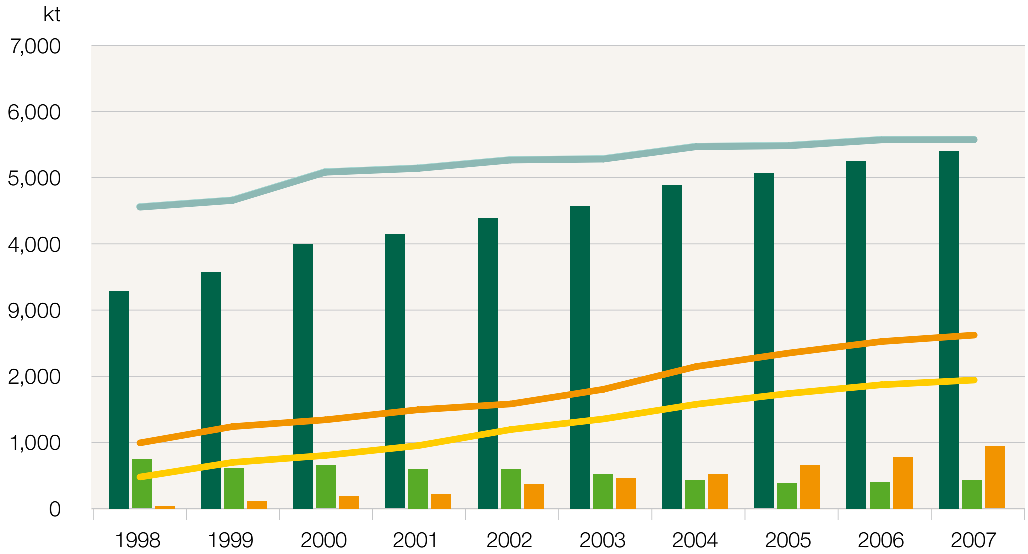


Figure 20
Separate collection, recovered paper consumption, and national recovered paper availability.

National recovered paper
Import
Export
Recovered paper consumption
Separate paper and board collection
Separate paper and board collection managed by Comieco

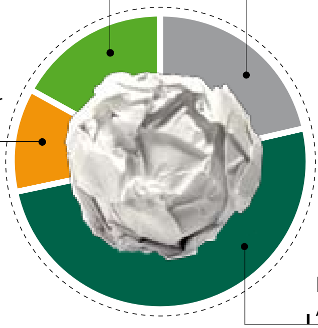
(Source: Comieco)

Improved collection of urban waste

National recovered paper quantities grew by more than 2.4 million tons in 10 years (1998-2007). Two-thirds of this amount resulted from the development of separate urban waste collection (+163%).
The incidence of this collection channel grew from 26.7 to 42.6%

Figure 21
Destination of consumed paper and board in Italy in 2007.

(Source: Assocarta data processed by Comieco)



	%	kt
Non-recoverable, non recyclable paper and board, preserved in time	21.5%	1,965
Recycled paper and board	50.4%	4,606
Recovered paper and board	11.3%	1,033
Paper and board sent to landfills And meant for other uses	16.8%	1,538
		9,142

Materials, recovery increases
Fifty percent of pulp-based materials meant for consumption was recycled, while a further 11% was recovered in view of energy production. A 17% share is still sent to landfills or meant for other uses. The remaining 21% share of paper and board cannot be recycled/recovered, or is preserved in time (e.g. books).

Table 10
Pulp-based packaging recovery and recycling targets achieved in 2007.

(Source: Comieco)

Calculation of recycling and recovery rates (values in tons)	2007
Apparent pulp-based packaging consumption	4,619,078
Pulp-based packaging waste from 1.01+1.02 sc	299,587
Pulp-based packaging waste from 1.04+1.05 sc	2,575,074
Recovered paper from packaging recycled abroad	343,145
Total recycled pulp-based packaging waste	3,217,807
Pulp-based packaging recovered as energy or waste-based fuel	375,773
Total recovered pulp-based packaging	3,593,580

Recycling	**69.7%**
Energy recovery	**8.1%**
Recovery	**77.8%**

Packaging: 77.8% recovered
Of a total of over 4.6 million tons of consumed packaging, the rate of material recovery was 77.8%. Of this amount 69.7% was recycled, while 8.1% of the weight of the collected packaging was incinerated and recovered as energy.

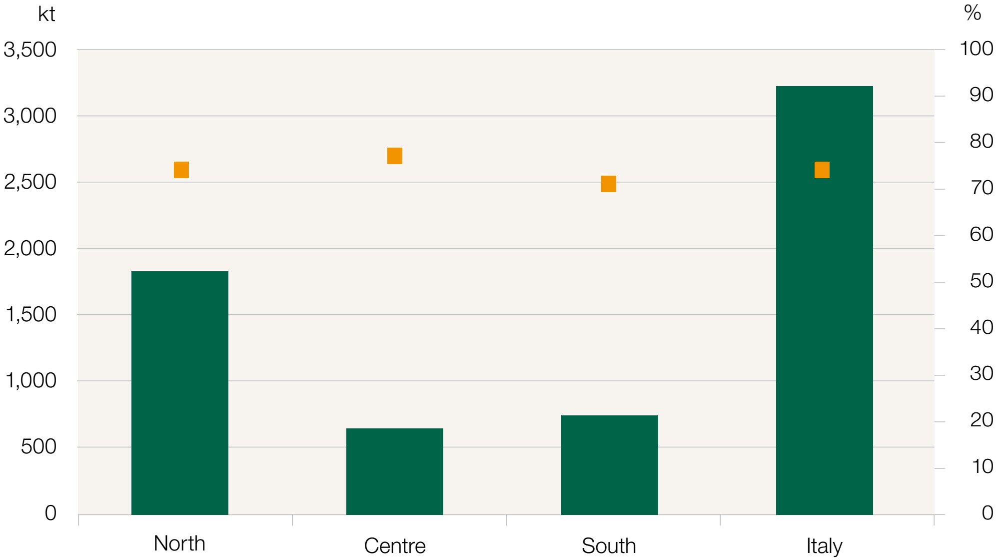


Figure 22
Paper and board packaging collection indexes achieved in 2007 by macro areas. Paper and board packaging collection Collection index

Pulp-based packaging collection
Collection index

(Source: Comieco)

		North	Centre	South	Italy
Pulp-based packaging collection	kt	1,826	647	744	3,217
Collection index	%	74	78	71	74

Paper and board packaging collection: homogeneous in the country
If the quantities collected through the different public and private systems are considered, packaging collection turns out homogeneous in the different regions.

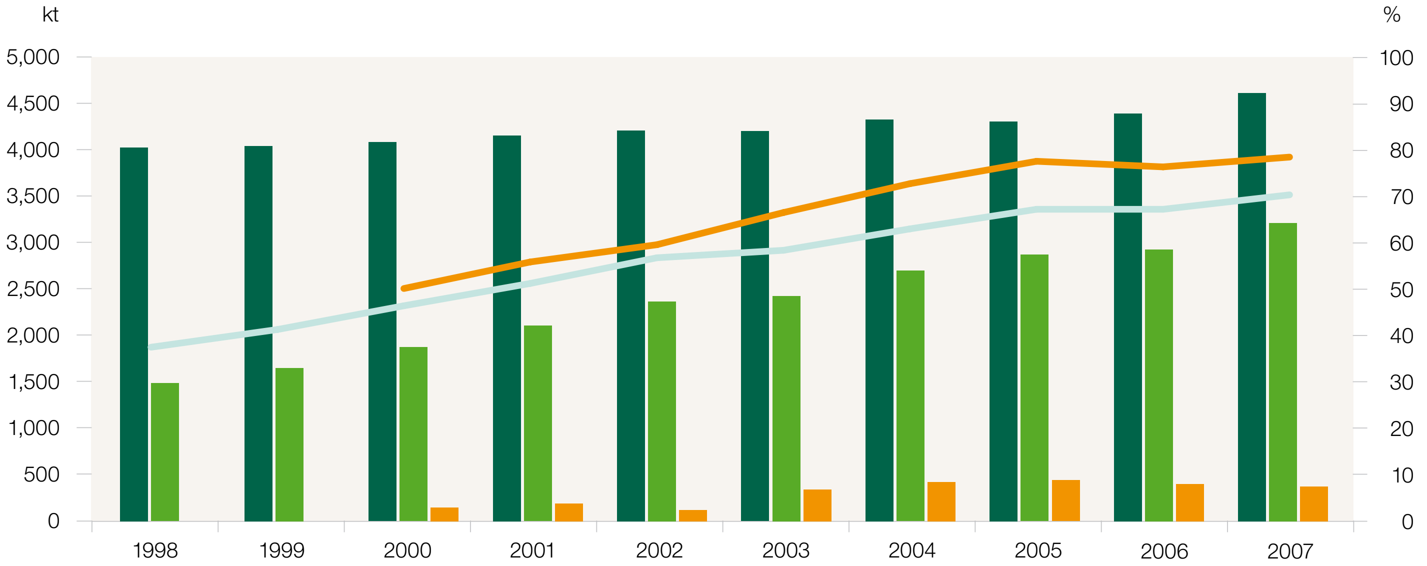


Figure 23
Paper and board packaging recycling and recovery targets achieved. 1998-2007 period.

- Apparent pulp-based packaging consumption (tons x 1000)
- Total recycled pulp-based packaging waste (tons x 1000)
- Pulp-based packaging recovered as energy or waste-based fuel (tons x 1000)
- Recycling rate (%)
- Recovery rate (%)

(Source: Comieco)

Packaging: recycling has doubled
In ten years, the share of consumed packaging recycled constantly grew, from 37.0% in 1008 to 69.7% in 2007. While the quantity of packaging increased by about 10% in ten years, recycled packaging more than doubled, from less than 1.5 to more than 3.2 million tons. The total recovered share (recycling and energy recovery) in 2007 was close to 78%.

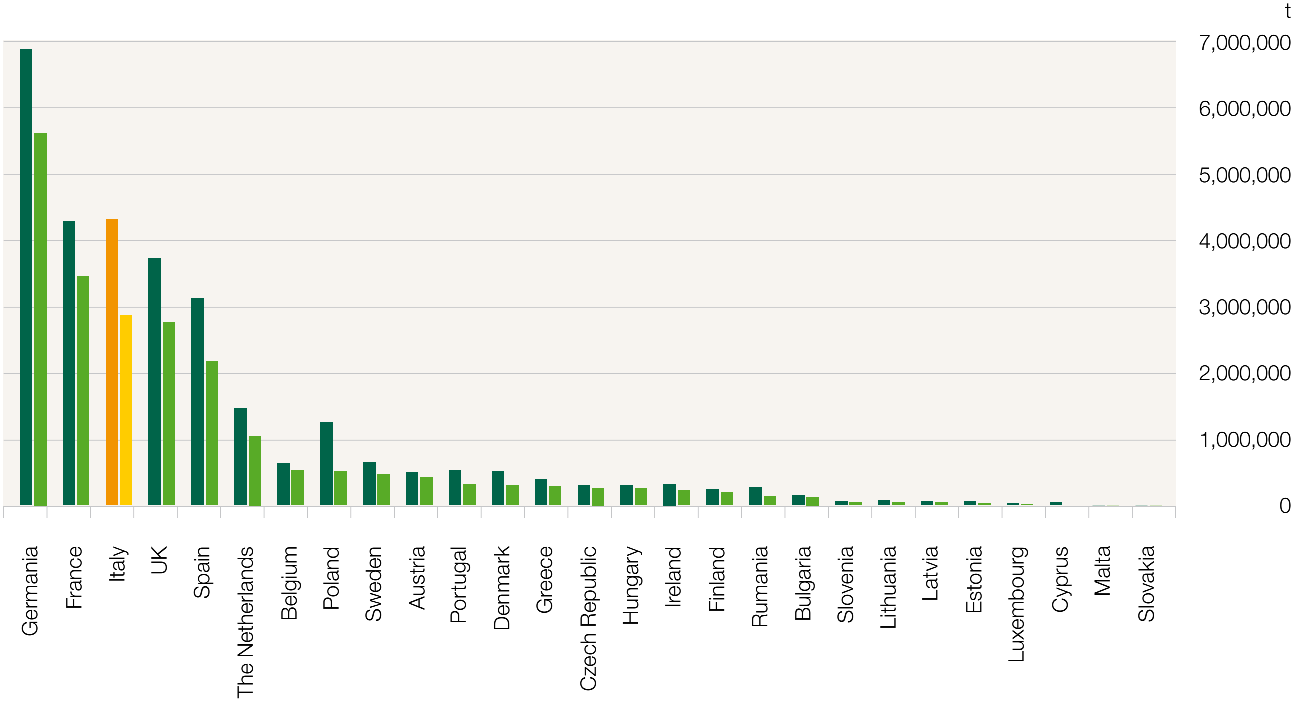
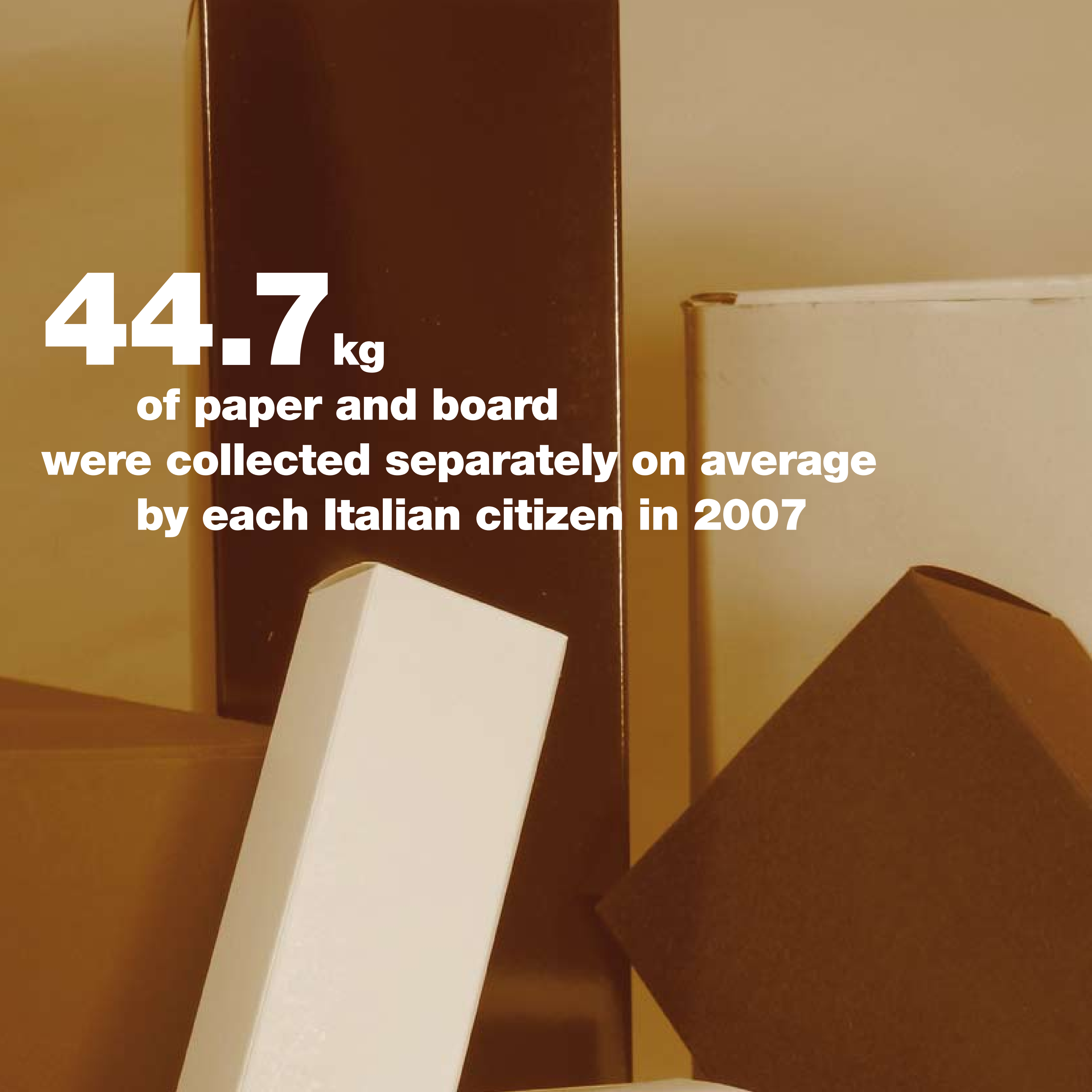


Figure 24
Quantity of paper and board packaging waste produced and recovered in member states - year 2005.

Packaging waste produced
Recycled material

(Source: European Commission)

Italy ranks third in Europe in 2005
Most recent European data shows that Italy, with almost 2.9 million tons of recycled packaging, ranks third in Europe, in terms of quantity, after Germany and France.


44.7 kg
of paper and board
were collected separately on average
by each Italian citizen in 2007

Note on the method

The definition of the separate paper and board collection share not managed by the Consortium was, as in the past, the object of a survey aimed primarily at collecting official data.

In particular Comieco, based on by-now consolidated co-operations, has established contacts locally with APAT, the Regions, the local Agencies, the Provinces and Work Groups, the Cities, the operators, etc. for data collection.
Only when no official data was available, Comieco adopted the method described below.

Upon completing the survey, 72.7% of the collected data came from official sources, and partly overlapped with the data already available to Comieco; 22.4% referred to quantities managed directly by the Consortium (without other official sources), and 4.9% was based on estimates.

In order to estimate the quantities not managed by Comieco, and not available from the above-mentioned official sources, 3 groups of provinces were considered:

- Group A, i.e. the provinces where Comieco covers more than 85% of the inhabitants through the agreements;
- Group B, i.e. the provinces where Comieco covers 51 to 85% of the inhabitants through the agreements;
- Group C, i.e. the provinces where Comieco covers 20 to 50% of the inhabitants through the agreements.

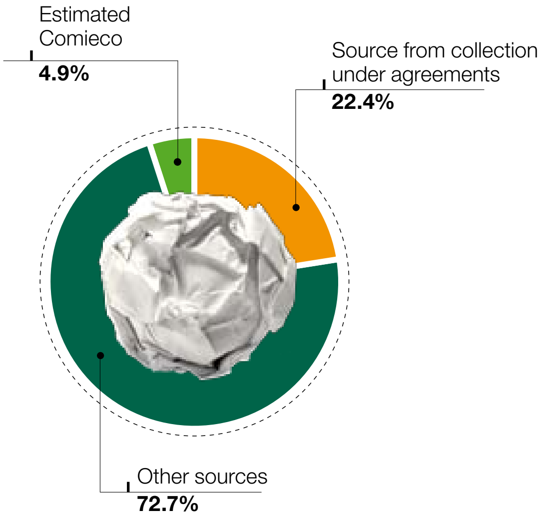
A direct survey was then carried out on the Cities and service companies, aimed at understanding how many of the Cities not involved in the agreements have introduced the separate paper and board collection service.
If the surveyed City provided information on the introduction, if any, of the collection service, as well as data on collection, such data was included among the official sources.

On the other hand, if no data on quantities was available, attempts were made to identify the rate of inhabitants under the agreements, but performing separate paper and board collection: for these, the same per-capita value recorded for the inhabitants under the agreements in that province was assumed.
Hence the data on collection was calculated and added to the data referring to the share managed by Comieco, so as to estimate total collection in the considered territory.

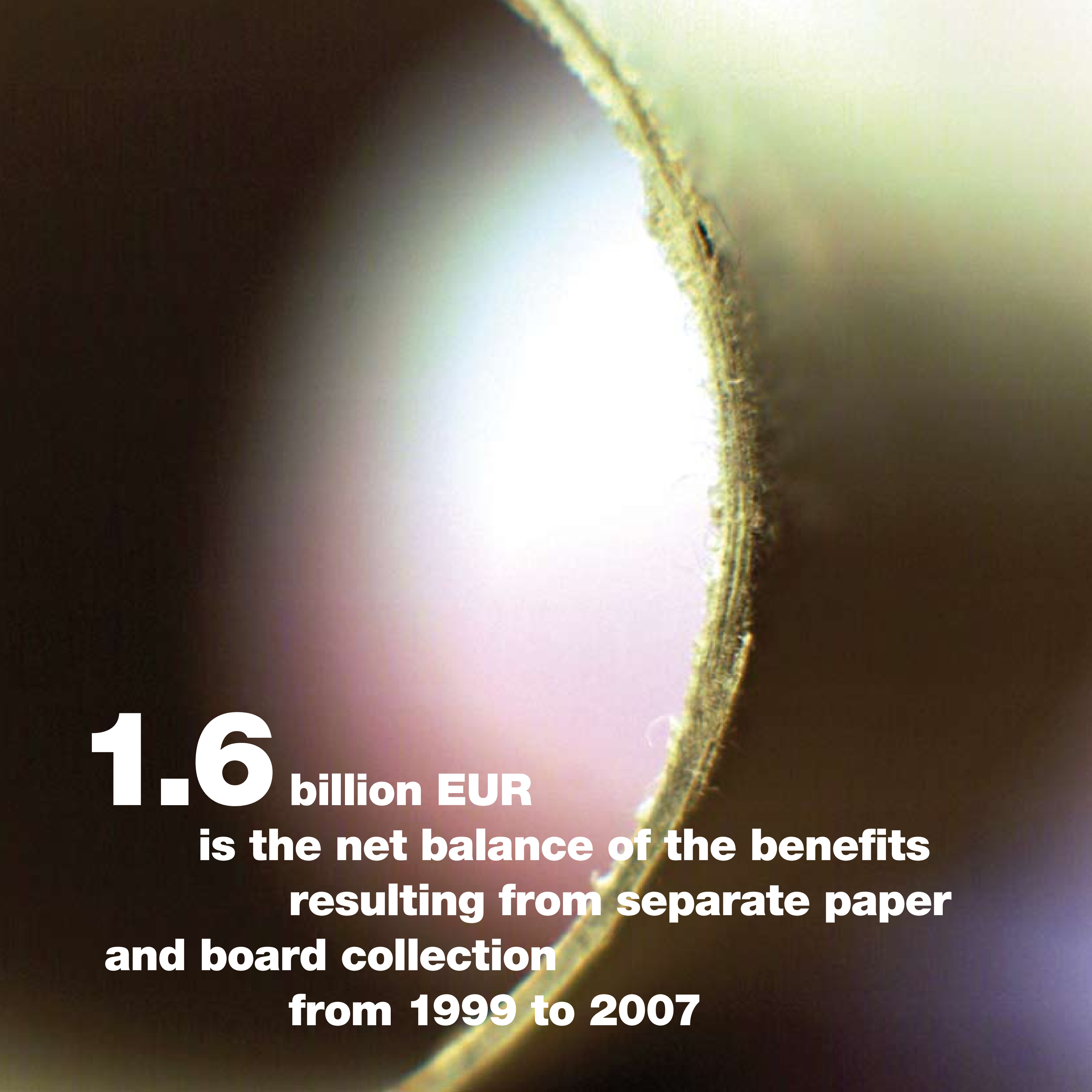
Note:
the ISTAT reference for the population was updated for the years 2006/2007 consistently with the CONAI system. Certain values (in particular per-capita yields) included in last year's report were updated to ensure a homogeneous comparison of the last two years.

Figure 25
Sources and method.

(Source: Comieco)



Group	Inhabitants under agreements	Inhabitants outside agreements to be checked for sc implementation
A	inh > 85%	almeno il 25 %
B	51% < inh < 85%	almeno il 50 %
C	20% < inh < 50%	almeno il 75 %


1.6 billion EUR
is the net balance of the benefits
resulting from separate paper
and board collection
from 1999 to 2007

Cost-benefit analysis of separate paper and board collection in Italy

(updated at 31.12.2007)

The benefits of separate paper and board collection in Italy in 1999-2007.
This paper is aimed at calculating the balance of the benefits of separate paper and board collection in Italy from 1999 to 2007.
The previous assessments are updated here with data for 2006 and 2007; in particular, the starting point is the inclusion of the final volumes of separate paper and board collection in 2006 and 2007, followed by a recalculation of all the other items.
The volumes of paper and board collected separately globally grew from the previous 11.9 million tons in 2005 to 17.1 million tons in 2007.
Using the Cost-Benefit Analysis method, we estimated the net balance of the benefits resulting from collecting over 17.1 million tons of paper and board separately from 1999 to 2007: this value is equal to approximately 1.6 billion EUR and includes:

- The economic aspects, i.e. the costs (or missed benefits) and the benefits (or avoided costs) connected with the implementation of the paper and board collection-recycling system;
- The environmental effects, through the calculation of the money value of the costs (missed benefits) and environmental benefits (avoided costs) tied to the paper and board collection-recycling system;
- The socio-economic impact, through a monetary estimate of the greater or lesser business related to paper and board collection-recycling.

Please note that the analysis is founded on differential evaluations based on a variety of assumed scenarios:
• The basic scenario: here it is the "historical" one of the paper and board collection-recycling system implemented in the different years following the establishment of the Comieco consortium, between 1999 and 2007;
• The alternative scenario: this assumes the absence of any separate paper and board collection system;
the volumes that are "historically" managed in a separate way are theoretically disposed of together with solid urban waste.

Relevant effects concern the following logical categories:
• The costs of the historical scenario that could have been avoided;
• The benefits of the historical scenario that could have been lost if the alternative scenario had been in place;
• The costs of the alternative scenario that were avoided with the historical scenario in place.

Below is a brief summary of the items considered.

Table 11
The overall benefits of separate paper and board collection in Italy updated at 2007.

(Source: data processed by Agici)

	Worst Value euro	Fair Value euro	Best Value euro
Cost Items			
Differential cost of separate collection	-426,370,295	-347,346,242	-277,397,541
Cost due to non-generated energy	-86,080,858	-86,080,858	-86,080,858
Total costs	**-512,451,153**	**-433,427,100**	**-363,478,399**
Benefit Items			
Environmental benefits from avoided emissions	375,940,186	495,031,136	605,903,329
Economic benefits from non-disposal	768,211,360	795,192,786	1,037,314,854
Value of the generated raw materials	323,888,531	365,569,541	416,201,976
Social benefit from generated employment	363,992,569	363,992,569	363,992,569
Total benefits	**1,832,032,646**	**2,019,786,032**	**2,423,412,727**
Net benefit	**1,319,581,493**	**1,586,358,932**	**2,059,934,328**

The analysis points out to net benefits for approximately 1.6 billion EUR. This is the result of a comparison of costs for about 430 million EUR and benefits for about 2,020 million EUR. The fair value falls within a range of 1.3 to 2.1 billion EUR.

Cost items

Differential cost of separate collection: this item shows the higher cost of performing separate paper and board collection vs. the cost of non-separate collection of equivalent volumes in time. The data source is "The evaluation of the management costs of the urban hygiene service in Italy" (APAT-ORN Reports). The cost is the mean of the annual surveys.

Costs due to non-generated energy: this item represents the money value of the energy that could have been generated through the incineration of the paper and board volumes collected separately every year. Based on the total quantity of incinerated waste per year (APAT data), it is estimated that about 1.8 million tons of paper and board were not processed from 1999 to 2007, with a non-generation of about 1,400 GWh of energy.

The money value is calculated based on the average annual wholesale cost per GWh.

Benefit items

Environmental benefits from avoided emissions: this item highlights the benefits of separate collection on the environment resulting from a reduction of CO_2 emissions due to a more limited use of new raw materials and to non-disposal, however net of the emissions due to separate collection.
The avoided emissions figure per ton of paper collected separately results from the analysis of the full paper and board collection and sorting cycle performed by Comieco (Comieco-Ambienteitalia), which shows an actual benefit of 1,308 kg of CO_2 avoided per ton, calculated as follows:
CO_2 for collection and sorting activities (+ 32kg/t) - CO_2 avoided due to recycling (-210 kg/t) - CO_2 avoided through different disposal methods (-1.130 kg/t) = -1.308 kg of CO_2 per ton of recycled paper.

Economic benefits from non-disposal

We calculated the lower cost resulting from the non-disposal of 17.1 million tons of paper that were recycled and not disposed of from 1999 to 2007. The avoided costs were estimated in proportion to the annual rate of use of each possible waste management system: landfill, composting, incineration, biostabilization, and waste-based fuel production.

Value of generated raw materials: this is the money value of the recovered paper generated from separate collection based on the annual trend of the list price for type 1.01 (source: Chamber of Commerce).

Social benefit from generated employment:

The introduction of separate collection generates employment, calculated with reference to the number of operators theoretically required to perform separate collection in time, through an estimate of the required hours. The money value is based on the gross salary of urban hygiene operators. For reasons of homogeneity, all the items were calculated as in the previous studies.

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