22nd Report

Collection, Recycling, and Recovery of Paper and Board in 2016

June 2017

comieco
Consorzio Nazionale Recupero e Riciclo degli Imballaggi a base Cellulosica

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Welcome to the 22nd Report on the "Collection, Recycling, and Recovery of paper and board."
Data analysis is organized in three areas:

Overall national data

Comieco management

Scenario

Basic information is contained in a brief insert that can be detached from the cover for quick and convenient use.

Thank-you for your attention and enjoy your reading.

Graphic design
XxY studio

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88%

is the recovery rate of paper and board packaging consumed and collected separately in 2016

+3.3%

is the increase of the amount of paper and board collected by the Cities in 2016 vs. 2015

Preface

A young man or woman placing an empty shoe box in a paper and board collection container is not likely to wonder whether separate paper and board collection has always been in place or for how long it has. They would not wonder because the sorting of waste and, particularly, of paper and board, is by now a consolidated, regular activity for most Italyn citizens.
Even older people could hardly name a start date and would probably be surprised to hear that the organized paper and board recycling cycle is – all in all – quite recent.

However, when referring to separate waste collection it is not so much "when", as "how much" that counts. This is why Comieco drafts an annual report to disclose the results achieved at national level to the institutions, the press, citizens, and operators.

Paper and board recycling in Italy has been steadily improving since its outset, and our country is definitely among the best performers in Europe in this respect.

When focusing on 2016, the year of our present survey, the most remarkable data is a 3.3% increase of the amount of paper and board collected by the Italyn Cities compared to the previous year. How was this excellent result achieved? The answer, as it often happens in such cases, can be found in a combination of several circumstances. First, if growth is broken down by macro-areas, as it usually is, a figure stands out: +8% for the southern Regions. While we celebrate this success, we are also ready to reduce it to its right proportions, because this growth starts from a much lower level compared to the rest of the Country.

The figure for the South is also a positive sign from the methodological viewpoint: it was, in fact, achieved through a greater commitment of local administrations, as well as through the actions implemented by Comieco in the southern Regions. We refer, in particular, to the Plan for the South – sponsored by the Ministry of the Environment and of Territorial and Sea Protection – and to the ANCI-Comieco Tender, that provided 7 million EUR in three years to the Cities involved in the agreements that suffer from collection deficits to fund the purchase of equipment and vehicles. The economic support ensured by Comieco is linked to the achievement of collection targets within a specified term, in combination with communication activities.

Results were positive also in the other Northern and Central regions. In particular, while the North confirmed the upward trend of the past few years, the Centre performed even better with increases above average, and recorded a remarkable 3% growth achieved, in particular, as a result of the positive performance of Latium.

Another finding deserves great attention for its historical value. While it does not concern paper and board directly, it is important anyway. This year, for the first time, global separate collection (which does include paper and board, but also other recyclable materials) passed the 50% threshold.
This is a very important achievement. Major changes take place slowly, but high speed usually goes to the detriment of consolidation. We are therefore happy and proud to welcome this new result as a reward for the effort of the entire paper pipeline, of the Cities, of collection and recovery operators and, particularly, of the citizens, as well as a stimulus for new achievements.

Piero Attoma
Chairman, Comieco

53.1 kg

is the amount
of paper and board
that each Italian citizen
collected separately in 2016

Introduction
Carlo Montalbetti

General Manager, Comieco

Separate Paper and Board Collection in Italy – the State of the Art

1.
2016: a positive year

Like all human activities, separate paper and board collection is subject to ongoing improvement. This is confirmed by the 2016 trend that, with over one-hundred thousand tons more of paper and board collected compared to 2015, records a 3.3% increase. In other words, paper and board collection in 2015 brought about a decline of the landfill share, thus reducing waste.
One historical and statistical index is the average per-capita paper collection performed by the Italyn citizens, which grew from 51.5 to 53.1 kg. This number, obtained with the formula "kg collected/no. of inhabitants in Italy," is an important national index. However, other parameters should also be considered for better understanding, such as overall waste production, which displays a more varied scenario.
In particular, the ratio of paper and board collected at national level to total waste is 10.7% in 2016. The performance of each Region and, within each Region, the performance of the individual local areas, basically depend on penetration of the separate waste collection culture across the population, on the socioeconomic context and, last but not least, on the quality and organization of municipal collection services. Differences among the country's geographic regions have steadily been the object of scrutiny and, for a few years now, also of focused financial interventions that are now providing early concrete outcomes.

53.1 kg
Per-capita average

3.2 million tons
Municipal collection volumes

+102thousand tons
compared to 2015

However data is interpreted, it should be acknowledged that the overall amount of municipal paper and board collection is now 3,194,000 tons, as much as 102thousand tons more compared to the previous year. It amounts to adding a twenty-first region collecting the same quantity as Marche.

↗ *tab. 1 page 21* — ↗ *fig. 1 page 22* — ↗ *fig. 5 page 30*

2.
The dialects of paper

As far as the origin of paper for recycling by geographic regions is concerned, southern Italy records an excellent performance, with a total 8.6% growth. If this figure – twice as high as in the previous year (4.1%) – is broken down, we find that all the southern Regions provided a positive input. Four Regions rank at the top with two-digit growth rates: Molise (+17.9%), Calabria (+17.2%), Sicily (+15.3%), and Basilicata (+12.8%). While we applaud these growth rates, we need to acknowledge that the baseline values for the southern Regions are significantly lower compared to the rest of the Country. Just consider that the South macro-area, with 20.8 million inhabitants, collected 677thousand tons of paper for recycling in 2016, whereas the Centre macro-area, with a population of 11.8 million, collected 780thousand tons. The figure for the South is anyway very positive, in that it confirms the efficacy of the strategies implemented for the southern Regions. The North macro-area has resumed its upward trend after a stop recorded last year. In particular, Piedmont shows a slightly positive figure (+0.4%), which is anyway worth appreciating in consideration of the downward trend that characterized the past few years. Liguria drives the area's performance with a 3.9% increase. Lombardy, which collects alone one-third of the amount of the whole North macro-area, reverses its negative trend with a 1.7% increase. Only Vallée d'Aoste records a negative result (-0.5%), but volumes in this Region are not so high as to impact significantly on the performance of the macro-area.
The Centre performed better than the North – +3.0%, or even 3.5% if the area were not adversely impacted by the only negative figure, -4%, recorded in Marche. The cause of this downturn is not so much a reduced citizen effort, as a different collection amount calculation system introduced during the year. Latium therefore drives the improvement of the Centre macro-area with a remarkable +6.4%. Further significant growth margins are expected from this Region, not just in Rome, but also in many other Cities that changed their collection services in the past few years. The over 20thousand additional tons bear evidence of the effects of these adjustments and represent the most significant regional increase of the whole Country.
In a tentative full ranking of per-capita collection performance, citizens in Emilia Romagna would turn out the most virtuous, with 86 kg, followed by those in Trentino Alto Adige and Vallée d'Aoste. Last in ranking would be the Sicilyns with 19 kg. Citizens in Molise would rank slightly better with 22 kg. If we, rather, considered the figure based on the ratio of total waste production/total separate collection to paper-only

collection, the most virtuous would be the citizens in Trentino Alto Adige, who only dispose of 150 kg of waste in landfills vs. 461 kg produced. With separate collection they recover 311 kg of materials, including 76 of paper and board.

The region with the best per-capita result
Emilia Romagna
86.4 kg

The region with the strongest increase
Molise
+17.9%

The South is improving
+8.6%

Piedmont is second in this ranking, almost equal to Marche, whereas Emilia Romagna is only fourth. While this Region collects the highest per-capita amount of paper, it also produces the greatest amount of waste in Italy, with 642 kg per capita. The bottom of this ranking remains unchanged, with Molise last but one followed by Sicily. Latium and Liguria are closest to the Italyn average.

↗ *tab. 2 page 23* — ↗ *fig. 2 page 26* — ↗ *fig. 6 page 31*

3. Big cities: monitoring behaviours

According to estimates, Italy met a symbolic target in 2016: for the first time, overall separate collection (all recyclable materials) passed the 50% threshold. While this is a significant achievement, it should not arouse too much excitement, in that the 65% legal target is still far, particularly if we consider that some Regions have already met it, while others are not even half-way towards it.

In the monitored big cities – Milan, Turin, Florence, Rome, Naples, Bari, Palermo – separate collection exceeded 50% only in Milan (as early as in 2014). This overview confirms how complex it is to organize the collection service in metropolitan areas. The data of Naples, Palermo, and Bari stands out. In Naples, in particular, a sharp increase of separate collection (+21%) is recorded, combined with a decrease of mixed waste (-5.5%). In absolute terms, while total waste increases, landfill disposal in Naples decreased by 21thousand tons compared to the previous year, thus recording the best result ever.

Total separate collection increases
+4.4%

Total waste remains stable
+0.4%

Mixed waste decreases
-2.0%

While the figure for Palermo (+47%) is amazing, collection levels in absolute values are still very far from legal targets.

↗ *fig. 3 page 27* — ↗ *fig. 4 page 28*

4. Focus on packaging

During 2016, 4.7 million tons of paper and board packaging (+2.7% vs. 2015) were consumed. This is a positive result, particularly if seen as a sign of recovery from the economic downturn. Exports of paper for recycling obtained from packaging waste increased significantly (+4.7%) and this is even more important if we consider that the export balance was negative until 2003, and Italyn paper mills needed to import paper for recycling from abroad.

Paper and board packaging recycling
79.7%

Paper and board packaging recovery
88.2%

Apparent paper and board packaging consumption
4.7 kt

The recycling rate, i.e. the ratio of packaging recycling to apparent packaging consumption, is still just below 80%, which means that 4 packaging units out of 5 are recycled in Italy.

↗ *tab. 4 page 25* — ↗ *fig. 7 page 32* — ↗ *tab. 8 page 41*

Comieco Management: Numbers and Results for 2016

5. Collection under the agreements

The Cities participate in the agreement with Comieco on a voluntary basis.
767 agreements were in force as at 31/12/2016, entered into either directly or through delegated parties, representing 5,519 Italyn cities. The agreements are distributed unevenly across the national territory: the Centre and North have 94 and 148 agreements in place respectively, whereas the South has 555, i.e. 69%. This disproportion points out to widespread fragmentation, which means poor coordination among local entities. The Southern cities "are not connected" and therefore do not leverage on the optimized investments and know how offered by the network.
The subsidiary role of Comieco is confirmed: the managed volumes, which amount to 46.9% of total municipal separate collection, are declining vs. the maximum level of 75% (achieved in 2002), in accordance with the principle of subsidiarity.

68.0% Cities covered by the agreements

88.2% Italyn citizens covered by the agreements

1.5 kt managed under the agreements out of over 3 kt of paper and board collected in Italy

In 2016, the Consortium managed 1.5 million tons of paper and board obtained through municipal collection, produced by 82% of the population. This data, which is clearly unbalanced, can be interpreted in consideration of the fact that most Cities covered by the agreements only entrust a share of their collection to Comieco. It should further be noted that the Consortium operates as a sort of "amortizer", i.e. a party to which the Cities and the operators entrust paper and board recycling in full, in part, or not at all, in order to maximize revenues and optimize management. Each party under the agreements can therefore select the type of agreement to be signed with Comieco according to its own needs, in compliance with the timeline set out in the technical annex.
Alongside municipal collection, other collection channels are in place across the country – for so-called "special waste" – and account for an additional 3 million tons of paper and board.

↗ *tab. 5 page 33* — ↗ *fig. 9 page 37* — ↗ *fig. 12 page 40*

6. Economic support for the parties to the agreements

Our previous report noted that the Cities covered by the agreements had received "almost" 100 million EUR, a threshold they neared for two years in a row but never reached. In 2016 this threshold was passed, with a total allocation of 102 million EUR to the Cities covered by the agreements, for a managed amount of 1,030,000 tons of packaging and 469thousand tons of mixed waste. This is not the first time that Comieco allocates an amount exceeding 100 million EUR. It did back in 2009, when, however, the managed amount was 600thousand tons higher. This means that 7 years later the Consortium allocates the same funds to the parties to the agreements even if the managed amounts have declined by 28%. This progress can be accounted for by, in particular, an improved use of packaging waste according to the provisions of the new ANCI-CONAI Framework Agreement for the 2014-2019 period. It should be noted that the allocated amounts were aimed at helping cover the higher costs generated by separate paper and board collection.

102.1 million EUR granted to the Cities

+3.7% vs. 2015

↗ *tab. 6 page 34* — ↗ *fig. 10 page 38*

7. Focused loans to the South

The ANCI-Comieco Tender and the Plan for the South were reintroduced and enhanced also in 2016, the latter sponsored by the Ministry of the Environment and of Territorial and Sea Protection to buy equipment in support to separate paper and board collection.
Considering the 2014-2016 three-year period, the overall investment of the Consortium amounted to 7.2 million EUR, which were used to fund the purchase of equipment.
This capital provision covers the cost of the equipment and is subject to meeting certain collection targets within a specified term. As an additional assurance of proper operation, each investment gives place to regular communication and data sharing activities.
The first positive effects were recorded in 2015 and, to a greater extent, in 2016, because some time lag

30 kg/ab-year: per-capita loan access threshold

280 Cities involved in the plan

Over 7 million EUR invested in 3 years

needs to be considered from tender participation to fund provision and to the actual purchase and implementation of the equipment. For this reason, an increase and consolidation of benefits should be expected also during 2017, since the largest investment (3,250,000 EUR) refers to 2016.

↗ *tab. 7 page 35*

8.
Quality: a primary objective across the Country

The results of the tests performed during 2016 outline a different picture if both paper collection flows are considered – 1.01+1.02 (originating from households) and 1.04+1.05 (which only includes packaging collected from business users).
As far as 1.01+1.02 is concerned, the decline in quality adds up to the decline observed in 2015. The incidence of the foreign fraction increased by 1.1% in two years, resulting into a 3.6% national average that is beyond the reference threshold for bracket one (3%). The collection quality parameters are set out in the ANCI-COMIECO Paper Technical Annex. In this case too, the national figure – generally not in accordance with the parameter – can and should be separated, and the behaviour of the individual macro-areas should be observed. The result for the North (2.1% in 1.01+1.02) is actually improving, but is generally dragged down in ranking by the Centre (4.9% foreign fraction) and the South (4.0%). If a rating existed for Italy as a system, as in does in the financial sector, this would see the Country fall to the second bracket. The situation is different for 1.04+1.05, whose reference parameter for bracket one is set to 1.5%. The quality of 1.04+1.05 is substantially stable or slightly improved compared to the past year: a minor decrease in the South is offset by stability in the Centre and a clear quality improvement in the North.
There are two key factors upstream to these results: reduced user attention and a more focused testing mode, in compliance with the practices set out in the Technical Annex.

1,097 tests in one year

3.6% average foreign fractions in 1.01+1.02

0.8% average foreign fractions in 1.04+1.05

↗ *tab. 3 page 24* — ↗ *fig. 11 page 39*

9.
The national recycling plant network

The collected amounts managed by Comieco are delivered to 351 sorting plants across the country, which receive and process the material. This widespread plant network allows to limit costs by ensuring that vehicles are unloaded at a short distance from the collection points (16.5 km on average).
After processing, the material is provided to the parties that use paper for recycling for production. Sixty percent (just less than 900thousand tons) of the amounts managed by Comieco are entrusted on a pro-quota basis to 55 plants (paper mills), which ensure recycling across the national territory. The remaining 40% share (approximately 600thousand tons) is awarded by means of regular auctions to parties whose operating capacity is such as to ensure recycling. In 2016, 20 parties were awarded at least one lot. Ninety-four percent of this material was recycled in Italyn plants.

351 sorting plants

55 paper mills

Average distance from collection points 16.5 km

↗ *fig. 8 page 41*

10.
Guidelines from the paper sector

Paper production in Italy records the same values of 2015 (+0.1%), whereas the packaging segment grows by 1.5%, thus offsetting the decline observed in other paper production (-1.7%).
After more than 20 years of parallel development, an analysis of the historical data set of apparent consumption shows a separation between packaging consumption, which continues its progressive growth, and graphic paper consumption, which fell from its peak value in 2007 (4.8 million tons) to less than 3 million tons in 2016 – the lowest amount recorded since 1990. This figure can be seen as the effect of significant substitution brought about by IT technologies in the publishing and data storage sector. In particular, graphic paper production declined in the past ten years; this is also confirmed by a review of press circulation data, which shows that the average monthly circulation of newspapers was substantially reduced by half in the same period.
Lastly, when speaking about packaging, it should be noted that product consumption through the e-commerce channel increased in the past few years. The 24% increase from 2015 to 2016 gives an idea of the extent of this phenomenon in Italy. Ninety-two percent of the products purchased online in the Country are delivered at home and online purchases generated a movement of over 12 million parcels in 2016 (paper and board, as well as plastics). An average 25% increase is confirmed for this year too (source: Largo Consumo, January 2017). This is why Comieco is monitoring this phenomenon in order to review its impact on separate collection and recycling.
The consumption of paper for recycling by the Italyn paper mills is stable, whereas exports, with a 93thousand ton net increase, total just less than 1.6 million tons (+6,2%)
Paper for recycling quotations show an interesting upward trend, with average prices 8-10% higher than in 2015 and further increases in the first few months of this year.

↗ *tab. 9 page 42* — ↗ *tab. 10 page 42* — ↗ *fig. 13 page 43*
↗ *fig. 14 page 44* — ↗ *fig. 15 page 45* — ↗ *fig. 16 page 46*

Paper is recycled and comes back to life

as guara
by Comi

nteed

eco.

Acronyms

Acronyms

ATC
Allegato Tecnico Carta

CTA
Comieco Technical Annex

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

kg
kilograms

Table 1

Trend of municipal separate paper and board collection by regions. Years 2015-2016

Source: Comieco

Regions	SC OF PAPER 2015	SC OF PAPER 2016	Δ 2015/16	Δ 2015/16
	t	t	t	%
Piedmont	264,298	265,360	1,062	0.4
Vallée d'Aoste	9,696	9,649	-47	-0.5
Lombardy	550,035	559,461	9,426	1.7
Trentino Alto Adige	80,595	81,197	602	0.7
Veneto	283,495	286,947	3,452	1.2
Friuli Venezia Giulia	70,073	71,515	1,442	2.1
Liguria	80,415	83,533	3,119	3.9
Emilia Romagna	372,487	379,162	6,675	1.8
North	**1,711,093**	**1,736,824**	**25,731**	**1.5**
Tuscany	274,314	278,523	4,209	1.5
Umbria	54,790	56,796	2,005	3.7
Marche	104,767	100,571	-4,196	-4.0
Latium	323,606	344,256	20,649	6.4
Centre	**757,477**	**780,145**	**22,668**	**3.0**
Abruzzo	69,799	74,570	4,771	6.8
Molise	6,142	7,244	1,102	17.9
Campania	176,602	185,360	8,758	5.0
Puglia	141,404	152,030	10,626	7.5
Basilicata	18,102	20,417	2,315	12.8
Calabria	54,132	63,435	9,304	17.2
Sicily	82,941	95,654	12,713	15.3
Sardegna	74,927	79,002	4,075	5.4
South	**624,048**	**677,711**	**53,663**	**8.6**
Italy	**3,092,619**	**3,194,680**	**102,061**	**3.3**

Note: 2015 data adjusted for Lombardy, Liguria, Tuscany, and Campania

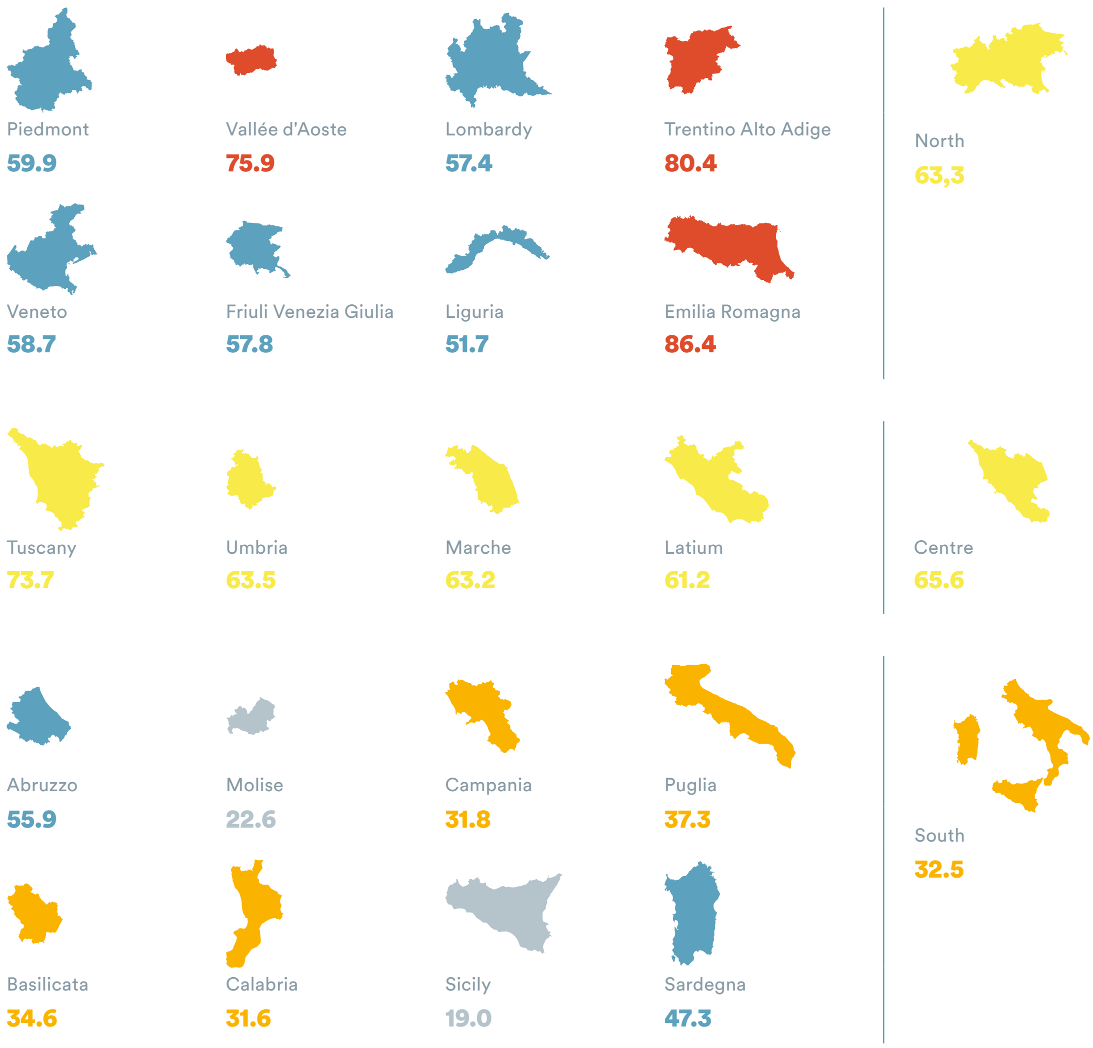
All the macro-areas record positive indexes again in 2016. The South stands out with an increase by over 8 percent points, which accounts for more than half of the growth at national level.

Figure 1

Per-capita municipal separate paper and board collection by regions and by areas in 2016.

Source: Comieco estimate

<30 kg/ab year | 30-45 kg/ab year | 45-60 kg/ab year | 60-75 kg/ab year | >75 kg/ab year



Per-capita collection reached 53.1 kg/ab in 2016. The South settled well above the 30 kg/year threshold. The performance of the past few years is confirmed for the North and Centre. Emilia Romagna, Tuscany, and Abruzzo lead the respective macro-areas.

20

Table 2

The ratio of separate paper and board collection to total urban waste.

Source: Ispra 2015 data processed by Comieco

Regions	Inhabitants	Total UW	Mixed UW	Total SC	Total SC	SC of paper	SC of paper vs. tot UW
	n	kg/ab	kg/ab	kg/ab	%	kg/ab	%
Trentino Alto Adige	1,059,114	461.2	150.2	311.1	67.4	76.0	16.5
Piedmont	4,404,246	465.8	209.0	256.8	55.1	61.6	13.2
Marche	1,543,752	513.7	216.5	297.2	57.9	67.8	13.2
Emilia Romagna	4,448,146	642.0	272.6	369.4	57.5	84.4	13.1
Veneto	4,915,123	445.8	139.1	306.7	68.8	57.7	12.9
North	**27,754,578**	**494.3**	**204.5**	**289.8**	**58.6**	**62.4**	**12.6**
Friuli Venezia Giulia	1,221,218	460.6	170.9	289.7	62.9	57.4	12.5
Vallée d'Aoste	127,329	569.1	297.0	272.1	47.8	70.1	12.3
Tuscany	3,744,398	607.8	327.6	280.2	46.1	74.1	12.2
Abruzzo	1,326,513	447.7	227.1	220.6	49.3	53.9	12.0
Lombardy	10,008,349	462.2	190.9	271.2	58.7	55.0	11.9
Umbria	891,181	519.5	265.7	253.8	48.9	61.6	11.9
Centre	**12,067,803**	**543.2**	**305.5**	**237.7**	**43.8**	**63.8**	**11.7**
Latium	5,888,472	513.4	320.8	192.6	37.5	56.5	11.0
Italy	**60,665,551**	**486.7**	**255.6**	**231.1**	**47.5**	**51.9**	**10.7**
Liguria	1,571,053	555.3	345.3	210.0	37.8	59.1	10.6
Sardegna	1,658,138	434.0	189.3	244.6	56.4	45.8	10.5
Basilicata	573,694	346.8	239.7	107.1	30.9	34.2	9.9
Puglia	4,077,166	464.8	324.7	140.1	30.1	37.2	8.0
Calabria	1,970,521	407.5	305.6	101.9	25.0	31.0	7.6
South	**20,843,170**	**443.8**	**294.6**	**149.2**	**33.6**	**31.1**	**7.0**
Campania	5,850,850	438.8	225.8	213.0	48.5	30.2	6.9
Molise	312,027	390.6	290.1	100.4	25.7	19.7	5.1
Sicily	5,074,261	463.2	404.0	59.2	12.8	16.7	3.6

Parameters like the level of extraction of paper from urban waste and the amount of residual waste, combined with per-capita data, allow clearer understanding of the actual development of separate collection services. In the above table, the regions and macro-areas are arranged by rate of separate paper collection vs. total urban waste in decreasing order.

Table 3

Collection quality (mean trend of foreign fractions). 2015-2016 comparison by macro-areas.

Source: Comieco

	Year 2015		Year 2016		Δ 2015/2016
	Tests	Foreign Fractions	Tests	Foreign Fractions	Foreign Fractions
	n	%	n	%	%
1.01+1.02					
North	227	2.23	193	2.10	-0.13
Centre	150	3.58	208	4.89	1.31
South	252	3.35	405	4.00	0.65
Italy	**629**	**3.00**	**806**	**3.60**	**0.60**
1.04+1.05					
North	136	0.79	101	0.31	-0.48
Centre	67	0.77	86	0.76	-0.01
South	265	0.94	333	1.15	0.21
Italy	**468**	**0.87**	**520**	**0.82**	**-0.05**

The upward trend of the share of contaminants in household collection flows is confirmed; the business collection trend is positive. Quality is a challenge that needs to be met in parallel with volume growth.

Table 4
Paper and board packaging recovery and recycling results achieved in 2016.
Source: Comieco

Recycling and recovery rate calculation	Year 2016	Δ 2015/2016
	t	%
Apparent paper and board packaging consumption	4,709,045	2.7
Waste paper and board packaging (paper and packaging) from 1.01+1.02 recycled in Italy	345,068	-1.9
Waste paper and board packaging (packaging only) from 1.04+1.05 recycled in Italy	2,056,707	2.2
Paper for recycling obtained from waste packaging recycled abroad	1,349,922	4.7
Total recycled waste packaging	**3,751,696**	**2.7**
Paper and board packaging recovered as energy or waste-based fuel	**403,762**	**-2.6**
Total recovered paper and board packaging	**4,155,458**	**2.2**

	%
Recycling	**79.7**
Energy recovery	**8.5**
Recovery	**88.2**

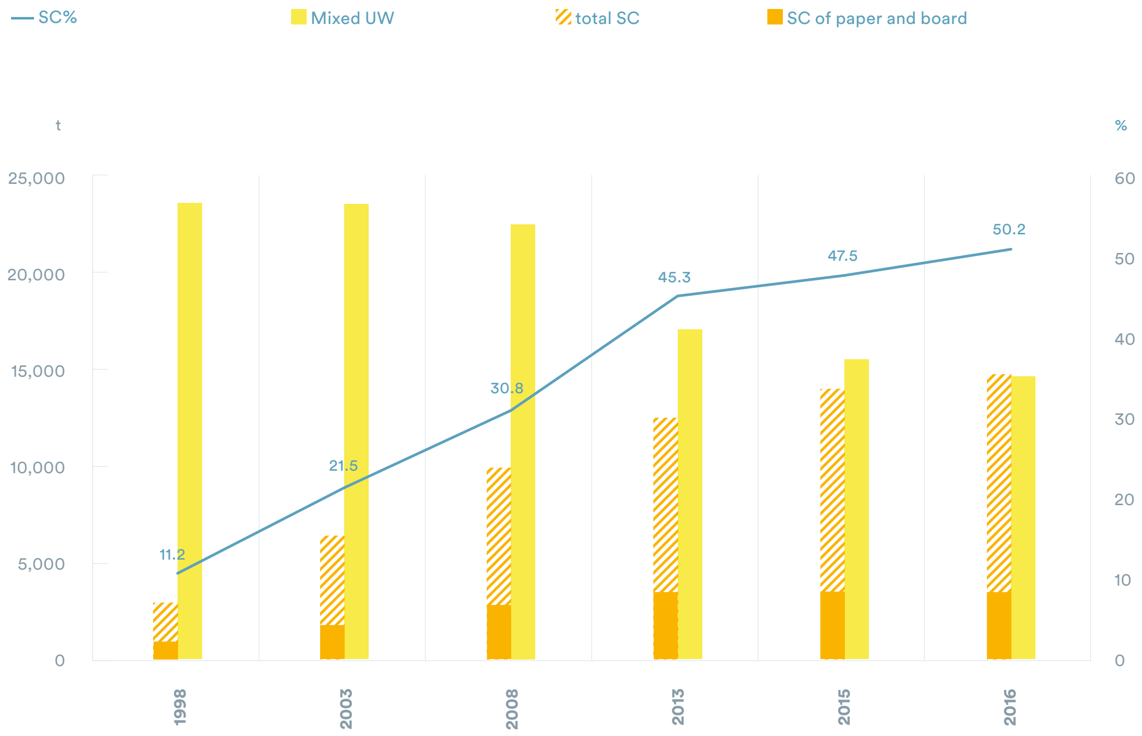
Note:
Apparent consumption data for 2013 was adjusted by CONAI, apparent consumption data for 2014 also includes tubes and rolls subject to the CAC (the CONAI environmental contribution) from 1/1/2014.

The development of plant-based processing contracts results into a decline of the recycled share of packaging vs. mixed paper for recycling, with an associated qualitative and economic enhancement of the material ready for manufacturing processes.

Figure 2

Comparison of urban waste production, total separate collection, and municipal separate paper and board collection in Italy. 1998-2016 historical data set.

Source: ISPRA and Comieco



Detailed per-capita separate paper and board collection data by areas

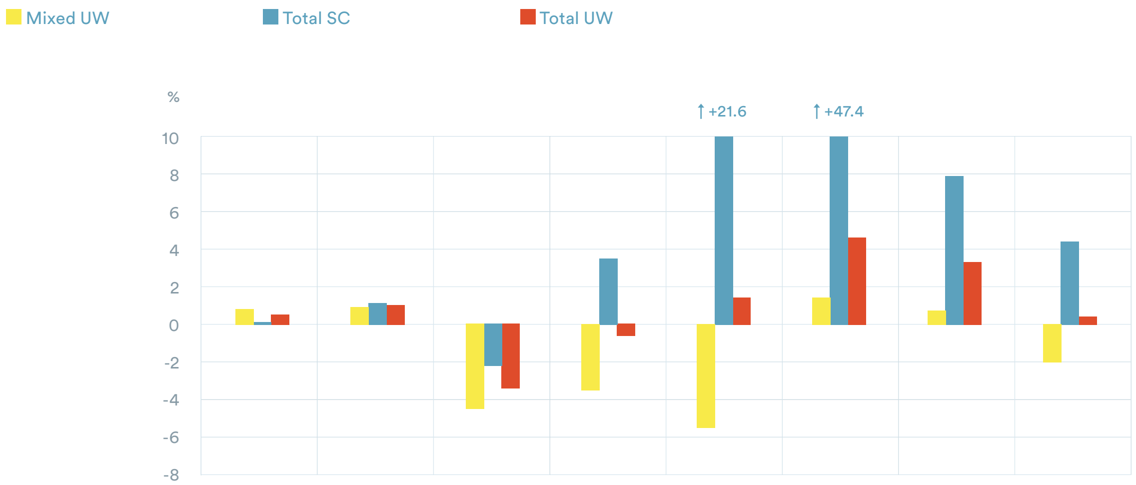
	1998	2015	2016	Δ 2015/2016	Δ 1998/2016	Δ 1998/2016
	kg/ab-year	kg/ab-year	kg/ab-year	kg/ab-year	kg/ab-year	%
North	28.3	62.0	63.3	1.3	35.0	123.6
Centre	17.1	62.6	65.6	3.0	48.5	283.7
South	2.4	31.5	32.5	1.0	30.1	1.252.7
Italy	**17.0**	**51.5**	**53.1**	**1.6**	**36.1**	**212.1**

Overall estimated urban waste production is stable, separate collections subtract approximately 700thousand tons from mixed waste, exceeding 50% for the first time.

Figure 3

Waste collection in the sample cities of Turin, Milan, Florence, Rome, Naples, Bari, and Palermo.
2015-2016 variations.

Source: Comieco



	Milan	Turin	Florence	Rome	Naples	Palermo	Bari	Mean
	%	%	%	%	%	%	%	%
Mixed UW	0.8	0.9	-4.5	-3.5	-5.5	1.4	0.7	**-2.0**
Total SC	0.1	1.1	-2.2	3.5	21.6	47.4	7.9	**4.4**
Total UW	0.5	1.0	-3.4	-0.6	1.4	4.6	3.3	**0.4**

		Milan	Turin	Florence	Rome	Naples	Palermo	Bari	Total
Total SC	t	342,078	198,420	112,040	724,897	156,573	34,727	71,793	**1,640,529**
Total UW	t	671,324	444,493	231,153	1,690,681	510,959	353,840	192,960	**4,095,410**
Total SC / total UW	%	51.0	44.6	48.5	42.9	30.6	9.8	37.2	**--**
Mixed UW	t	329,246	246,072	119,113	965,784	354,386	319,113	121,167	**2,454,881**

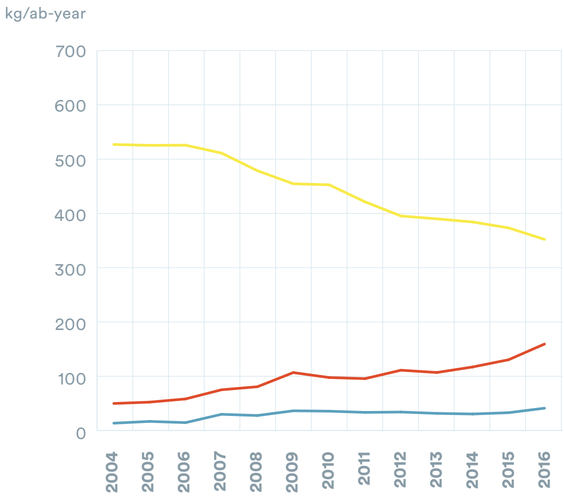
The focus on metropolitan cities confirms the national trend. Separate collections spread, whereas mixed waste decreases. Big cities require attention, because their collection levels have been found to be slightly lower than those of the neighbouring areas.

Figure 4

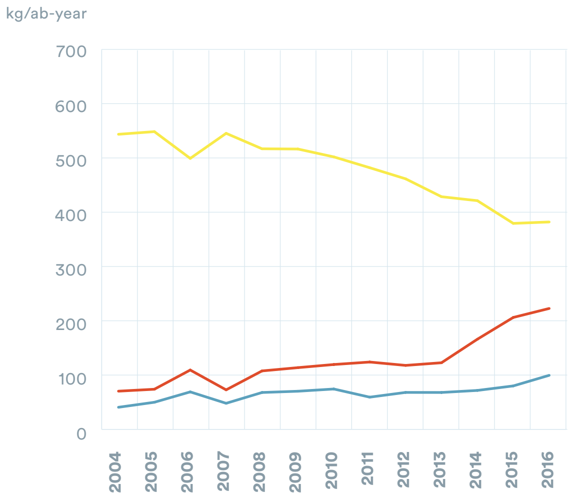
Waste collection in the sample cities of Turin, Milan, Florence, Rome, Naples, Bari, and Palermo. 2004-2016 per-capita data.

Source: Comieco

Naples



Bari



Palermo

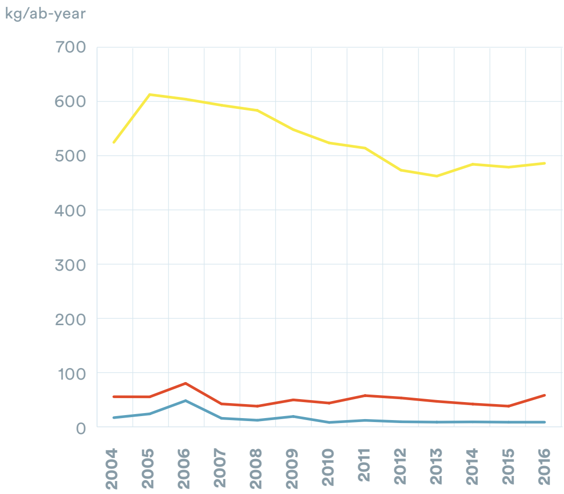
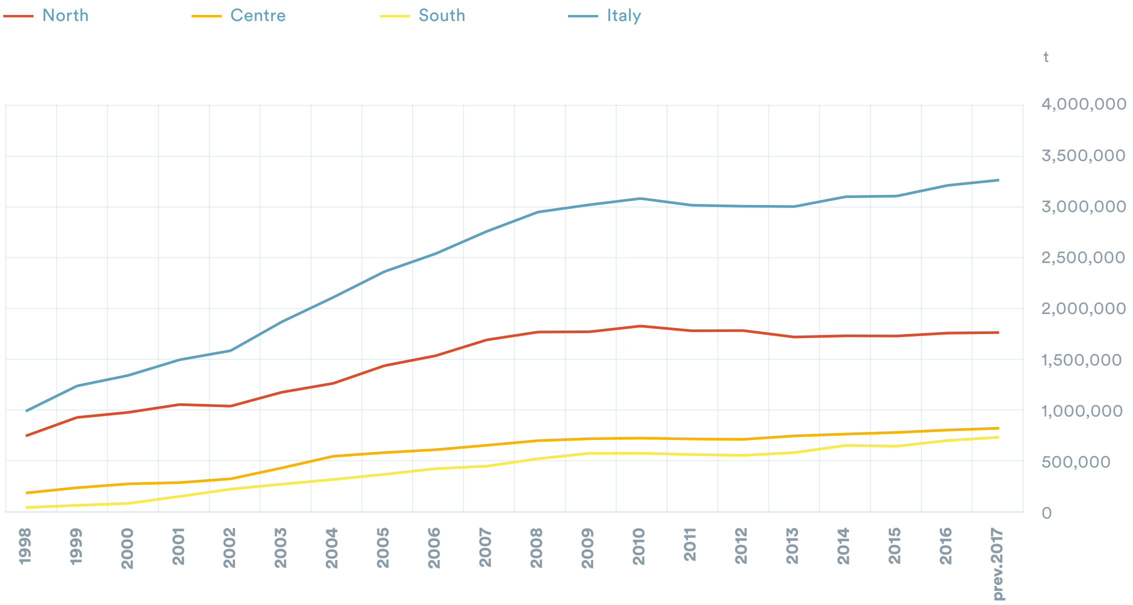
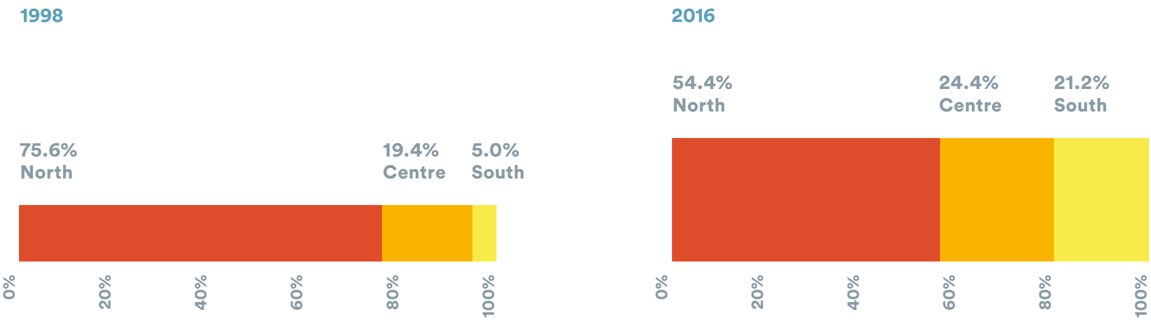


Figure 5

Municipal separate paper and board collection. 1998/2016 volume trend and 2017 forecasts.

Source: Comieco





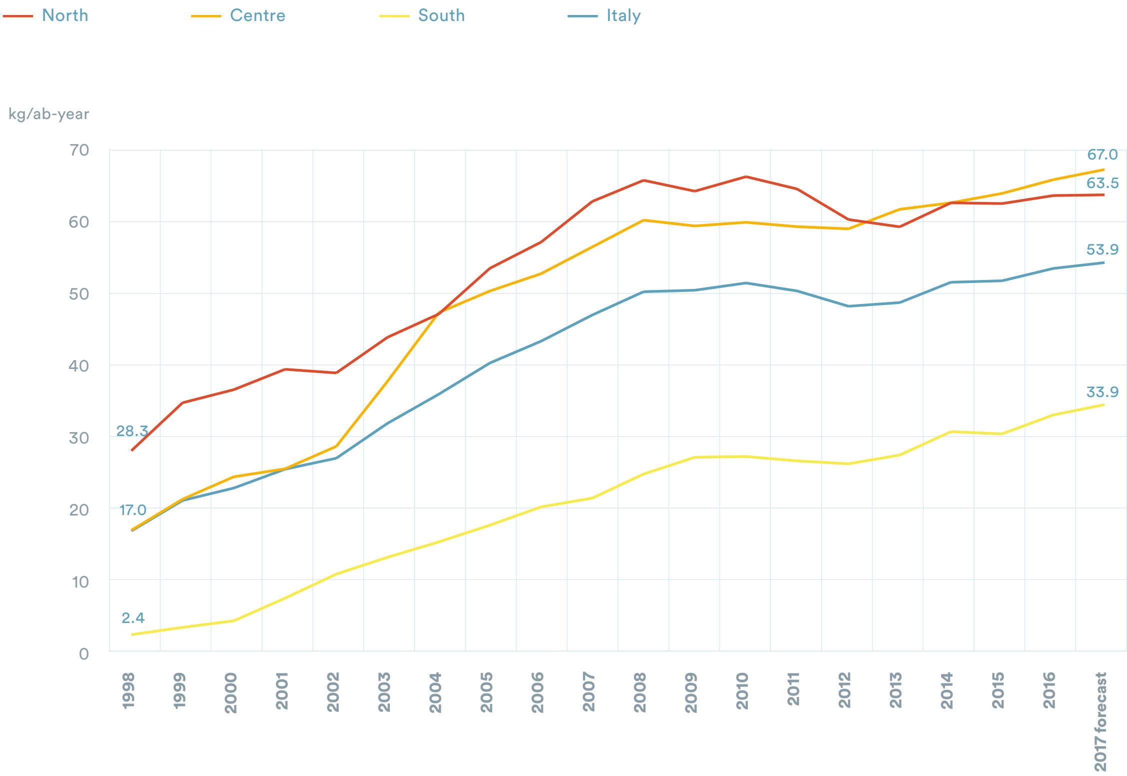
Nota: le aree sono in proporzione ai volumi di raccolta

	1998	2016	2017 forecast	Δ 2016-2017
	t	t	t	t
North	756,813	1,736,824	1,744,111	7,827
Centre	193,958	780,145	796,282	16,138
South	50,222	677,711	707,694	29,983
Italy	**1,000,993**	**3,194,680**	**3,248,088**	**53,408**

Figure 6

Municipal separate paper and board collection. 1998-2016 per-capita trend and 2017 forecasts.

Source: Comieco

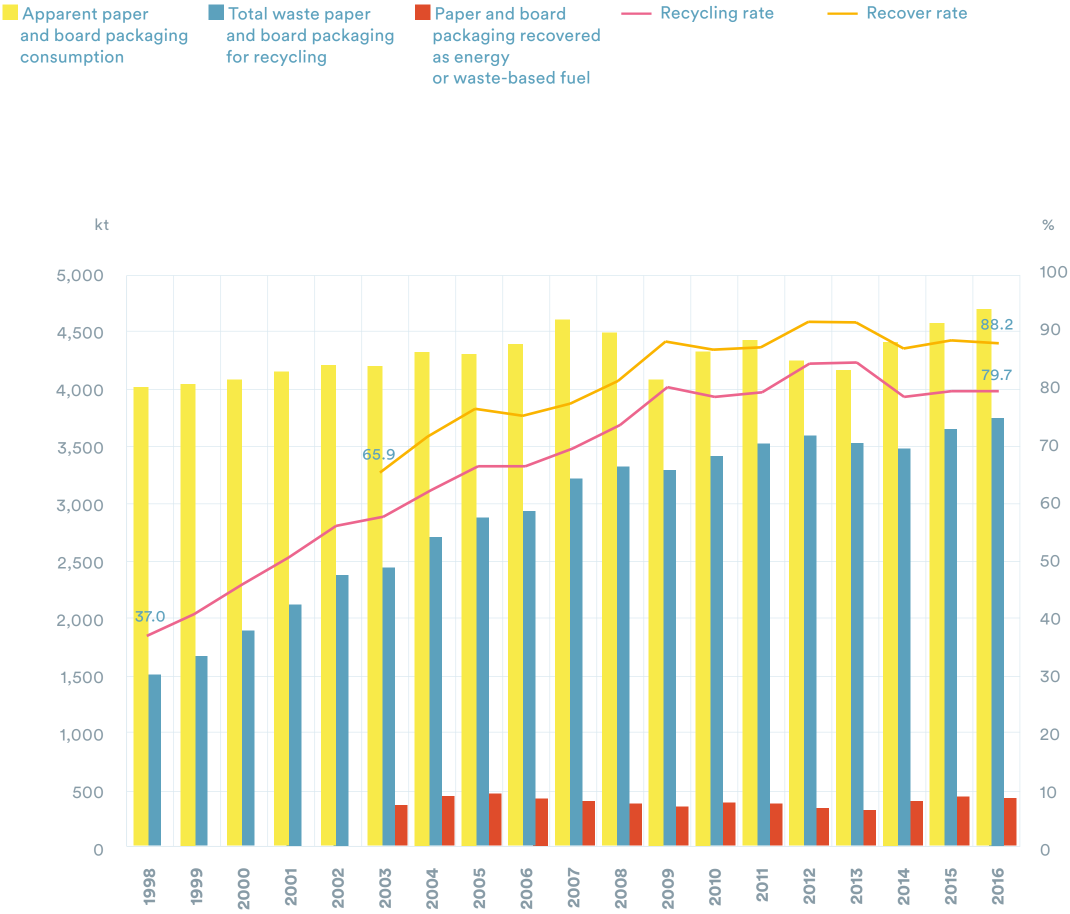


The South and big cities are the main target areas, but all areas have various potentials still untapped to a varying extent.

Figure 7

Paper and board recovery and recycling targets achieved. 1998-2016 historical data set.

Source: Comieco



Note:

- *energy recovery before 2003 only monitored for the amounts managed under the agreements. Overall data not available*
- *apparent consumption data for 2013 was adjusted by CONAI, apparent consumption data for 2014 also includes tubes and rolls subject to the CAC (the CONAI environmental contribution) from 1/1/2014*

Table 5

Local coverage by regions as at December 31, 2016.

Source: Comieco

Regions	Cities	Cities under the agreements		Inhabitants	Inhabitants under the agreements		Amount managed under the agreements	Amount managed under the agreements vs. SC of paper
	n	n	%	n	n	%	t	%
Piedmont	1,206	1,055	87.5	4,432,571	4,135,866	93.3	159,223	60.0
Vallée d'Aoste*	74	74	100.0	127,065	127,065	100.0	9,714	100.7
Lombardy	1,549	646	41.7	9,750,644	5,714,758	58.6	126,481	22.6
Trentino Alto Adige	331	307	92.7	1,010,328	928,166	91.9	48,860	60.2
Veneto	582	429	73.7	4,888,887	4,069,010	83.2	99,062	34.5
Friuli Venezia Giulia	219	201	91.8	1,236,844	1,192,363	96.4	34,302	48.0
Liguria	235	123	52.3	1,615,064	1,325,304	82.1	46,646	55.8
Emilia Romagna	345	322	93.3	4,389,696	4,272,971	97.3	128,727	34.0
North	**4,541**	**3,157**	**69.5**	**27,451,099**	**21,765,503**	**79.3**	**653,014**	**37.6**
Tuscany	294	274	93.2	3,776,950	3,629,634	96.1	161,182	57.9
Umbria	92	52	56.5	894,222	762,015	85.2	12,684	22.3
Marche	248	196	79.0	1,591,969	1,362,784	85.6	47,516	47.2
Latium	378	156	41.3	5,626,710	4,554,692	80.9	100,321	29.1
Centre	**1,012**	**678**	**67.0**	**11,889,851**	**10,309,125**	**86.7**	**321,703**	**41.2**
Abruzzo	305	240	78.7	1,334,675	1,215,449	91.1	55,225	74.1
Molise	136	43	31.6	320,795	169,947	53.0	3,960	54.7
Campania	552	394	71.4	5,832,418	5,227,562	89.6	145,992	78.8
Puglia	258	222	86.0	4,079,702	3,634,823	89.1	135,837	89.3
Basilicata	131	86	65.6	590,601	472,904	80.1	12,180	59.7
Calabria	409	274	67.0	2,008,709	1,480,966	73.7	40,464	63.8
Sicily	390	281	72.1	5,037,799	4,213,675	83.6	81,769	85.5
Sardegna	377	144	38.2	1,671,001	1,034,087	61.9	48,859	61.8
South	**2,558**	**1,684**	**65.8**	**20,875,700**	**17,449,413**	**83.6**	**524,284**	**77.4**
Italy	**8,111**	**5,519**	**68.0**	**60,216,650**	**49,524,041**	**82.2**	**1,499,002**	**46.9**

	Agreements	Average inhabitants under the agreements	Average inhabitants under the agreements
	n	n	t
North	148	147,064	4,412
Centre	94	109,672	3,422
South	555	31,440	945
Italy	**797**	**62,138**	**1,881**

**In 2016 Vallée d'Aoste delivered a residual amount relevant to 2015*

Table 6

Resources allocated to the parties under the agreements in 2016. Detailed by areas.

Source: Comieco

Areas	Inhabitants under the agreements	Amount					
		Managed packaging	FMS	Total	Managed packaging	FMS	Total
	n	t	t	t	kg/ab	kg/ab	kg/ab
North	21,765,503	496,720	156,294	653,014	22.8	7.2	30.0
Centre	10,309,125	205,989	115,715	321,703	20.0	11.2	31.2
South	17,449,413	326,804	197,481	524,284	18.7	11.3	30.0
Italy	**49,524,041**	**1,029,512**	**469,490**	**1,499,002**	**20.8**	**9.5**	**30.3**

Areas	Inhabitants under the agreements	Economic investment					
		Managed packaging	FMS	Total	Managed packaging	FMS	Total
	n	EUR	EUR	EUR	EUR/ab	EUR/ab	EUR/ab
North	21,765,503	47,566,890	3,233,789	50,800,679	2.18	0.15	2.33
Centre	10,309,125	18,312,535	2,138,320	20,450,855	1.77	0.21	1.98
South	17,449,413	27,079,283	3,762,121	30,841,403	1.55	0.22	1.77
Italy	**49,524,041**	**92,958,708**	**9,134,230**	**102,092,938**	**1.88**	**0.18**	**2.06**

A slight recovery is recorded for the amounts managed by the Consortium (+2.8%), with an associated greater economic investment (+3.7%). Resources allocated to the Cities exceed 102 million EUR.
The amount managed by Comieco vs. total municipal collection falls below 47% – the lowest value ever.

Table 7

Comieco-Anci tender for the purchase of equipment in support of separate paper and board collection. Detailed by regions.

Source: Comieco

Regions	2014 Cities	2014 Inhabitants	2014 Loan amount	2015 Cities	2015 Inhabitants	2015 Loan amount	2016 Cities	2016 Inhabitants	2016 Loan amount
	n	n	EUR	n	n	EUR	n	n	EUR
Emilia Romagna	-	-	-	3	26,401	64,929	-	-	-
North	**-**	**-**	**-**	**3**	**26,401**	**64,929**	**-**	**-**	**-**
Tuscany	1	3,367	9,160	1	22,495	48,640	-	-	-
Marche	-	-	-	-	-	-	5	13,200	16,488
Latium	18	164,714	258,071	13	16,604	75,347	14	242,258	460,423
Centre	**19**	**168,081**	**267,231**	**14**	**39,099**	**123,987**	**19**	**255,458**	**476,910**
Abruzzo	11	18,837	67,385	7	14,653	21,026	1	5,798	7,210
Molise	3	59,290	48,372	-	-	-	-	-	-
Campania	17	289,262	532,342	9	107,036	275,585	10	191,414	505,242
Puglia	22	264,187	313,728	6	165,341	222,972	6	129,675	244,128
Basilicata	3	33,565	45,843	2	12,654	30,168	1	17,811	65,179
Calabria	18	98,652	248,214	22	130,592	429,049	19	164,469	687,624
Sicily	8	120,328	245,138	24	286,434	553,149	36	571,609	1,736,834
South	**82**	**884,121**	**1,501,022**	**70**	**716,710**	**1,531,949**	**73**	**1,080,776**	**3,246,217**
Italy	**101**	**1,052,202**	**1,768,253**	**87**	**782,210**	**1,720,866**	**92**	**1,336,234**	**3,723,127**

Total 2014/2015/2016

	Cities	Inhabitants	Loan amount	Ripartizione finanziamento
	n	n	EUR	%
North	3	26,401	64,929	1
Centre	52	462,638	868,129	12
South	225	2,681,607	6,279,188	87
Italy	**280**	**3,170,646**	**7,212,246**	

The equipment tender was reintroduced and strengthened for the underperforming Cities.
Over 7 million EUR invested in three years. New access parameters are provided and specific targets are defined for the accepted projects.

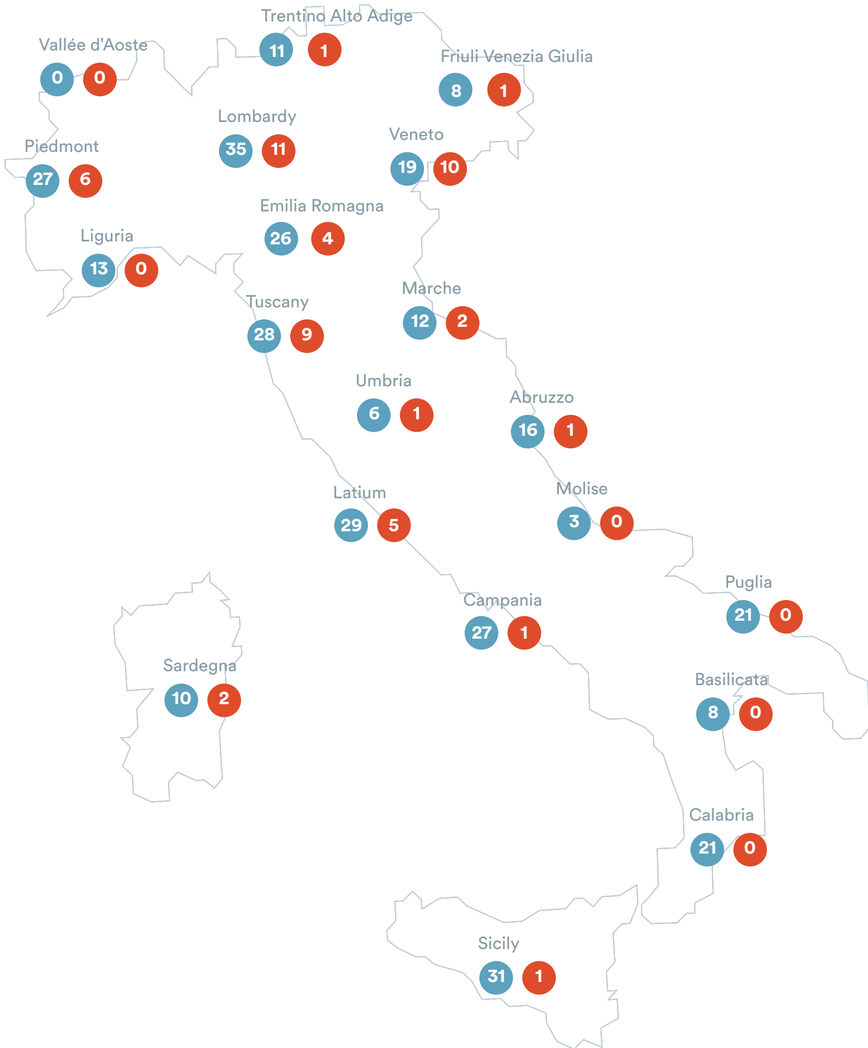
Figure 8

The recycling network. Year 2016.

Source: Comieco

Sorting plants under the agreements

Paper mills (plants)



Area	Sorting plants under the agreements	Mean distance for conferment	Paper mills (plants)
	n	km	n
North (*)	139	16.6	33
Centre	75	15.7	17
South	137	16.9	5
Total	**351**	**16.5**	**55**

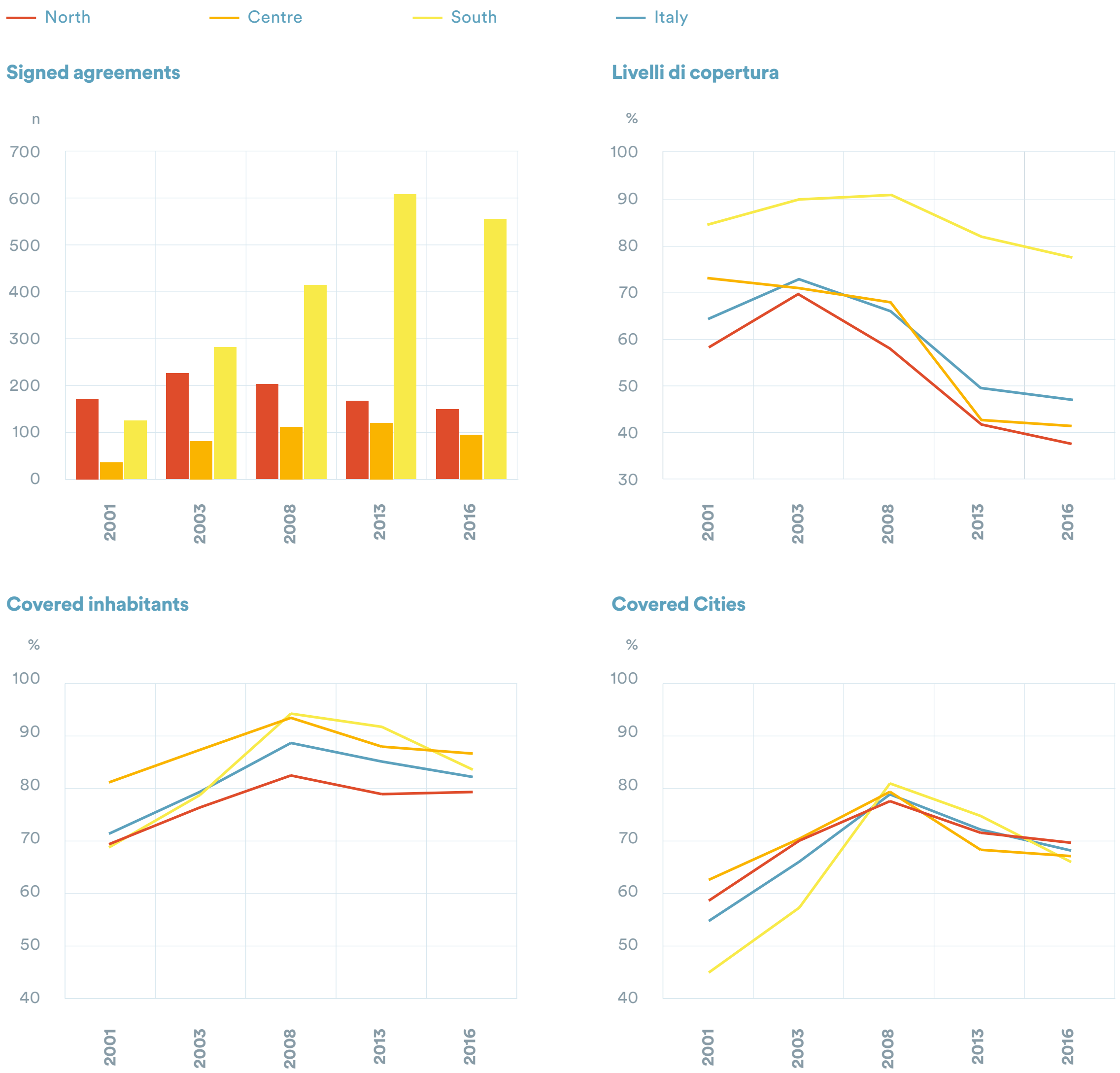
(*) one paper mill is based within the territory of the Republic of San Marino

Comieco ensures recycling also by awarding the materials in auctions.
Based on the commitments made in 2011 with AGCM, 20 parties were awarded in 2015 and managed approximately 600thousand tons of paper and board for recycling.
Ninety-four percent of this material was recycled in Italian plants anyway.

Figure 9

Status of the agreements upon expiration of each framework agreement and coverage rates of the agreements. 2001-2016 historical data set.

Source: Comieco

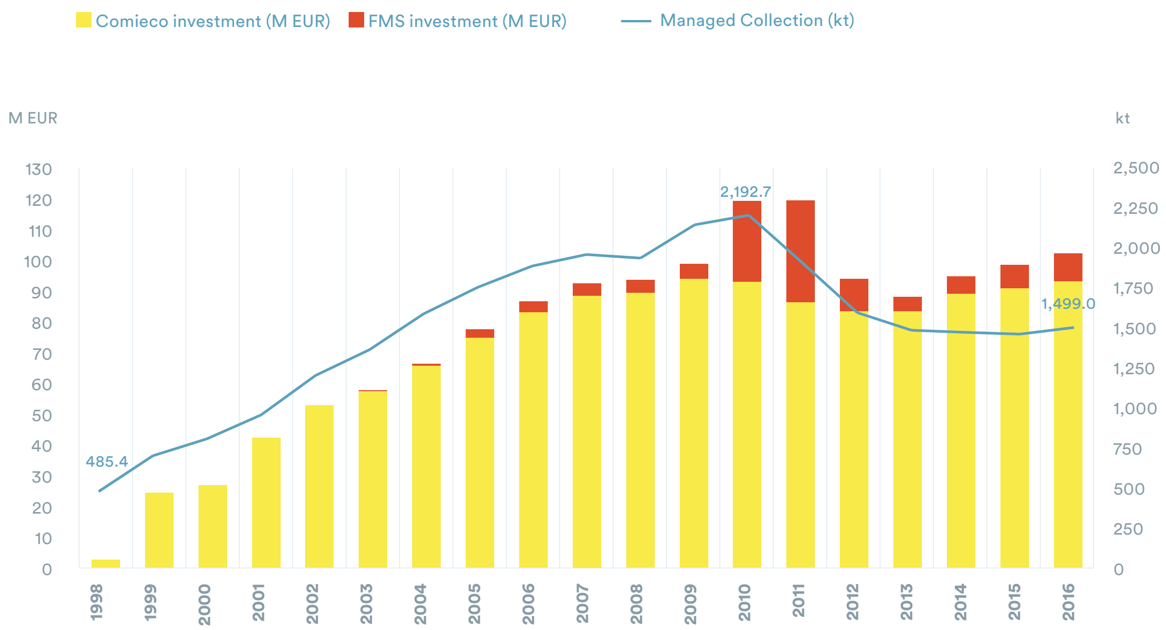


High agreement fragmentation is confirmed in the South and poses a barrier to synergic development. Comieco confirms its subsidiary role and records a decline, vs. a peak of more than 75% (year 2002), of the managed volumes – consistently with the principle of subsidiarity – which amount to 46.9% of municipal separate collection.

Figure 10

Economic investment. 1998-2016 historical data set

Source: Comieco



		1st ANCI-CONAI Agreement 1998-2003	2nd ANCI-CONAI Agreement 2004-2008	3rd ANCI-CONAI Agreement 2009-2013	4th ANCI-CONAI Agreement 2014-2016	Total
Packaging	million EUR	204.2	400.3	439.0	272.4	**1,315.8**
FMS	million EUR	0.4	15.3	80.2	22.8	**118.7**
Total	million EUR	**204.6**	**415.6**	**519.2**	**295.2**	**1,434.5**
Managed collection	kt	**5,524.0**	**9,088.3**	**9,295.7**	**4,425.8**	**28,333.8**

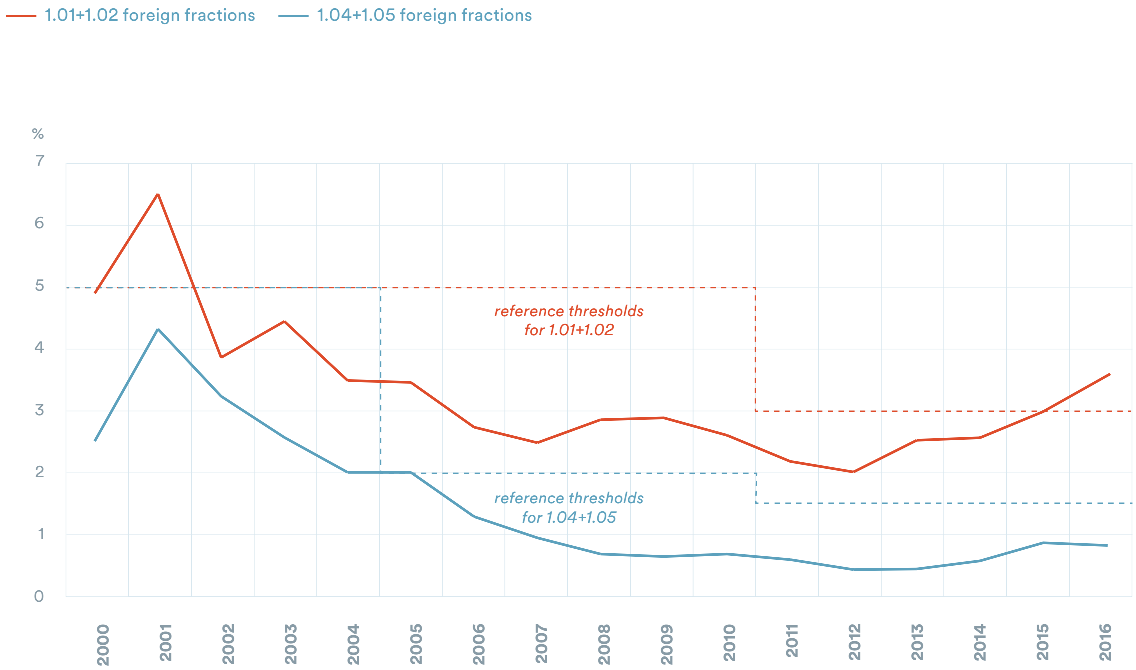
		2015	2016	Δ 2015-16
Packaging	million EUR	90.6	93.0	2.6%
FMS	million EUR	7.8	9.1	16.4%
Total	million EUR	**98.5**	**102.1**	**3.7%**
Managed collection	kt	**1,457.7**	**1,499.0**	**2.8%**

Comieco managed over 28 million tons of paper and board collected by the Cities and provided considerations for almost 1.5 billion EUR from 1988 to 2016.

Figure 11

Quality of the collected material (mean trend of foreign fractions). 2000-2016 period

Source: Comieco



			1st ANCI-CONAI Agreement 1998-2003	2nd ANCI-CONAI Agreement 2004-2008	3rd ANCI-CONAI Agreement 2009-2013	4th ANCI-CONAI Agreement 2014-2016	Total
1.01+1.02	Tested amounts	kg	188,638	811,898	1,135,220	395,807	**2,531,564**
	Performed tests	n	1,006	3,456	4,040	2,159	**10,661**
1.04+1.05	Tested amounts	kg	120,740	709,776	966,937	242,309	**2,039,762**
	Performed tests	n	594	3,591	4,204	1,559	**9,948**

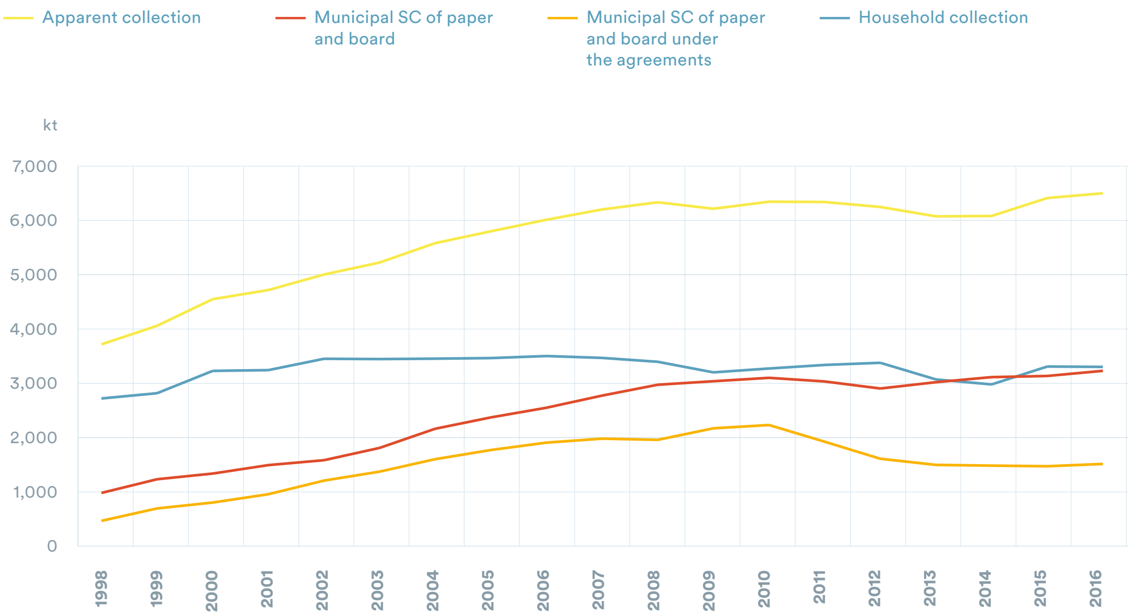
Note: The above results, until June 2014, refer to the total tests performed on both incoming and outgoing materials in order to determine the considerations due to the parties under the agreements. From July 2014 these results only refer to tests on incoming materials performed to determine the consideration

Tests highlight a high quality of the collected materials, also in the light of the new and more accurate testing methods. Quality and control pose the toughest challenges in the framework agreement in force.

Figure 12

Ratio of total paper and board collection managed under the agreements to apparent collection.
2015-2016 historical data set and comparison.

Source: Comieco



		1998	2003	2008	2013	2015	2016	1998/2016		2015/2016	
								Δ kt	Δ %	Δ kt	Δ %
Apparent collection	kt	3,749	5,227	6,316	6,062	6,392	6,479	2,730	72.8	87	1.4
Total municipal SC of paper and board	kt	1,001	1,810	2,945	2,991	3,093	3,195	2,194	219.1	102	3.3
Municipal SC of paper and board under the agreements	kt	485	1,362	1,928	1,482	1,458	1,499	1,014	209.1	41	2.8
Household collection	kt	2,748	3,417	3,371	3,071	3,300	3,284	536	19.5	-14	-0.5
Ratio of paper and board collection under the agreements to apparent collection	%	12.9	26.1	30.5	24.4	22.8	23.1				

Table 8

Direct and indirect benefits of paper and board packaging recycling managed by Comieco.

Source: CONAI data processed by studio Fieschi for CONAI

Indicators within the CONAI boundaries (managed)

Indicator		year 2016	total 2005/2016
Amount of conferred packaging	kt	1,030	12,149
Fractions for recycling	kt	1,030	12,149
Fractions for energy recovery	kt	-	-
Fractions for other forms of disposal	kt	-	-

Environmental benefits

Indicator		year 2016	total 2005/2016
Secondary raw material obtained from recycling	kt/year	1,030	12,149
Electric power produced from energy recovery	TJ	-	-
Thermal power produced from energy recovery		-	-
Saving of primary energy through recycling	TJ	13,015	164,601
CO_2 production avoided through recycling	kt CO_2 eq	948	11,005
CO_2 production avoided through energy recovery	kt CO_2 eq	-	-

Economic value

Category			year 2016	total 2005/2016
Direct benefits	Economic value of the secondary raw material obtained from recycling	Million EUR	69	680
	Economic value of the power produced from energy recovery	Million EUR	-	-
Indirect benefits	Economic value of the avoided CO_2 production	Million EUR	28	329
Overall benefits		Million EUR	**97**	**1,009**

The benefits generated through the recycling of managed packaging (1.03 million tons) in 2016 are worth an estimated 100 million EUR. The 2005-2016 aggregate data points out to more than one billion EUR benefits, calculated as the value of the raw material and of the avoided emissions.

Table 9

Paper and board packaging in 2016.

Source: ISTAT data processed by Assocarta and Assocarta estimates

		Imports (A)	Exports (B)	Consumption (C)	Apparent collection (C-A+B)
Paper and board packaging	t	4,373,941	3,046,102	1,517,642	5,902,401
Δ 2015/2016	%	0,9	4,9	6,6	1.5
Other paper and board (paper for graphic and hygienic-sanitary use)	t	4,514,392	2,090,142	2,422,638	4,181,896
Δ 2015/2016	%	-2,3	-2,6	-3,6	-1.7
Total paper production	t	**8,888,333**	**5,136,244**	**3,940,280**	**10,084,297**
Δ 2015/2016	%	-0.7	1.7	0.1	0.1

Table 10

Consumption, imports, exports of paper for recycling and apparent collection – 2015-2016 variations.

Assocarta data processed by Comieco

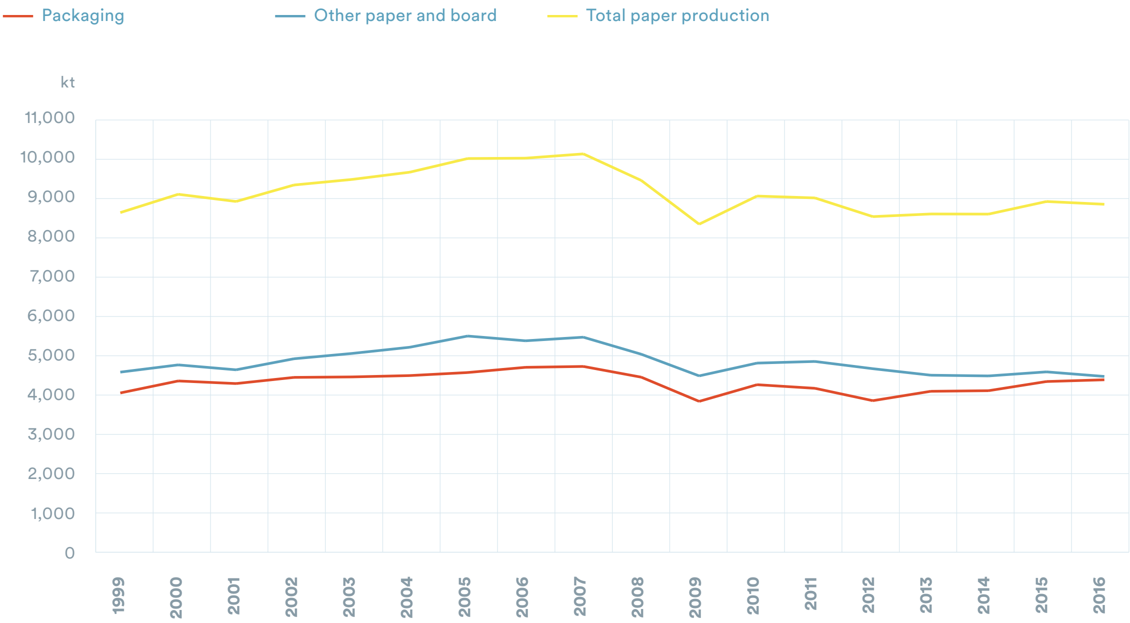
		Imports (A)	Exports (B)	Consumption (C)	Apparent collection (C-A+B)
2015	kt	322	1,821	4,893	6,392
2016	kt	348	1,940	4,887	6,479
Δ 2015/16	%	7.9	6.5	-0.1	1.4

The increase in the production of paper packaging and paper for hygienic-sanitary use in general offsets the decline of graphic paper production. Import-export trends are particularly strong in this context.

Figure 13

Paper and board production. 1999-2016 historical data set.

Source: ISTAT data processed by Assocarta and Assocarta estimates

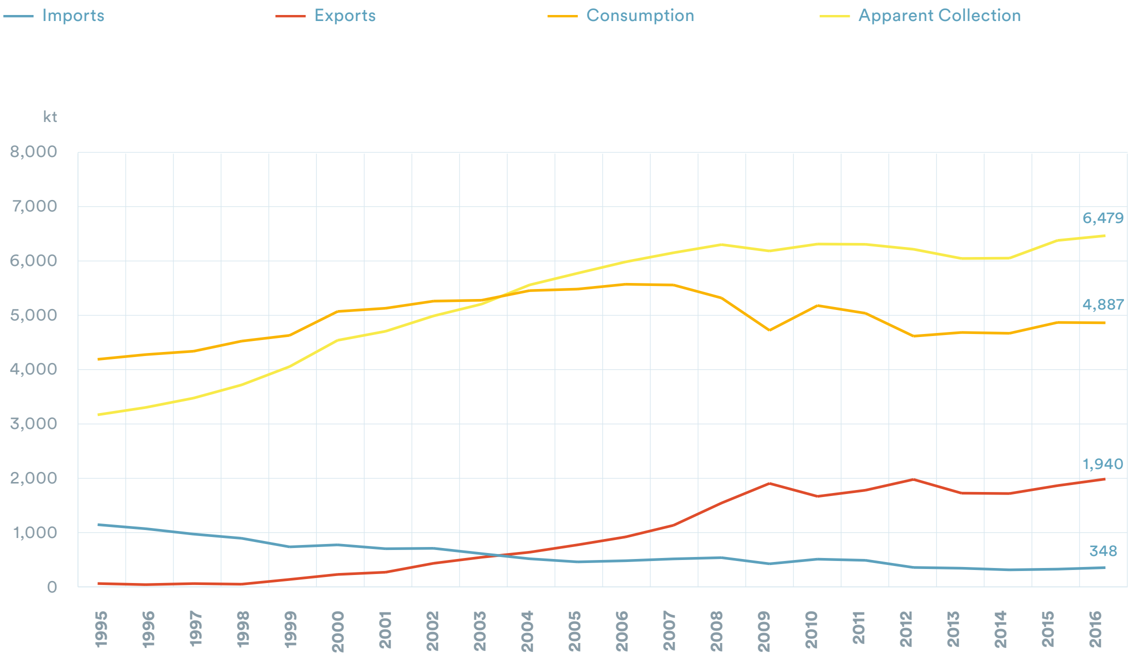


		1999	2003	2008	2013	2015	2016	1999/2016		2015/2016	
								Δ kt	Δ %	Δ kt	Δ %
Packaging	kt	4,071	4,440	4,434	4,109	4,334	4,374	303	7.4	40	0.9
Other paper and board	kt	4,615	5,051	5,033	4,543	4,621	4,514	-100	-2.2	-107	-2.3
Total paper production	kt	**8,686**	**9,491**	**9,467**	**8,652**	**8,955**	**8,888**	**203**	**2.3**	**-67**	**-0.7**

Figure 14

Consumption, imports, exports of paper for recycling and apparent collection* – 1995-2016 period.

Source: Assocarta data processed by Comieco



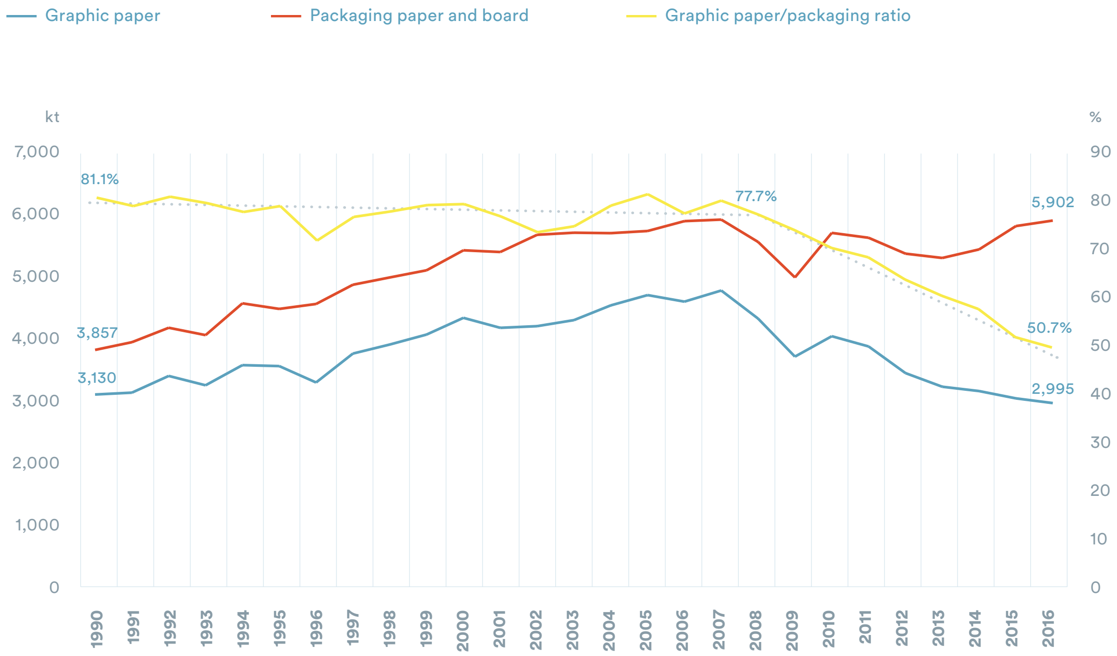
		1998	2003	2008	2013	2015	2016	1998/2016		2015/2016	
								Δ kt	Δ %	Δ kt	Δ %
Imports	kt	854	589	520	338	322	348	-506	-59.3	26	7.9
Exports	kt	42	528	1,507	1,685	1,821	1,940	1,898	4,545.2	119	6.5
Consumption	kt	4,561	5,288	5,329	4,715	4,893	4,887	326	7.1	-6	-0.1
Apparent Collection	kt	**3,749**	**5,227**	**6,316**	**6,062**	**6,392**	**6,479**	**2,730**	**72.8**	**87**	**1.4**
Net exports	kt	**-812**	**-61**	**987**	**1,347**	**1,499**	**1,592**				

Exports become more and more strategic. Their net balance is close to 1.6 million tons and growing by almost 100thousand tons. This level is almost equivalent to the growth recorded for municipal collections.

Figure 15

Ratio of apparent graphic paper consumption to packaging. 1990-2016 historical data set.

Source: Assocarta data processed by Value Quest

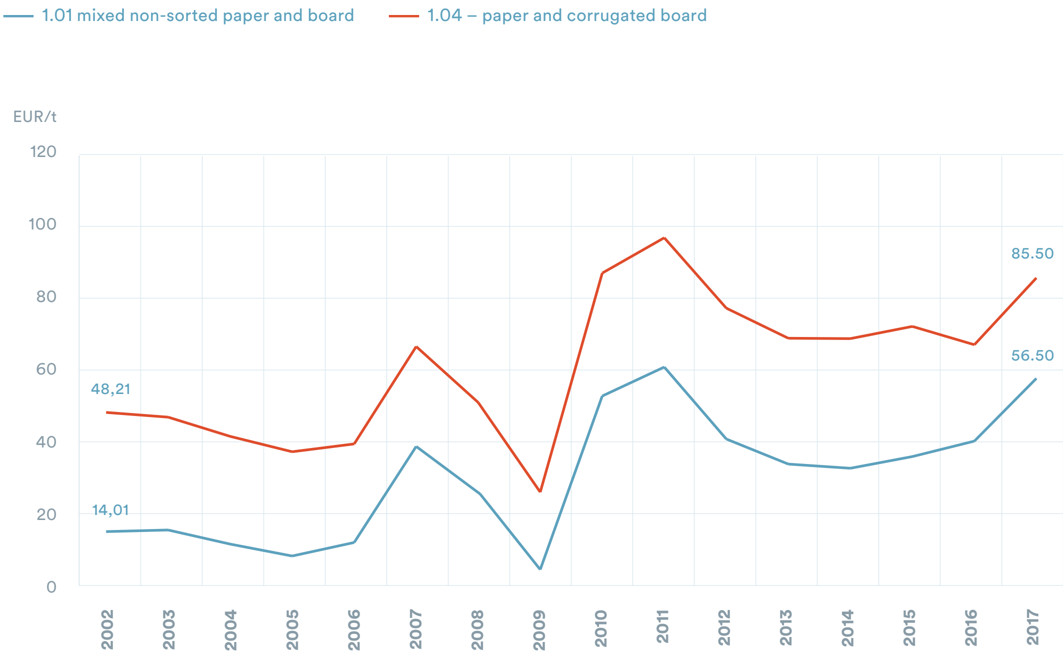


The ratio of graphic paper consumption to packaging paper consumption gradually changed over time. This phenomenon emerged in 2009 and developed in time until values fell below the 1990 threshold. The different composition of the consumption mix also brings about a significant change of the "quality" of the collected materials and of subsequent issues connected with the processing of paper for recycling.

Figure 16

Mean annual values of paper for recycling. 2002-2017 period

Source: Milan Chamber of Commerce

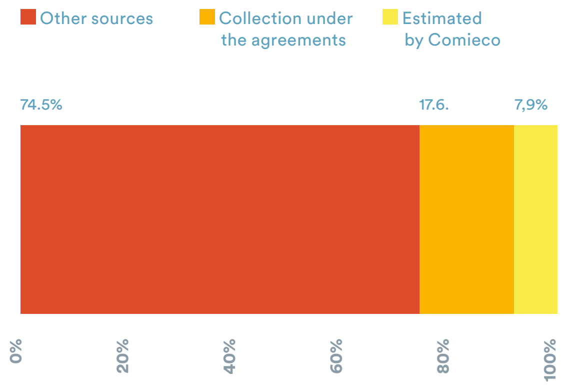


Interesting quotations of paper for recycling in the second half of 2016 and in the first months of this year. For mixed papers in particular – the less valuable fractions – average prices reach the historical peaks recorded in 2010-2011.

Note on the method

The processing method adopted for data on national paper and board collection is the same as in the previous years. Some of the 2015 collection data is updated, particularly for the regions of Lombardy, Liguria, Tuscany, and Campania. The related data (total area and national data, per-capita data, etc.) is updated accordingly.
Data processed by Entities and/or organizations in charge of the monitoring or management of waste flows (ISPRA; Regions, Agencies, Provinces and Work Groups, ANCI, Cities, operators, plants, etc.) was mainly used to determine separate paper and board collection levels.
The data thus acquired is overlapped and compared to the data available to Comieco within the framework of its activities (management of the agreements) to ensure consistency and, if necessary, to carry out further focused reviews. Processing is made at province level and, if necessary and possible, a more in-depth analysis is performed (e.g. Cities).
Whenever "official" data is not available, Comieco estimates the provincial collection level starting from the data on collection by the parties under the agreements. Estimates consider separate paper and board collection as being actively in place across the national territory. As to evaluations vs. 2016, constituting the object of this Report, 74.5% of collection data comes from third-party sources; 17.6% refers to the amounts managed directly by the Consortium, or notified by the parties to the agreements as provided for by the Technical Annex (without any other sources), and 7.9% is based on estimated amounts.

Sources and methodology



COMIECO
National Consortium for Recovery and Recycling of Paper and Board Packaging

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Folow us on

Paper and board collection and recycling in Italy

comieco
Consorzio Nazionale Recupero e Riciclo degli Imballaggi a base Cellulosica

A recycled box comes back to life within less than

two weeks.

A newspaper sheet comes back to life within less than

one week.

Separate paper and board collection and recycling represent a true circular economy model. This is ensured by Comieco through a widespread network made up of 351 sorting plants, which receive the paper and board collected by the Italians everywhere in the country and provide for their processing.
Once sorted, paper for recycling is available to the 55 paper mills in charge of recycling across the national territory.

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Follows us on

Results of paper and board recycling in Italy in 2016

88%

Recovery rate
of paper and board packaging
for apparent consumption
collected separately by the Italians

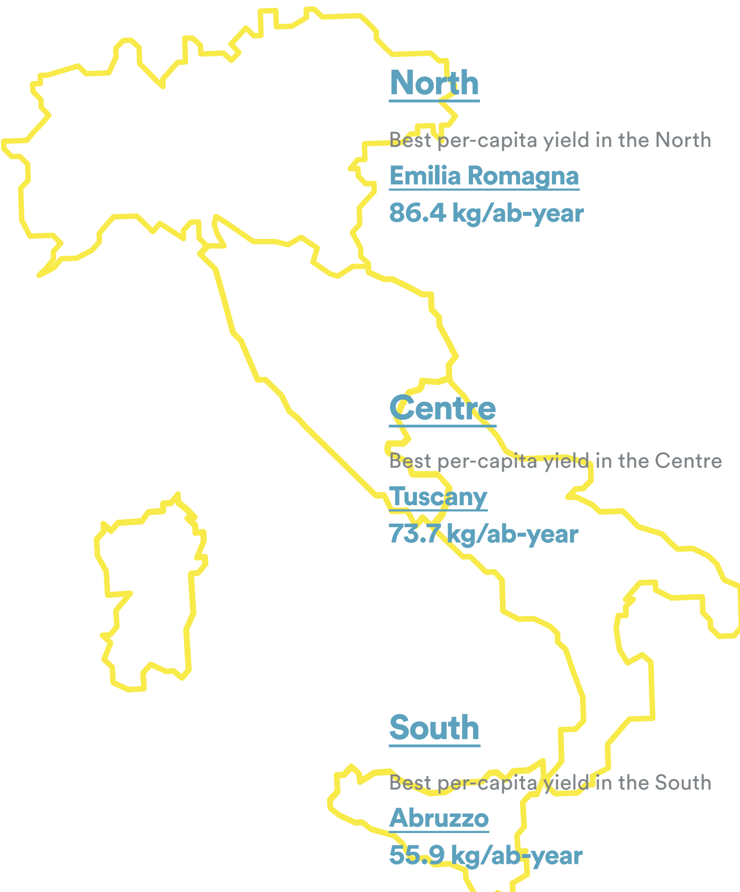
80%

Recycling rate
of paper and board packaging
for apparent consumption
collected separately by the Italians

10t

Amount of paper for recycling recycled every minute
More than 80% of paper for recycling
is used for the production of packaging raw material

Municipal separate paper and board collection



	Volumes	Per-capita amounts
Italy	**3,194,680 t** including **1,499,002 t** managed by Comieco i.e. **46.9%**	**53.1 kg/ab-year** Δ 2015/2016 **+ 3.3%** Δ 1998/2016 **+212.1%**
North Best per-capita yield in the North **Emilia Romagna** **86.4 kg/ab-year**	**1,736,824 t** including **653,014 t** managed by Comieco i.e. **37.6%**	**63.3 kg/ab-year** Δ 2015/2016 **+1.5%** Δ 1998/2016 **+123.6%**
Centre Best per-capita yield in the Centre **Tuscany** **73.7 kg/ab-year**	**780.145 t** including **321.703 t** managed by Comieco i.e. **41,2%**	**65.6 kg/ab-year** Δ 2015/2016 **+3.0%** Δ 1998/2016 **+283.7%**
South Best per-capita yield in the South **Abruzzo** **55.9 kg/ab-year**	**677.711 t** including **524.284 t** managed by Comieco i.e. **77,4%**	**32.5 kg/ab-year** Δ 2015/2016 **+8.6%** Δ 1998/2016 **+1,252.7%**

Data on the agreements with Comieco

Covered inhabitants

Italy	North	Centre	South
49,524,041	21,765,503	10,309,125	17,449,413
82.2%	79.3%	86.7%	83.6%

Covered Cities

Italy	North	Centre	South
5,519	3,157	678	1,684
68.0%	69.5%	67.0%	65.8%

Considerations paid

by Comieco for the share of paper and board managed under the agreements

Italy	North	Centre	South
102.1 million EUR	50.8 million EUR	20.5 million EUR	30.8 million EUR
i.e. an average of **2.06 euro/ab**	i.e. an average of **2.33 euro/ab**	i.e. an average of **1.98 euro ab**	i.e. an average of **1.77 euro/ab**

Comieco enters into agreements with the Cities and operators to ensure the recycling of an amount of paper and board allowing to maximize revenues and optimize management. In 2016, the Consortium managed 1.5 million tons of paper and board under the agreements, equal to 46.9% of total municipal collection. The remaining share – equal to 1.65 million tons – is managed outside relations with Comieco. Each party under the agreements can establish a tailor-made relation with the Consortium, for example for partial collection management.

Coverage rate of paper and board collection managed under the agreements – 1999/2016 variations

	1999	2016	Δ 1999/2016
North	51.7%	37.5%	-27.4%
Centre	70.0%	41.2%	-41.1%
South	74.8%	77.4%	3.4%
Italy	**56.6%**	**46.9%**	**-17.1%**