Collection, Recycling, and Recovery of paper and board

18th Report

2012

July 2013

comieco
Consorzio Nazionale Recupero e Riciclo
degli Imballaggi a base Cellulosica

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COMIECO
NATIONAL CONSORTIUM FOR RECOVERY AND RECYCLING OF PAPER AND BOARD PACKAGING
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GENERAL MANAGER
Carlo Montalbetti

Contents

48,9 kg

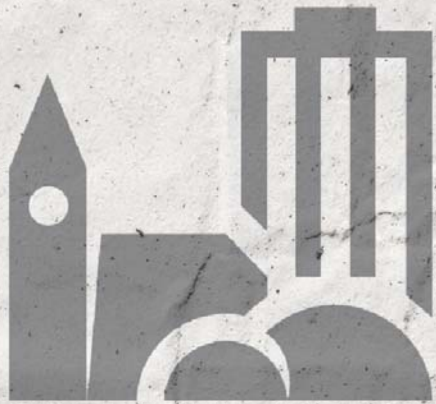
is the average amount of paper and board collected separately by each Italian citizen in 2012

270

is the number of landfills avoided on the Italian territory thanks to the separate collection and recycling of paper and board from 1999 to 2012

is the recycling rate of paper and board packaging collected in 2012

84,5 %



94

million EUR is the amount transferred in 2012 to the Italian municipalities under the agreements by way of consideration

83,2

million EUR is the consideration for paper and board packaging collection alone

4,3

billion EUR is the net amount of community benefits derived from separate paper and board collection from 1999 to 2012

PREFACE

The Report on separate paper and board collection drafted every year by Comieco provides hints for thinking about the attained results and the possible future achievements.

In the light of the challenging economic downturn in Italy, several negative indexes are contained in the 18th edition of the Comieco Report. Signs of weakness observed upon reviewing the year 2011 were confirmed, or even enhanced, in 2012.

However, two positive and encouraging factors deserve mentioning, namely the growth of separate paper and board collection vs. non-separate waste collection – despite the decline of household consumptions – and waste reduction in absolute terms.

Reasons for concern are rather found in data on the five percent point reduction of paper production, by which the sector now stands at one of the lowest levels of the past decade. This implied a reduced use of paper for recycling by national paper mills. The surplus was absorbed by exports, albeit on a sharply declining market compared to 2011 values.

The amount of municipal separate paper and board collection suffered a 2.3% decline vs. the previous year, and now totals less than 3 million tons (2.93 million tons).

While the decline affects the whole Country, it is sharper in the north (-3.2%), where the collection service can be considered as historically consolidated and broadly disseminated – with occasional exceptions – and has therefore suffered more severely from the decline of consumptions.

Regions that still allow for some growth – particularly in the south – generally did not see any increase of the collected amounts in 2012. Comieco identified these as the main target for collection-boosting actions in 2013.

The reduction of the amounts collected under the agreements – now totalling 1.6 million tons – falls within the framework of the subsidiary role of Comieco vs. the market.
However, the economic support provided by the agreement is significant and globally amounts to 94 million EUR.

The recycling rate of paper and board packaging is further improving.

The Report's overview allows to identify a few possible targets for an increase of collection amounts in regions where services are still poor and higher amounts can therefore be collected, as well as to confirm the excellent results achieved in other regions in the on-going pursuit of efficiency and high quality of the collected material.

An important tool to pursue such goals is the General Agreement that ANCI and CONAI have started to review in view of a new cycle, due to start in 2014.

One prerequisite will, however, concern the ability to encourage the recovery of the Italian recycling pipeline, which represents a significant element of the country's Green Economy.

Ignazio Capuano
President Comieco

Paper and board collection, recycling, and recovery:

An 18-year Italian story

Carlo Montalbetti
General Manager

1. LOWER CONSUMPTIONS, REDUCED COLLECTION

After a decade of gradual and relentless growth and significant fluctuations in the 2009-2010 period, overall indicators for 2012 confirm a decrease of paper and board collection for the second year in a row.

While on one hand absolute amounts of paper and board from municipal separate collection are declining (-2.3%), consideration should be given – on the other – to the impact of the economic downturn on consumptions and, therefore, on total waste production that, based on preliminary ISPRA and Federambiente data, decreased by more than 4% in 2012.
Separate paper and board collection totals just less than 3 million tons In absolute terms (approximately 68thousand tons down vs. 2011).

A detailed review of regional conditions points out to a general decline, which is particularly sharp in regions where collection has been consolidated for a few years, namely **Piedmont** (-3.9%), **Trentino Alto Adige** (-3.7%), **Lombardy** (3.6%), **Tuscany** (-5.6%), and **Emilia Romagna** (-2.9%). Here, services and economic activities in general were also affected by the earthquake of May 2012.

The regions where stronger assimilation systems are in place (e.g. Emilia Romagna and Tuscany) are suffering more severely from the decline of consumptions and the shift of amounts from public collection to privately operated collection, particularly where medium/ small entities can opt for paper and board waste management independently of the public service. In these specific regions, the decline of the pulp-based materials available for collection is deemed to be sharper, but collection mechanisms upstream to municipal services cannot be ignored. These concern more valuable types of pulp-based materials, or materials originating from collection at the premises of manufacturing plants and distributors.

The centre has an edge over the other parts of the country: trends in three out of four regions - **Latium** (+3.9%), **Marche** (+1.2%), **Umbria** (+3.2%) - are in contrast with the negative ones recorded for the country.

In some cases, municipal separate collection in the south can be reasonably deemed to depend on the activities of private operators, following the suspension of the public service due to the financial troubles of public companies. The exception of **Sicily** (+3.4%) is quite encouraging for a region that ranked last in terms of collection yields in the past few years.

2. COLLECTION YIELD: THE ITALIANS ARE NOT REDUCING SEPARATE COLLECTION

The figure of per-capita collection in 2012, estimated at 48.9 kg/inhabitant per year, points out to an uneven decline in the three macro-areas of the Country: the north suffers from the sharpest decline (-3.2%), followed by the south (-1.5%) and by the centre (-0.5%).

The leadership in the region is confirmed by **Emilia Romagna** (its 81.5 kg/inhabitant per year is the best per-capita yield figure recorded at national level), followed by **Trentino Alto Adige** (80.2 kg/inhabitant per year) and **Vallée d'Aoste** (75.9 kg/inhabitant per year). In the centre, **Tuscany** recorded 74.8 kg/inhabitant per year despite a significant -5.6% decline of collection: it thus holds the leadership in the region, in addition to a respectable fourth place in the national ranking.
"Competition" is harsher in the south, where **Abruzzo** ranks first with 43.2 kg/inhabitant per year, surpassing **Sardinia** by a hair's breadth (43.0 kg/inhabitant per year). However, both regions are expected to reach the national average shortly.

3. COLLECTION UNDER THE AGREEMENTS: THE ROLE OF COMIECO

The Consortium participates to the above-described dynamics. During 2012, Comieco took charge of approximately 1.6 million tons of paper and board, i.e. about 300thousand tons less (-16%) than in 2011.

This figure is not in contrast with a territorial coverage that sees just less than 85.4% of the inhabitants (-2% vs. 2011) and 71.8% of the Cities (-4%) involved in the agreements. "Subsidiary" management systems provided for by the Technical Annex continue to ensure efficient operation and allow collection operators to adjust the management format of the agreement.

Based on this data, the role of the Consortium as a party participating to the recycling of the collected materials accounts for 54.5% of municipal collection. If, on the other hand, the overall pulp-based material is considered (apparent paper and board collection), Comieco accounts for 25.5% vs. 30.1% in 2011.

4. CONSIDERATIONS: ABOVE 1 MILLION EUR

The resources transferred at local level by way of considerations paid by the Consortium amount to 83.2 million EUR. This value, below the one recorded in 2011 (-3%), originates from the decline of the managed collected amounts, and particularly of packaging amounts (-7.6%).

Meanwhile the investment of recyclers is declining, as determined according to the system for valorization of the similar pulp fraction (graphic paper) provided to the Consortium through collection. Overall, the total amount of locally transferred economic resources amounts to just less than 94 million EUR.
From 1998 to the end of 2012, Comieco transferred over 960 million EUR to the administrations and operators to recycle just less than 12 million tons of packaging.
If the investment of recyclers is also considered, the symbolic threshold of 1 million EUR was surpassed globally in 2012.

5. THE AUDIT SYSTEM

The new reference collection thresholds enforced in 2012 (1st quality level <3.0% for 1.01+1.02, <1.5% for 1.04+1.05) have turned out broadly attainable through the implementation of well-organized collection services.

The monitoring plan, implemented according to the provisions of the Technical Annex, involved approximately 2,000 sample collections for the management of the agreements. As far as 1.01+1.02 is concerned (951 tests performed), the average foreign fraction rates recorded in 2012 accounted for 2.03% (-0.17% vs. 2011): this result benefits from operational changes to the management of the agreements that concerned, particularly, central Italy.

With respect to 1.04+1.05, (1,051 sample collections), the recorded average rate of foreign fractions was 0.44%, vs. 0.60% in 2011. This data is consistent with monitoring solely focused on the tests performed on flows originating directly from collection.

The checked sample (60% of the collected samples) provides average values of foreign fractions of 2.40% for 1.01+1.02 and 0.51% for 1.04+1.05.

During 2012, as in earlier years, Comieco carried out audits at sorting plants, paper mills, and processing plants supported by three specialized companies.

The goals of this action included:

- ensuring the transparency and reliability of data;
- guaranteeing the monitoring level of the system;
- ensuring the appropriate operation of the system, thus minimizing litigations.

Audits were carried out on 146 entities in 2012, divided as follows:

- 89 sorting plants;
- 27 paper mills;
- 30 processing plants.

The audits performed at the sorting plants were aimed at ensuring compliance with contract requirements and drafting a mass balance sheet on transit materials that come from parties under the agreements and are headed towards the paper mills. If the plants had been allotted materials originating from Comieco auctions, the purpose of the audit was to ensure compliance with the auction rules.

The audits performed at the paper mills were, on the other hand, aimed at ensuring both compliance with the mandate agreement entered into with the Consortium and the appropriateness of the statements made to Comieco with respect to the used paper for recycling and the production of raw packaging materials.
Lastly, the audits at the processing plants were aimed at ensuring the appropriateness of the statements made to Comieco with respect to packaging production.
The criticalities observed during the audits were formally acknowledged by the Consortium, which initiated specific corrective actions.

6. CRISIS MONITOR: THE STATUS OF COLLECTION IN METROPOLITAN AREAS

The monitoring of specific circumstances continued in 2012 in co-operation with service operators.

Turin, Milan, Florence, Rome, Naples, and Palermo are now true “observatories”, where global waste production dynamics are monitored along with separate paper and board collection. In this respect, it should be noted that the decline of overall waste production was 3.7% on average vs. 2011 in the six cities. This figure is consistent with the surveys of Federambiente, which estimates a maximum 4% annual decline.

The decline is sharper if non-separate waste flows are only considered, whose value is -5.1% on average. Separate collection scores higher: in three cases (**Milan, Rome, Naples**), the net collected amount is increasing if related with the decrease of produced waste; this results into a positive balance and a growing rate of separate collection.

In the case of Palermo, the dynamic production of waste “as is” (-7.6%) is made up for by a reduced decline of separate collections (-4.1%).

Negative figures are recorded in Turin and Florence both for the production of waste “as is” and for separate collection. This implies a limited decline of the overall separate collection rate (-1.4% and -0.5% respectively).

7. TRENDS OF PAPER FOR RECYCLING

The average conferment distance is in line with the data recorded last year (17.4 km) despite a few changes to the existing system network.

The recycling process of the paper and board originating from collections operated by Comieco at domestic level is basically carried out by a network made up of 316 sorting plants and 61 paper mills. In order to put the pipeline in the appropriate context, it should be noted that in 2012 the Comieco Auctions system was by then in full operation based on the expected managed amounts. The system was launched in mid-2011, after the Authority for Competition and the Market (known as AGCM) acknowledged the commitments undertaken by the Consortium.

In practice, since April 2012 40% of the expected collected amounts falling within the scope of the agreements in place at national level have been managed by recyclers, identified by auction among the accredited parties, i.e. those that boast specific recycling capabilities. This new approach adds up to the "classic" system of allocation by shares to the paper mills that are members of the Consortium, which manage the remaining 60% share of collection. The input of Comieco, in this respect, is 25.5% of apparent national collection (consumption of paper for recycling + export - import).

The overall supply of paper for recycling is decreasing (-3.7%), and the sharp decline of domestic consumption of paper for recycling (now back to the values of ten years ago) is offset by the increase of exports, thus ensuring some sort of balance between supply and demand.

If the overall supply of paper for recycling is considered, the share originating from public services is declining to a greater extent compared to the share of private origin. The share managed by Comieco under the agreements records -5% and falls to 25% of the total: these rates are attributable both to the decline of overall public separate collection volumes and to the decision of the parties to the agreements to reduce the "non-packaging" component under the agreements.

The entire paper and board manufacturing pipeline sees clearer and clearer signs of weakness (-5%), which had already been recorded in 2011, albeit to a lesser extent (-0.5%). The packaging macro-sector records the sharpest decline of production levels (-6.8%). The fact that packaging manufacturers are the main users of recovered raw materials in the paper pipeline accounts for the significant reduction in the consumption of paper for recycling (-8.1% according to Assocarta).

However, other paper production types are also underperforming, recording a total 3.5% overall decline. In this respect, while a very negative figure is recorded for newspaper (-34%), the only segment that is still in line with 2011 is sanitary paper. Product export is generally stable.

Overall, the 8.6 ton figure referred to paper production in 2012 is comparable with the 1999 figure. Another indicator supporting the above-described trend is the mix of raw materials in the sector, which points out to a reduced use of paper for recycling in packaging (from 48.6% to 47.7%). As a consequence, however, the use of new fibres and of non-fibrous raw materials has grown to 34.6% (+0.5) and 17.7% (+0.4) respectively.

The positive trend of exports continues (+318thousand tons) vs. a small decrease of imports. The net balance is 1.6 million tons of paper for recycling bound towards foreign countries (+25.2%).

After the fluctuations recorded between the end of 2011 and the first quarter of 2012, paper for recycling is now settled on average reference values below the 2011 peaks.

8. PACKAGING MANAGEMENT: CONFIRMED EFFICIENCY AND EFFICACY

The trend of packaging recycling and recovery rates originates from the above analyzed factors.

While a decline is recorded in the amount of consumed packaging (-4%), the recycling amount of this type of pulp-based waste is increasing (3.6 million tons): the recycling rate is 84.5% for 2012, 6% up vs. the previous year.

A moderate decline (-40thousand tons) is recorded for packaging used for energy recovery, which accounts for 7.4% of the total recovery rate of 91.9%.

9. RECYCLING CONFIRMED AS A HIGH-VALUE ACTIVITY

Like the previous editions, this Report contains an update of the detailed Cost-Benefit Analysis, describing the impact of separate paper and board collection performed by the Cities.

The update concerns the year 2012 and the overall data recorded since 1999.
The considered cost items include:
- the higher cost due to separate collection vs. collection of waste "as is";
- the missed benefit connected with the choice not to use paper-based materials for energy recovery.

The total cost of these two items is estimated at 126 million EUR for 2012.

Benefits result from:
- avoided emissions;
- avoided cost for disposal of the recovered material;
- value of the generated raw materials;
- value of employment in related business.

The total benefit for 2012 is estimated at just less than 531 million EUR, while the net benefit resulting from such estimate (the sources are the same used in the past years) amounts to approximately 405 million EUR.

The total net benefit was then over 4.3 billion EUR in 14 years – from 1999 to 2011. The calculation includes 1.3 billion higher costs vs. 5.6 billion derived benefits.

The above summarized data requires some consideration.
First, the value of generated raw materials at this economic stage is confirmed as the main driver of the recorded changes. However, while other balance sheet items show signs of stability, the market of paper for recycling has been settled for some months on quotations that are on average 25% lower than average 2011 prices, despite significant fluctuations between the end of 2011 and the beginning of 2012.

An analysis of the time frames reflecting the terms of the General ANCI-CONAI Agreements (1999/2003 - 2004/2008 - 2009/2012) shows that the net benefit grew from an average annual value of 220 million EUR at baseline to 415 million EUR/year in the last four-year period (thus the net benefit increased by 89% year on year in ten years).

NOTES

Charts and tables

State of the art data

ACRONYMS

FMS	frazioni merceologiche similari (similar product fractions) (non-packaging paper and board)
SC	separate collection
UW	urban waste
%	percent rate
n	number
t	tons
kt	,000 tons
ab	inhabitants
ATC	Comieco Technical Annex and tables

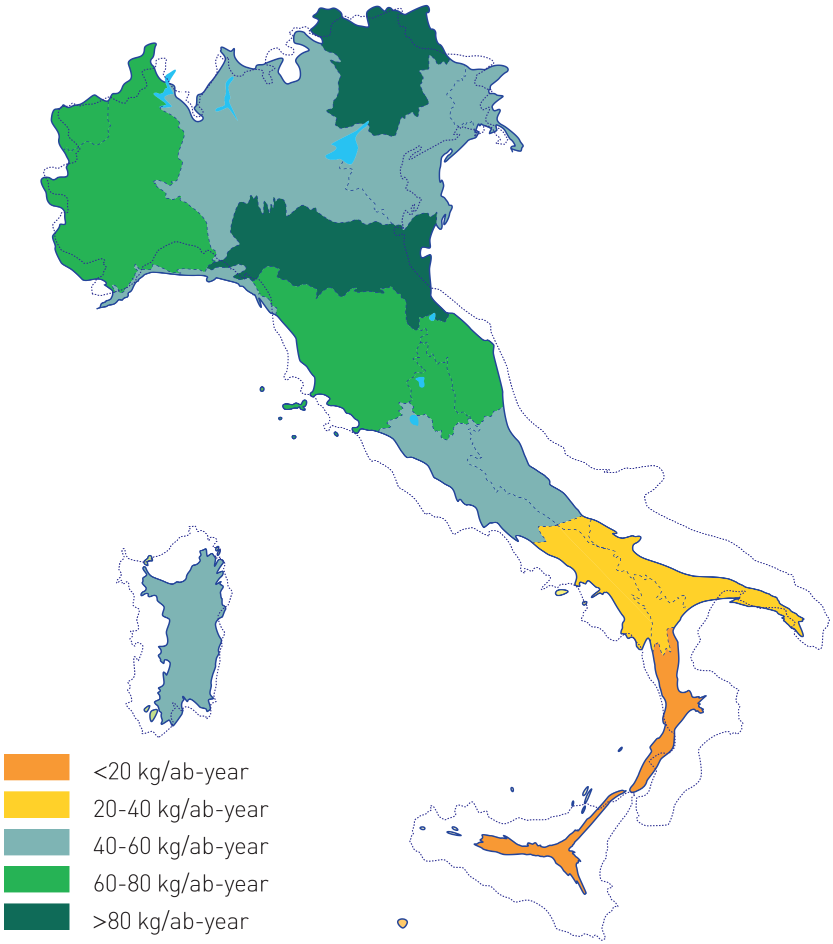
TABLE 1

Trend of municipal separate paper and board collection by regions. Year 2012 and changes vs. 2011.
Source: Comieco

	TOTAL inhabitants	2012	Δ 2011-2012	Δ 2011-2012
	n	t	t	%
Emilia Romagna	4,337,979	353,542.4	-10,546.1	-2.9
Friuli Venezia Giulia	1,230,441	68,228.2	-723.0	-1.0
Liguria	1,615,064	87,339.0	-3,234.6	-3.6
Lombardy	9,742,179	519,941.7	-19,623.0	-3.6
Piedmont	4,432,571	295,094.4	-11,936.6	-3.9
Trentino Alto Adige	1,010,328	81,051.3	-3,095.1	-3.7
Vallée d'Aoste	127,065	9,643.3	-72.1	-0.7
Veneto	4,885,549	289,660.8	-7,227.2	-2.4
NORTH	**27,381,176**	**1,704,501.1**	**-56,457.6**	**-3.2**
Latium	5,626,710	265,697.8	10,081.4	3.9
Marche	1,569,578	95,137.9	1,094.8	1.2
Tuscany	3,707,818	277,478.0	-16,478.5	-5.6
Umbria	894,222	54,851.3	1,724.1	3.2
CENTRE	**11,798,328**	**693,164.9**	**-3,578.3**	**-0.5**
Abruzzo	1,334,675	57,647.5	-289.6	-0.5
Basilicata	590,601	12,983.5	-327.3	-2.5
Calabria	2,008,709	37,221.0	-65.7	-0.2
Campania	5,812,962	160,238.3	-6,030.1	-3.6
Molise	320,795	6,636.2	-405.4	-5.8
Puglia	4,079,702	112,494.5	-2,383.4	-2.1
Sardinia	1,671,001	71,819.4	-1,035.0	-1.4
Sicily	5,037,799	78,999.3	2,614.4	3.4
SOUTH	**20,856,244**	**538,039.8**	**-7,922.1**	**-1.5**
ITALY	**60,035,748**	**2,935,705.8**	**-67,958.0**	**-2.3**

FIGURE 1

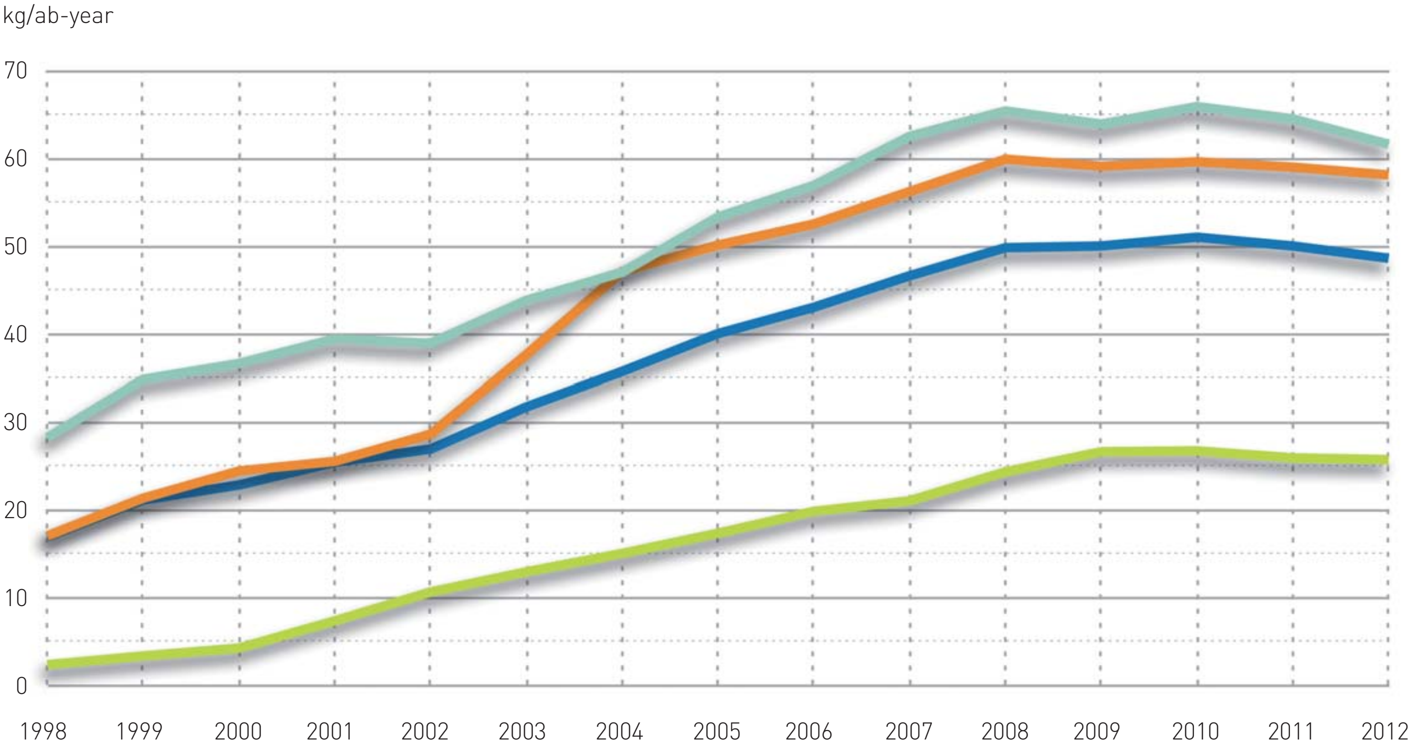
Municipal per-capita separate paper and board collection by regions and by areas. Year 2012.
Source: Comieco



	Total per-capita 2012 kg/ab-year
Emilia Romagna	81.5
Friuli Venezia Giulia	55.5
Liguria	54.1
Lombardy	53.4
Piedmont	66.6
Trentino Alto Adige	80.2
Vallée d'Aoste	75.9
Veneto	59.3
NORTH	**62.3**
Latium	47.2
Marche	60.6
Tuscany	74.8
Umbria	61.3
CENTRE	**58.8**
Abruzzo	43.2
Basilicata	22.0
Calabria	18.5
Campania	27.6
Molise	20.7
Puglia	27.6
Sardinia	43.0
Sicily	15.7
SOUTH	**25.8**
ITALY	**48.9**

FIGURE 2

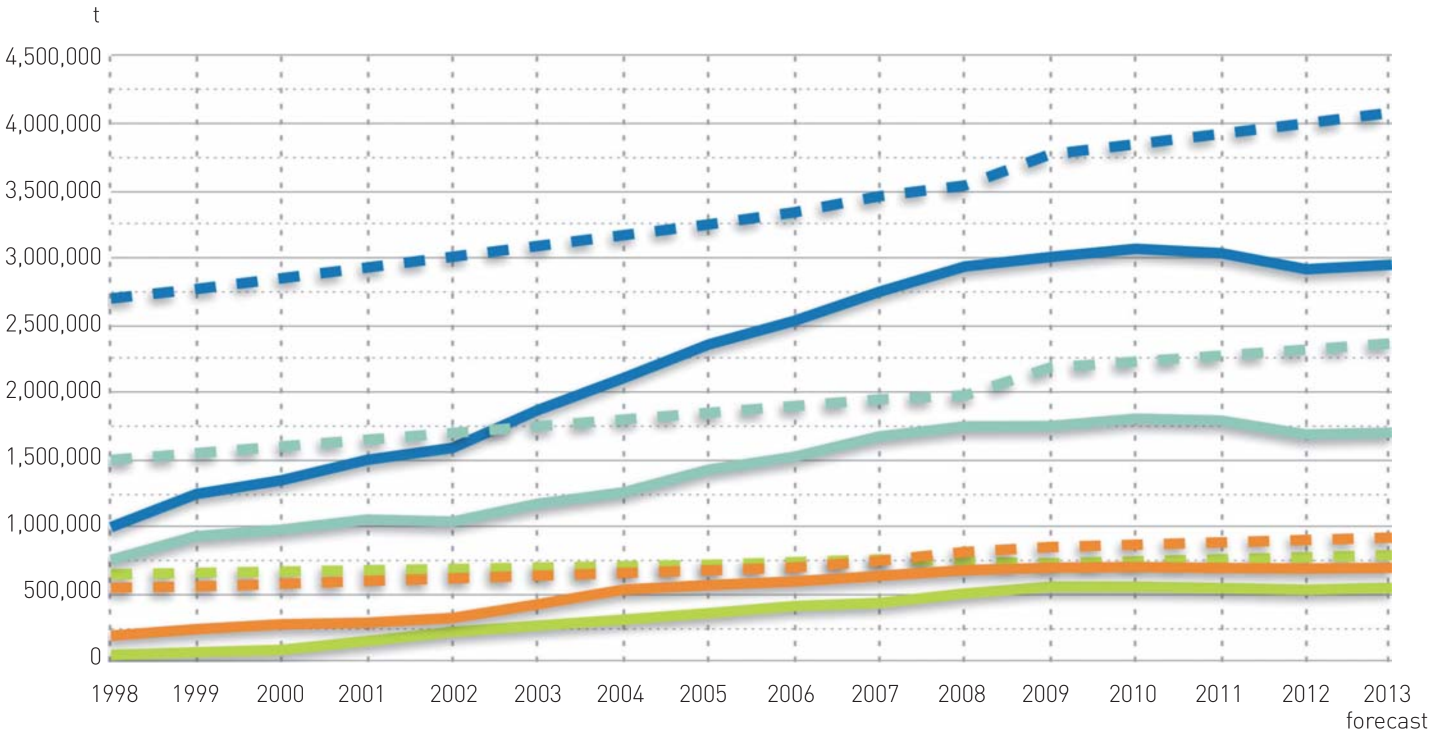
Municipal per-capita separate paper and board collection by areas.1998-2012 historical data set.
Source: Comieco



	Δ kg/ab 1998/2012	**Δ % 1998/2012**
NORTH	34.0	120.0
CENTRE	41.7	243.6
SOUTH	23.4	974.9
ITALY	**31.9**	**187.6**

FIGURE 3

Municipal separate paper and board collection. 1998-2012 trend and forecasts for 2013.
Source: Comieco



		NORTH	CENTRE	SOUTH	ITALY
2012	t	1,704,501	693,165	538,040	**2,935,706**
2013 forecast	t	1,708,747	698,512	552,109	**2,959,369**

TABLE 3

Comparison of urban waste production, overall separate collection, and municipal separate paper and board collection in Italy. 2011-2012 period.

Source: ISPRA data and projections processed by Comieco

		Year 2011	Year 2012	Δ %
UW	t	31,386,220	29,962,096	-4.5
Total SC	t	11,847,940	11,964,821	1.0
Municipal paper and board SC	t	3,003,664	2,935,706	-2.7
TOTAL SC vs. TOTAL UW PRODUCTION	%	**37.7**	**39.9**	
MUNICIPAL PAPER AND BOARD SC vs. TOTAL SC	%	**25.4**	**24.5**	

TABLE 4

Agreements signed in the 2001-2012 period and coverage rate of the agreements.

Source: Comieco

			2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
NORTH	signed agreements	n	170	215	225	224	228	211	208	202	203	202	186	177
	covered cities	%	58.5	63.7	69.9	71.8	75.4	76.5	78.1	77.4	80.9	81.0	74.9	71.8
	covered inhabitants	%	69.5	72.3	76.4	79.5	81.4	82.5	83.2	82.4	85.5	85.9	82.8	80.4
CENTRE	signed agreements	n	35	59	80	88	97	103	109	111	124	124	118	119
	covered cities	%	62.5	63.7	70.3	72.2	77.4	78.4	80.1	79.2	77.9	75.4	73.7	70.2
	covered inhabitants	%	81.3	81.4	87.4	88.1	91.1	91.5	93.9	93.4	94.0	93.4	92.6	89.6
SOUTH	signed agreements	n	124	197	281	328	334	302	329	414	428	454	487	492
	covered cities	%	44.7	47.8	57.1	63.2	68.6	75.6	77.8	80.8	79.5	79.5	77.4	72.6
	covered inhabitants	%	68.9	68.8	78.8	84.4	87.1	89.2	91.7	94.2	92.5	92.5	91.8	89.7
ITALY	**signed agreements**	**n**	**329**	**471**	**586**	**640**	**659**	**616**	**646**	**727**	**755**	**780**	**791**	**788**
	covered cities	**%**	**54.6**	**58.6**	**65.9**	**69.2**	**73.5**	**76.5**	**78.2**	**78.7**	**80.1**	**79.8**	**75.5**	**71.8**
	covered inhabitants	**%**	**71.5**	**72.8**	**79.4**	**82.9**	**85.3**	**86.6**	**88.2**	**88.6**	**89.5**	**89.6**	**87.9**	**85.4**

TABLE 5

Local coverage by regions as at December 31, 2012.
Source: Comieco

Region	Cities	Cities under the agreements		Inhabitants	Inhabitants under the agreements		Collection under the agreements
	n	n	%	n	n	%	t
Emilia Romagna	341	316	92.7	4,337,979	4,208,443	97.0	117,656.82
Friuli Venezia Giulia	218	177	81.2	1,230,441	1,155,100	93.9	40,292.11
Liguria	235	84	35.7	1,615,064	1,128,223	69.9	30,511.15
Lombardy	1,547	774	50.0	9,742,179	6,307,487	64.7	241,854.20
Piedmont	1,206	1,077	89.3	4,432,571	4,019,439	90.7	181,543.85
Trentino Alto Adige	331	310	93.7	1,010,328	944,042	93.4	54,849.51
Vallée d'Aoste	74	74	100.0	127,065	127,065	100.0	9,401.56
Veneto	581	442	76.1	4,885,549	4,116,881	84.3	112,460.96
NORTH	**4,533**	**3,254**	**71.8**	**27,381,176**	**22,006,680**	**80.4**	**788,570.16**
Latium	378	215	56.9	5,626,710	4,904,113	87.2	88,468.74
Marche	246	177	72.0	1,569,578	1,282,962	81.7	52,587.53
Tuscany	287	253	88.2	3,707,818	3,585,165	96.7	178,130.44
Umbria	92	59	64.1	894,222	797,719	89.2	22,098.39
CENTRE	**1,003**	**704**	**70.2**	**11,798,328**	**10,569,959**	**89.6**	**341,285.09**
Abruzzo	305	202	66.2	1,334,675	1,102,023	82.6	48,612.32
Basilicata	131	72	55.0	590,601	437,790	74.1	9,615.41
Calabria	409	261	63.8	2,008,709	1,430,907	71.2	22,721.34
Campania	551	443	80.4	5,812,962	5,389,233	92.7	137,525.86
Molise	136	32	23.5	320,795	151,385	47.2	4,038.52
Puglia	258	231	89.5	4,079,702	3,921,736	96.1	107,653.28
Sardinia	377	239	63.4	1,671,001	1,340,846	80.2	57,791.11
Sicily	390	376	96.4	5,037,799	4,923,748	97.7	73,357.34
SOUTH	**2,557**	**1,856**	**72.6**	**20,856,244**	**18,697,668**	**89.7**	**461,315.17**
ITALY	**8,093**	**5,814**	**71.8**	**60,035,748**	**51,274,307**	**85.4**	**1,591,170.42**

TABLE 6

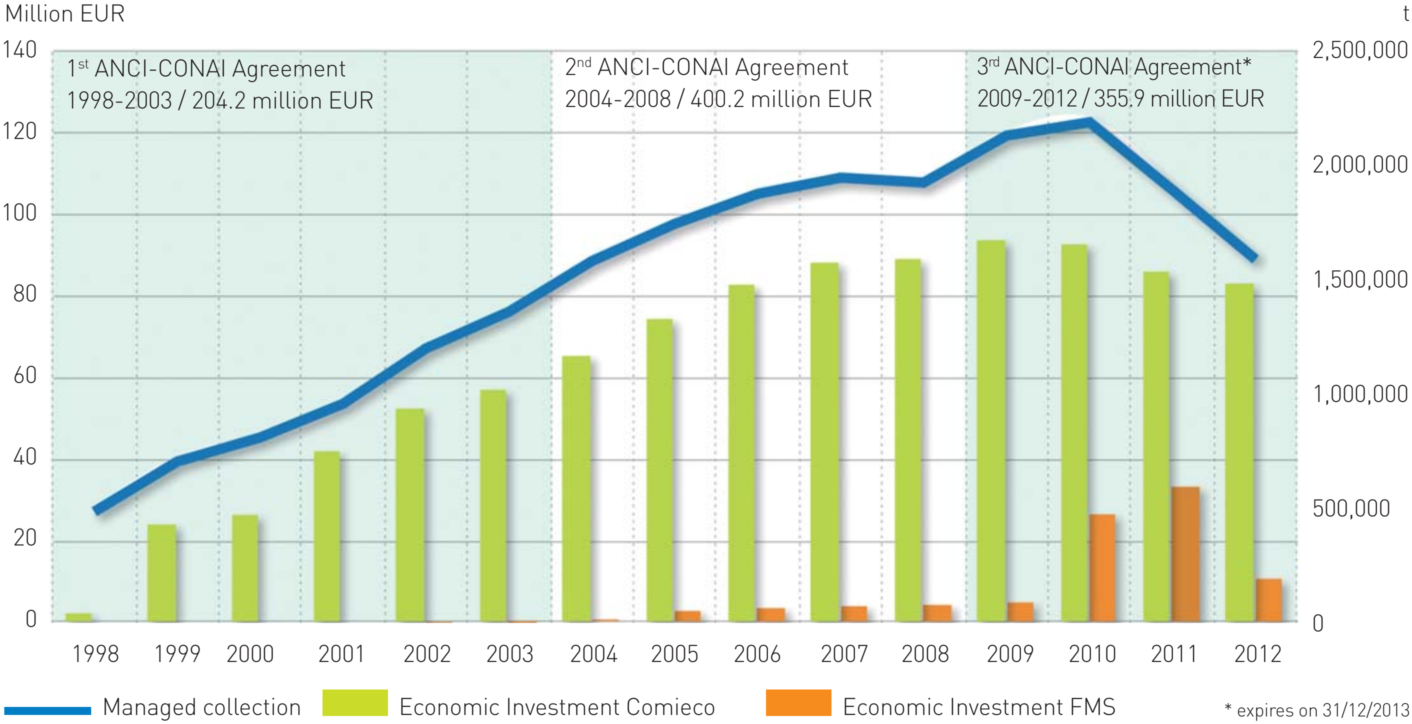
Resources allocated to parties under the agreements in 2012. Detail by areas.
Source: Comieco

	2012					
Region	**Inhabitants under the agreements**	**Managed packaging**	**Economic investment of Comieco (PACKAGING)**		**Economic investment of recyclers (SIMILAR PRODUCT FRACTIONS)**	
	n	**t**	**EUR**	**EUR/ab. under the agreements**	**EUR**	**EUR/ab. under the agreements**
NORTH	22.006.680	458,462	41,636,299	1.89	5,418,558	0.25
CENTRE	10,569,959	207,795	18,669,533	1.77	2,185,408	0.21
SOUTH	18,697,668	267,634	22,904,914	1.23	3,142,107	0.17
ITALY	**51,274,307**	**933,891**	**83,210,747**	**1.62**	**10,746,073**	**0.21**

FIGURE 4

Economic investment. 1998/2012 historical data set.

Source: Comieco



		1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	TOT.
Economic investment Comieco	million EUR	2.2	24.0	26.4	42.0	52.5	57.1	65.4	74.5	82.9	88.3	89.2	93.8	92.8	86.1	83.2	**960.4**
Economic investment FMS	million EUR	0.0	0.0	0.0	0.0	0.1	0.3	0.7	2.8	3.5	4.0	4.3	4.9	26.5	33.3	10.7	**91.1**
Managed collection	kt	485.4	705.5	810.8	958.6	1,201.8	1,361.9	1,584.1	1,747.5	1,879.0	1,949.6	1,928.1	2,134.2	2,192.7	1,895.4	1,591.2	**22,425.6**

FIGURE 5

Per-capita waste collection in the sample cities Turin, Milan, Florence, Rome, and Naples. 2004-2012 data.
Source: Comieco

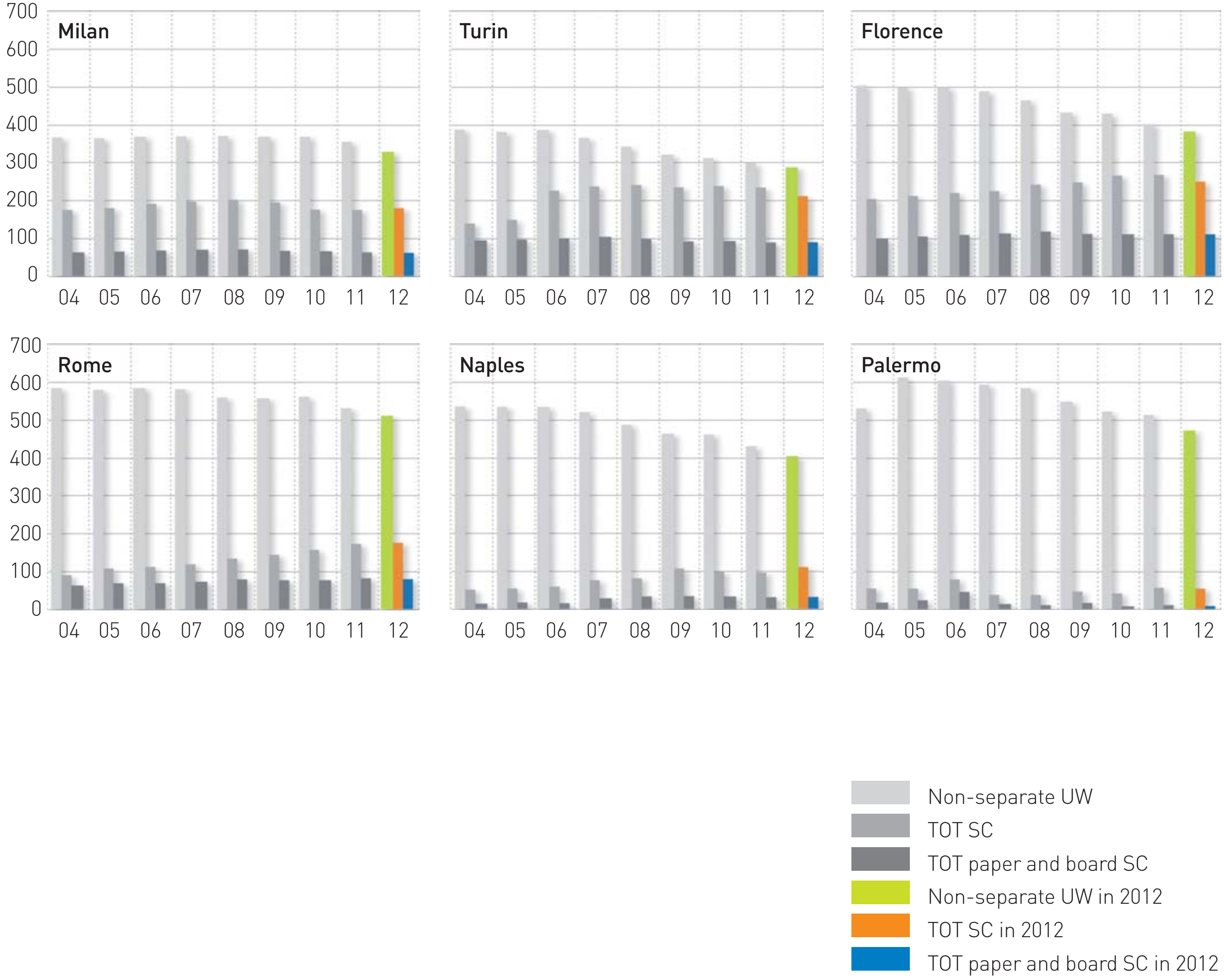
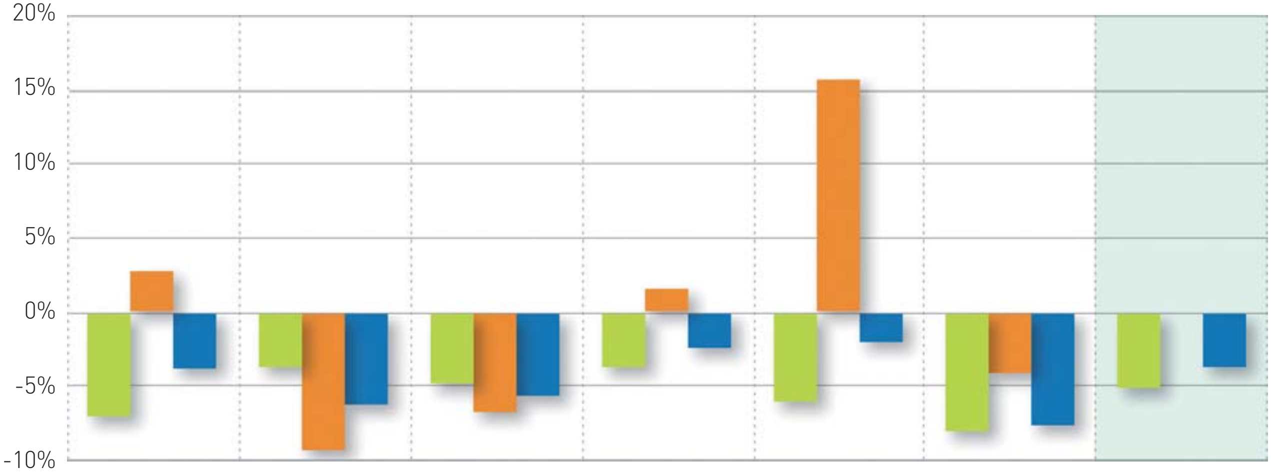


FIGURE 6

Waste collection in the sample cities Turin, Milan, Florence, Rome, and Naples. 2011-2012 variations.
Source: Comieco



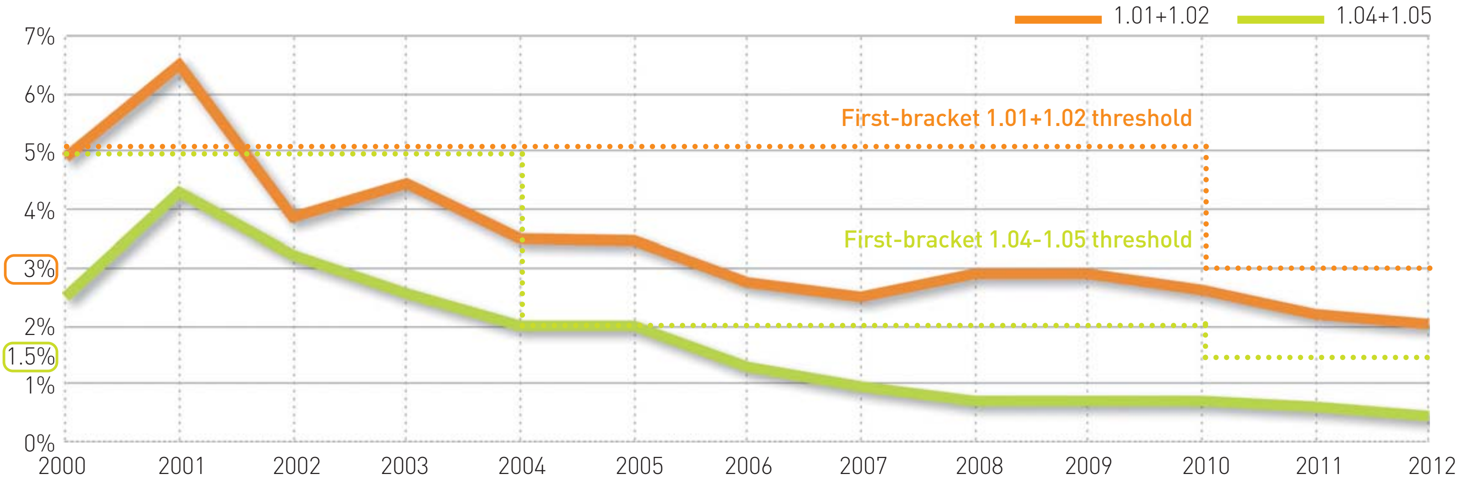
	Milan	Turin	Florence	Rome	Naples	Palermo	Mean
TOT Non-sep. UW	-7.0%	-3.7%	-4.8%	-3.7%	-6.0%	-8.0%	-5.1%
TOT SC	2.8%	-9.3%	-6.7%	1.6%	15.7%	-4.1%	0.0%
TOT UW	-3.8%	-6.2%	-5.6%	-2.4%	-2.0%	-7.6%	-3.7%

2012		Milan	Turin	Florence	Rome	Naples	Palermo	Total
TOT SC	t	235,531	191,827	92,261	450,015	110,140	36,688	1,116,462
TOT UW	t	665,588	451,806	232,624	1,753,563	506,691	347,992	3,958,264
SC/UW	%	35.4	42.5	39.7	25.7	21.7	10.5	-
Non-sep. UW	t	430,057	259,979	140,363	1,303,548	396,551	311,304	2,841,802

FIGURE 7

Quality of the collected material (mean trend of foreign fractions). 2000-2012 period.

Source: Comieco



			1st ANCI-CONAI AGR.				2nd ANCI-CONAI AGR.					3rd ANCI-CONAI AGR.			
Collection	**Data**		**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
1.01+1.02	Analyzed amounts	kg	n.d.	26,166	42,657	119,814	103,884	76,572	188,826	227,852	214,764	252,289	279,917	220,178	198,905
	Foreign fractions	%	4.90	6.50	3.87	4.45	3.50	3.47	2.75	2.50	2.90	2.90	2.62	2.20	2.03
	Performed analyses	n	27	171	275	533	443	321	772	930	990	1174	1302	1,054	951
1.04+1.05	Analyzed amounts	kg	n.d.	25,455	33,181	62,104	119,124	62,936	145,873	181,758	200,085	202,555	193,863	186,802	201,480
	Foreign fractions	%	2.50	4.30	3.22	2.56	2.00	2.00	1.29	0.95	0.70	0.70	0.70	0.60	0.44
	Performed analyses	n	26	122	165	281	335	291	779	1,041	1,145	1,176	1,068	1,041	1,053

Notes

The new CTA, in force since 2010, redefined the quality brackets and lowered the 1st-bracket specifications.

The above results refer to the total product analyses performed at sorting plants both on incoming and on outgoing materials in order to determine the amount of the considerations due to the parties under the agreements.

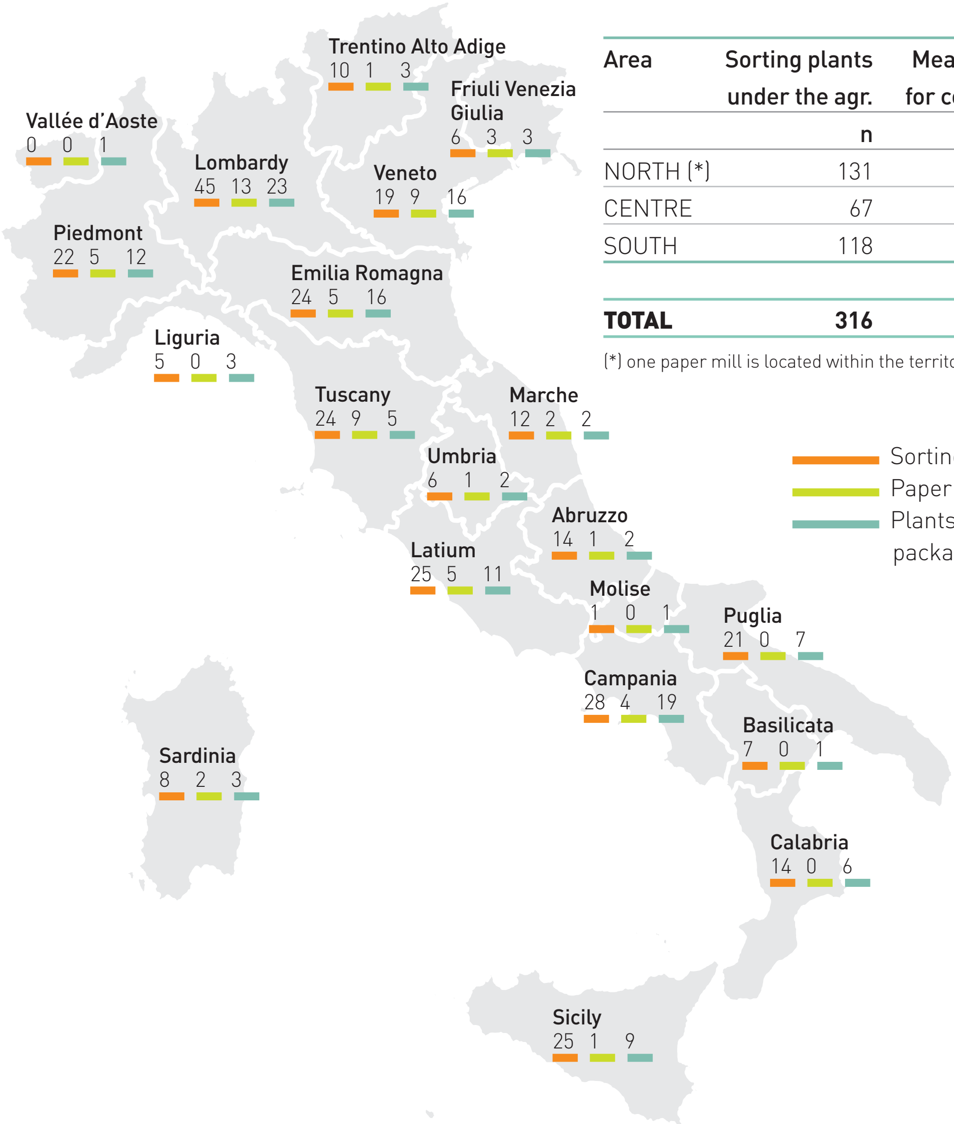
TABLE 7

Quality of the collected material (mean trend of foreign fractions). Detailed by macro-areas. 2011-2012 comparison.
Source: Comieco

	YEAR 2011		YEAR 2012		Δ 2011-2012
	ANALYSES	FOREIGN FRACTION	ANALYSES	FOREIGN FRACTION	FOREIGN FRACTION
	n	%	n	%	%
1.01+1.02					
NORTH	486	1.95	400	1.74	-0.21
CENTRE	286	2.44	213	2.12	-0.32
SOUTH	282	2.39	338	2.31	-0.08
ITALY	**1,054**	**2.20**	**951**	**2.03**	**-0.17**
1.04+1.05					
NORTH	441	0.42	452	0.32	-0.10
CENTRE	219	0.62	243	0.55	-0.06
SOUTH	381	0.80	356	0.51	-0.29
ITALY	**1,041**	**0.60**	**1,051**	**0.44**	**-0.16**

FIGURE 8

The recycling network in 2012.
Source: Comieco



Area	Sorting plants under the agr.	Mean distance for conferment	Paper mills under the agr.	Sorting plants II & III
	n	km	n	n
NORTH (*)	131	17.1	36	77
CENTRE	67	16.7	17	20
SOUTH	118	18.2	8	48
TOTAL	**316**	**17.4**	**61**	**145**

(*) one paper mill is located within the territory of the Republic of San Marino

Sorting plants under the agreements
Paper mills under the agreements
Plants for collection of secondary and tertiary packaging

TABLE 8

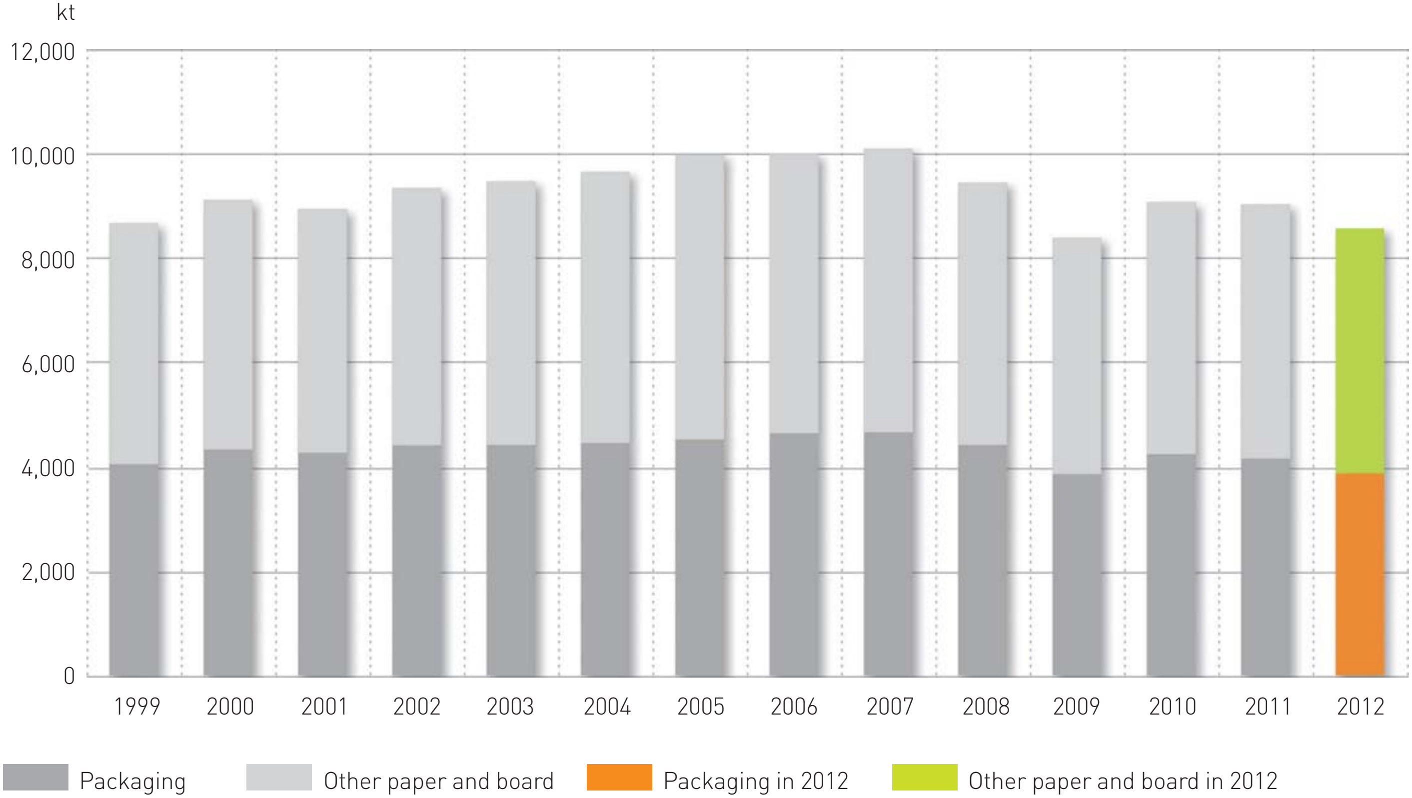
Production, import, export, and apparent consumption of paper and board in 2012.
Source: ISTAT data processed by Assocarta and Assocarta estimates

		PRODUCTION (A)	IMPORT (B)	EXPORT (C)	APPARENT CONSUMPTION (A+B-C)
Paper and board for corrugated board	t	2,119,100	1,373,943	160,920	3,332,123
Cardboard for cases	t	521,703	607,623	395,348	733,978
Other wrapping and packaging paper and board	t	1,251,743	609,322	667,739	1,193,326
TOTAL PACKAGING	t	3,892,546	2,590,888	1,224,007	5,259,427
Δ % vs. 2011	%	-6.8	0.6	0.0	-4.9
Newspaper	t	127,059	609,346	3,074	733,331
Paper for graphic use	t	2,778,405	1,593,654	1,645,596	2,726,463
Paper for hygienic-sanitary use	t	1,410,237	51,795	692,067	769,965
Other types of paper	t	379,348	67,846	65,645	381,549
TOTAL OTHER PAPER AND BOARD	t	4,695,049	2,322,641	2,406,382	4,611,308
Δ % vs. 2011	%	-3.5	-10.6	0.3	-8.9
TOTAL PAPER PRODUCTION	t	**8,587,595**	**4,913,529**	**3,630,389**	**9,870,735**
Δ % vs. 2011	%	**-5.0**	**-5.0**	**0.2**	**-6.8**

FIGURE 9

Paper production in Italy. 1999-2012 historical data set.

Source: ISTAT data processed by Assocarta and Assocarta estimates

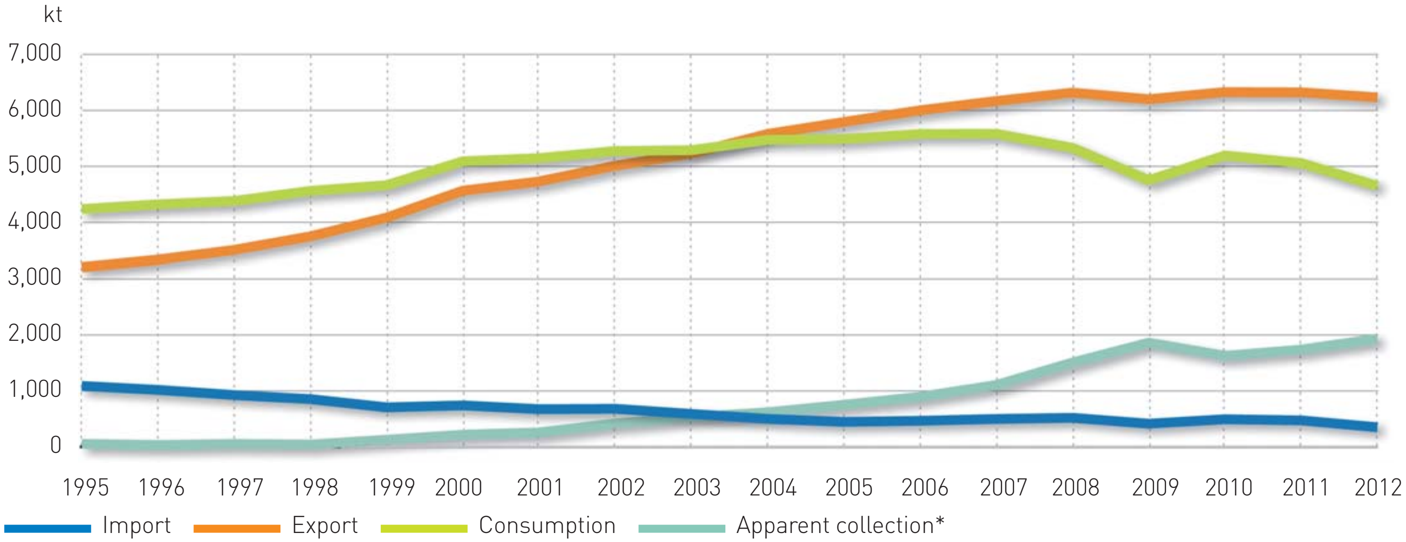


	PAPER PRODUCTION (kt)													
	1999	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
PACKAGING	4,071	4,347	4,287	4,429	4,440	4,471	4,541	4,661	4,681	4,434	3,877	4,261	4,178	3,893
OTHER PAPER AND BOARD	4,615	4,784	4,669	4,927	5,051	5,196	5,458	5,347	5,431	5,033	4,527	4,826	4,864	4,695
TOTAL PAPER PRODUCTION	**8,686**	**9,131**	**8,956**	**9,356**	**9,491**	**9,667**	**9,999**	**10,008**	**10,112**	**9,467**	**8,404**	**9,087**	**9,042**	**8,588**

FIGURE 10

Consumption, import, export of paper for recycling and apparent collection*. 1995-2012 period.

Source: Assocarta data processed by Comieco



*Apparent collection: Consumption + Import - Export

FIGURE 11

Raw materials of the paper industry in 2012.

Source: Assocarta and Comieco

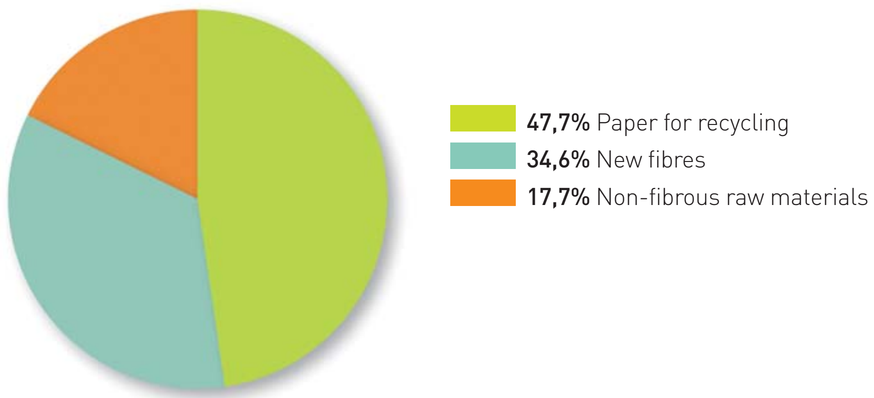
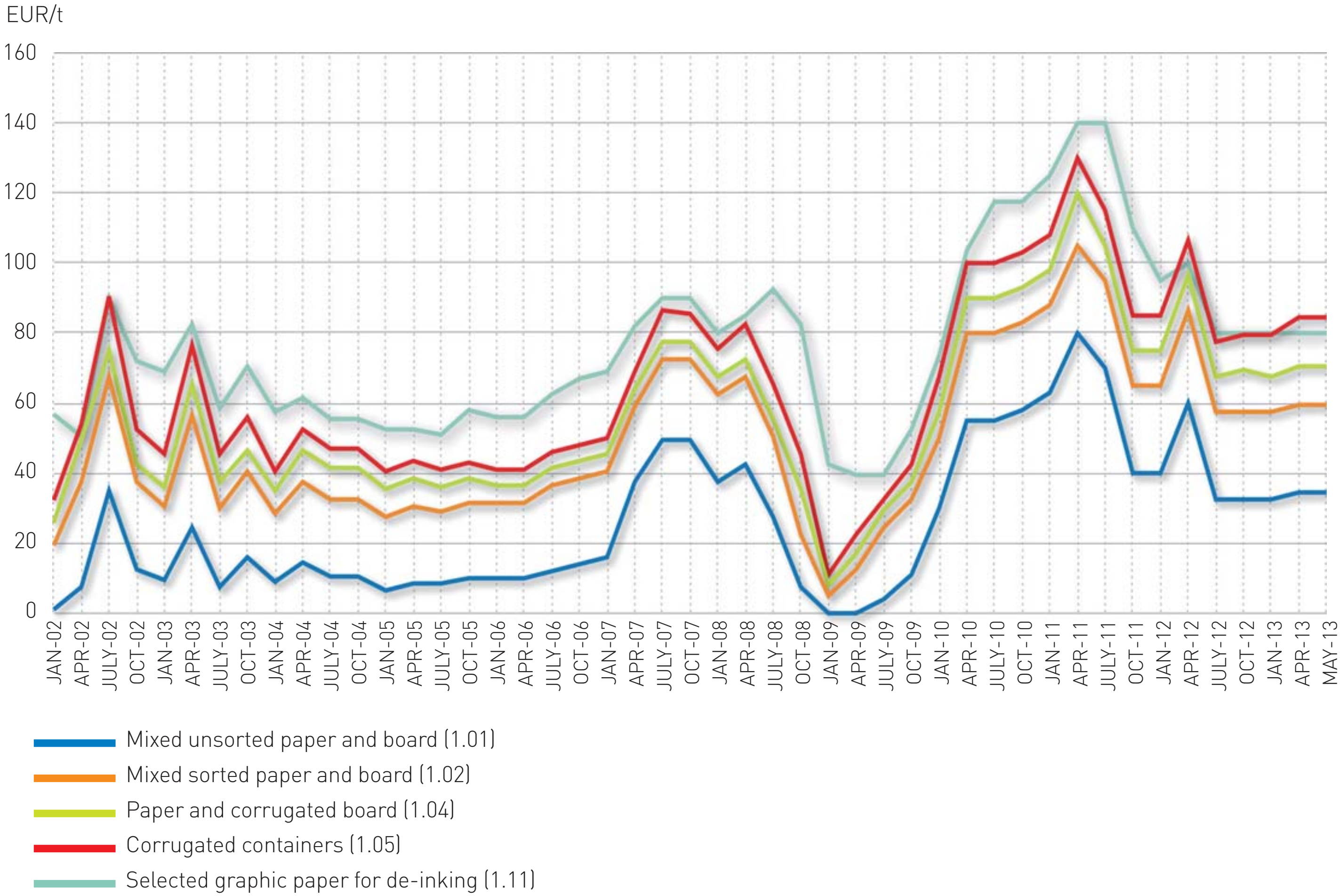


FIGURE 12

Monthly observations of mean paper for recycling values* (EUR/t). January 2002-May 2013 period.

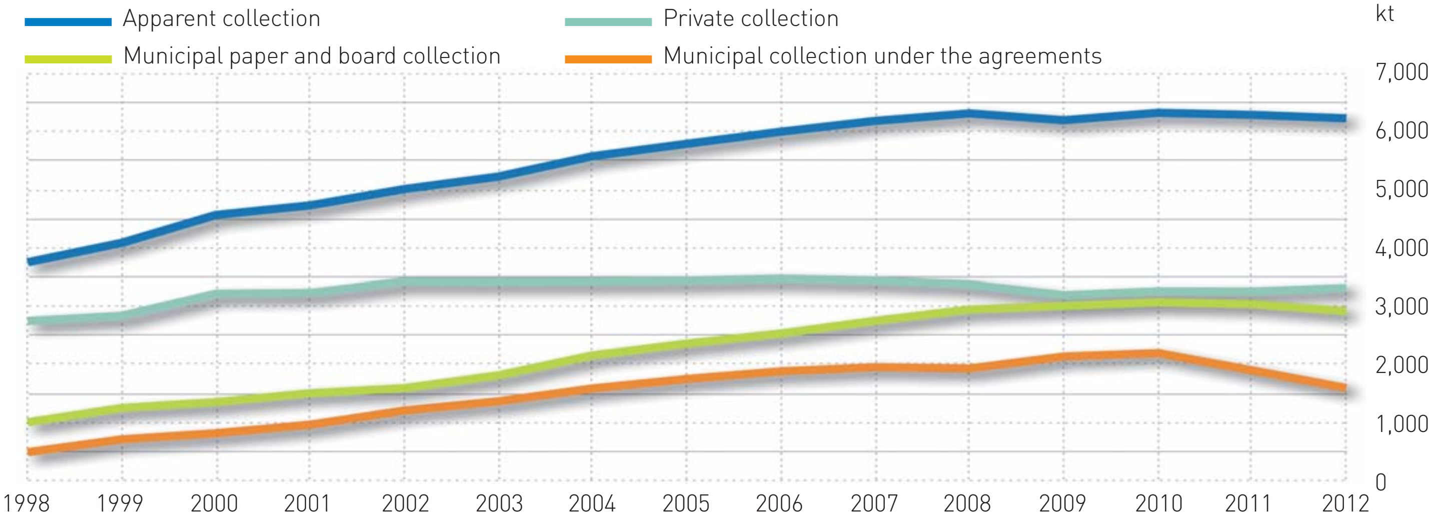
Source: Milan Chamber of Commerce



* for sorted materials, packed in bales without foreign substances, from recoverer to user ex departure facility, VAT and transport excluded, except paper for recycling relevant to types referred to the materials recovered through separate urban and similar waste collection.

FIGURE 13

Overall and municipal paper and board collection in Italy. 1998-2012 historical data set.
Source: Comieco

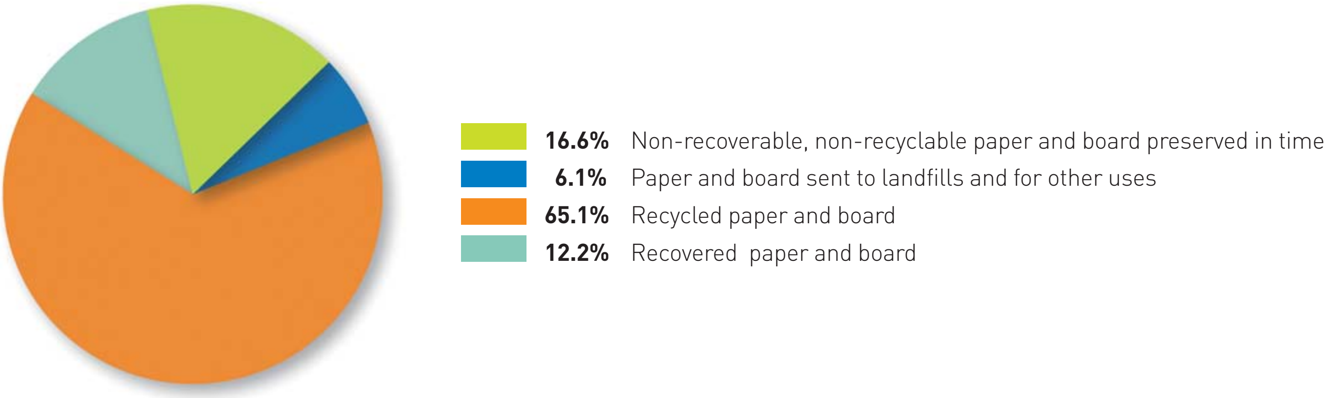


		1998	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Apparent collection	kt	3,749	4,084	4,565	4,730	5,011	5,227	5,578	5,792	6,001	6,187	6,316	6,199	6,326	6,321	6,231
Municipal paper and board SC	kt	1,001	1,247	1,349	1,501	1,589	1,810	2,154	2,358	2,532	2,750	2,945	3,008	3,069	3,004	2,936
Municipal paper and board collection under the agreements	kt	485	706	811	959	1,202	1,362	1,584	1,747	1,879	1,950	1,928	2,134	2,193	1,895	1,591
Private collection	kt	2,748	2,837	3,216	3,229	3,422	3,417	3,424	3,434	3,469	3,437	3,371	3,191	3,257	3,287	3,295
Municipal paper and board collection under the agreements vs. apparent coll.	%	**12.9**	**17.3**	**17.8**	**20.3**	**24.0**	**26.1**	**28.4**	**30.2**	**31.3**	**31.5**	**30.5**	**34.4**	**34.7**	**30.1**	**25.5**

FIGURE 14

Destination of paper and board products consumed in Italy in 2012.

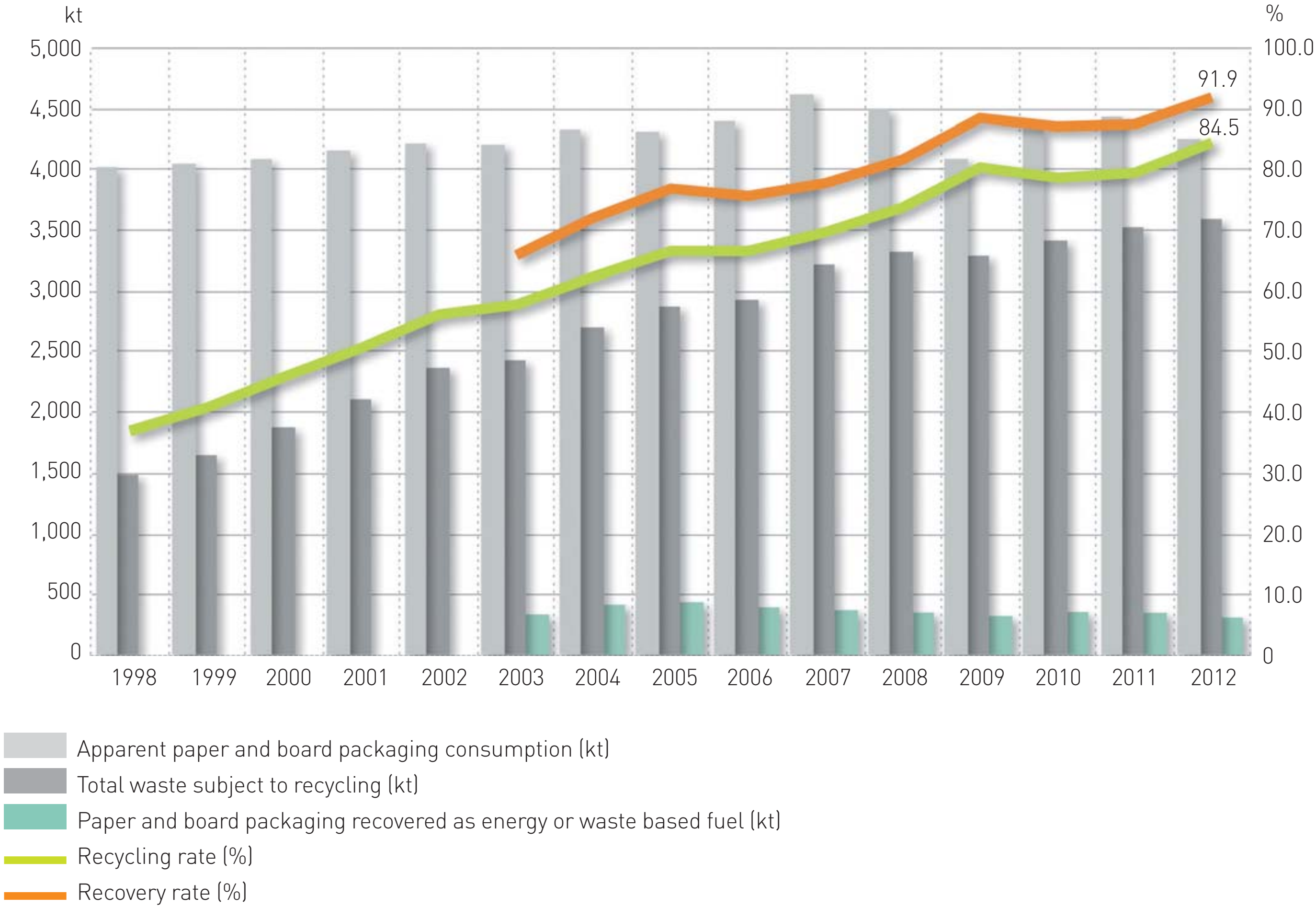
Source: Assocarta data processed by Comieco



	kt
non recoverable, non-recyclable paper and board preserved in time	1,260
recycled paper and board	4,950
recovered paper and board	930
paper and board sent to landfills and for other uses	460
TOTAL CONSUMPTION OF PAPER AND BOARD PRODUCTS	**7,600**

FIGURE 15

Achieved paper and board packaging recovery and recycling targets. 1998-2012 period (kt and %).
Source: Comieco



Note: energy recovery before 2003 only monitored for the share managed under the agreements. Total data not available.

TABLE 9

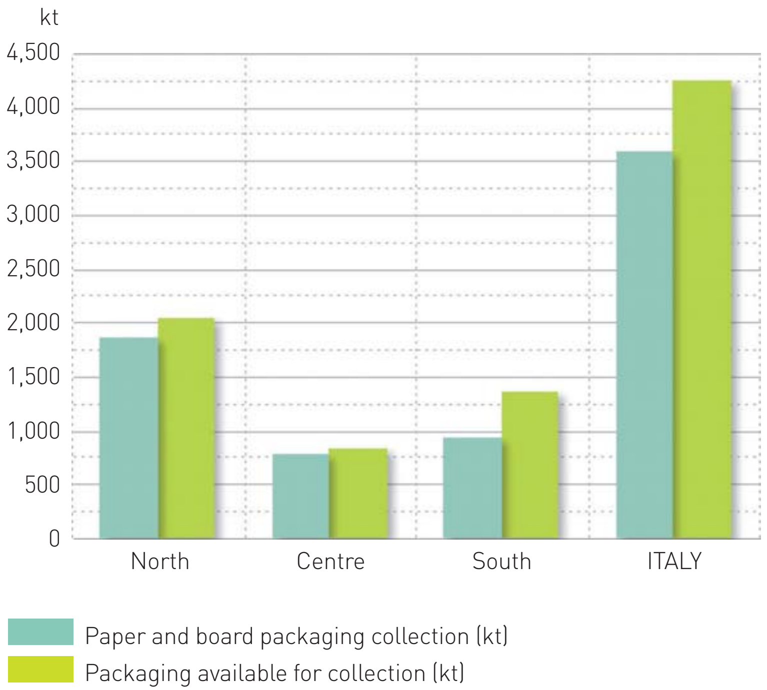
Paper and board packaging recovery and recycling targets achieved in 2012.
Source: Comieco

Calculation of recycling and recovery rates	year 2012	Δ 2011/2012
	t	%
Apparent paper and board packaging consumption	4,255,404	-4.08
Paper and board packaging from 1.01+1.02 (paper and packaging) recycled in Italy	343,412	3.47
Paper and board packaging from 1.04+1.05 (packaging only) recycled in Italy	1,919,223	-14.98
Paper for recycling originating from packaging recycled abroad	1,331,217	42.16
TOTAL RECYCLED PAPER AND BOARD PACKAGING	3,593,852	1.93
PAPER AND BOARD PACKAGING RECOVERED AS ENERGY OR WASTE-BASED FUEL	315,000	-11.27
TOTAL RECOVERED PAPER AND BOARD PACKAGING	3,908,852	0.73
RECYCLING	84.5%	
ENERGY RECOVERY	7.4%	
RECOVERY	91.9%	

FIGURE 16

Paper and board packaging collection indexes achieved in 2012 by macro-areas.

Source: Comieco



		NORTH	CENTRE	SOUTH	**ITALY**
Paper and board packaging coll.	kt	1.754	733	1.107	**3.594**
Collection index	%	85,6	87,2	81,0	**84,5**

Note: The "collection index" estimates the collection level in public and private areas, with reference to the apparent consumption of paper and board packaging available for collection.

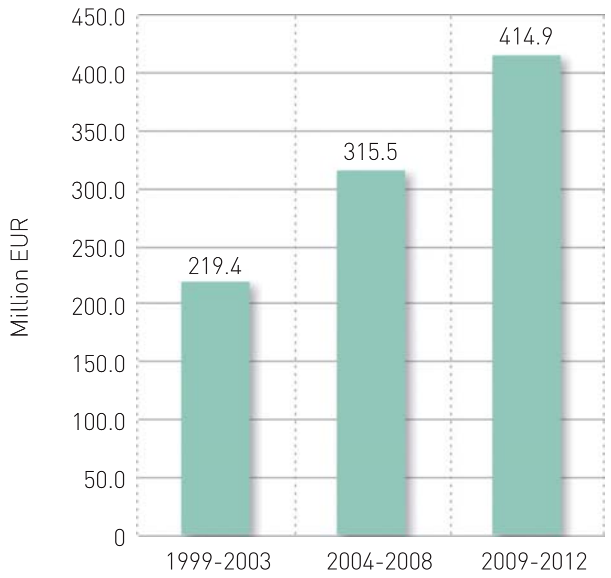
TABLE 10

Balance of benefits from paper and board collection and recycling in Italy. 1999-2012 period.
Source: Althesys data processed by Comieco

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	TOTALE
						Million EUR									
COST ITEMS															
SC differential	-35.9	-40.4	-56.3	-62.1	-73.5	-72.3	-74.1	-74.8	-78.7	-79.6	-82.6	-81.1	-106.3	-102.7	-1,020.4
Non-generated energy	-7.3	-6.6	-8.4	-9.4	-12.7	-14.5	-19.6	-23.0	-23.7	-30.5	-22.1	-20.9	-23.3	-23.5	-245.5
TOTAL COSTS	**-43.2**	**-47.0**	**-64.7**	**-71.5**	**-86.2**	**-86.8**	**-93.7**	**-97.8**	**-102.4**	**-110.1**	**-104.7**	**-102.0**	**-129.6**	**-126.3**	**-1,266.0**
BENEFIT ITEMS															
Avoided emissions	50.9	54.2	63.9	67.3	75.7	63.5	50.4	72.9	75.7	89.0	52.8	55.8	73.6	71.1	916.8
Non disposal	106.1	115.0	139.1	149.3	171.2	189.7	204.5	220.6	234.6	257.3	266.5	266.4	266.3	257.5	2,844.1
Generated raw materials	68.7	69.2	4.9	29.8	28.6	27.1	25.7	32.2	109.7	79.3	16.2	157.6	184.2	121.2	954.4
Generated employment	34.9	37.7	43.5	48.1	51.5	50.6	63.2	68.6	72.3	81.5	83.3	84.7	84.0	81.2	885.0
TOTAL BENEFITS	**260.6**	**276.1**	**251.4**	**294.5**	**327.0**	**330.9**	**343.8**	**394.3**	**492.3**	**507.1**	**418.8**	**564.5**	**608.1**	**530.9**	**5,600.3**
NET BALANCE	**217.4**	**229.1**	**186.7**	**223.0**	**240.8**	**244.1**	**250.1**	**296.5**	**389.9**	**397.0**	**314.1**	**462.5**	**478.5**	**404.6**	**4,334.3**

FIGURE 17

Mean annual benefit of separate paper and board collection and recycling based on the ANCI-CONAI Agreements.
Source: Althesys data processed by Comieco



Note on the method

What's new and why

In order to ensure appropriate reading of the data contained in this report, the changes made vs. the past edition are highlighted.

The figure for collection in the regions Emilia Romagna, Piedmont, and Sardinia, and the subsequent total figures for the area were updated vs. the year.
For a few years now, the share of separate paper and board collection not managed by the Consortium has been based on the input of the Entities and organizations that monitor or manage the waste flows locally (ISPRA, Regions, Local Agencies, Provinces and Work Groups, Cities, operators, plants, etc.). The goal is to obtain as detailed as possible local data for comparison against the data on the Consortium's management.
Whenever official data is not available, Comieco estimates the amounts collected at provincial level.

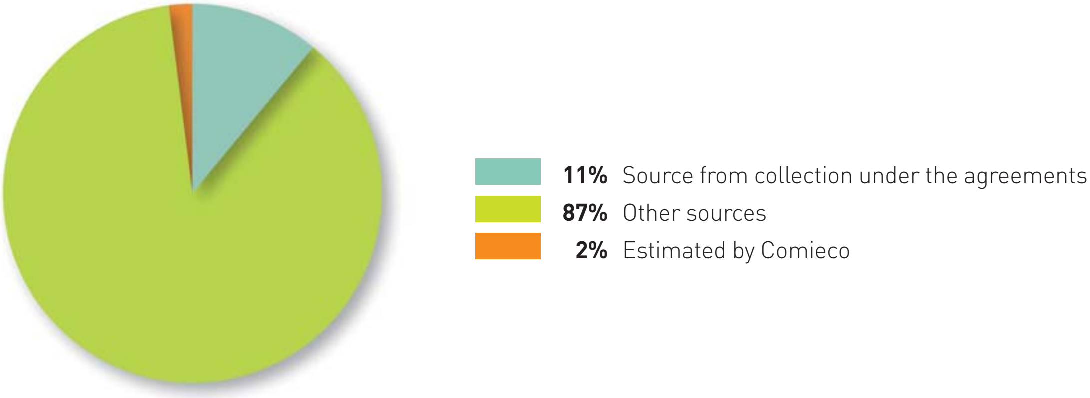
As to the evaluation of 2012, which is the object of this Report, 87.4% of collection data originates from official sources, and partially overlaps to the data available to Comieco; 10.5% refers to amounts managed by the Consortium directly, i.e. reported by the parties under the agreements as provided for by the Technical Annex (without any other official sources); and 2.1% is based on amounts estimated as described below.

In order to estimate the amounts not managed by Comieco, and not available from 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 providers, aimed at understanding how many of the Cities not involved in the agreements have introduced the separate paper and board collection service.

FIGURE 18

Sources and method.
Source: Comieco



Group	% inhabitants under the agreements	% of inhabitants not subject to the agreements on whom SC performance should be checked
A	AB > 85%	minimum il 25 %
B	51% < AB < 85%	minimum il 50 %
C	20% < AB < 50%	minimum il 75 %

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 the amounts was available, attempts were made to identify the rate of inhabitants not subject to 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. Based on the above, the collection data was calculated and added to the data referring to the share managed by Comieco, so as to estimate total collection in the region under consideration.

Note: Certain values (quantitative, in particular) taken from last year's report were updated to ensure a homogeneous comparison for the past two years.

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