Collection, Recycling, and Recovery of paper and board in 2014

20th Report Comieco

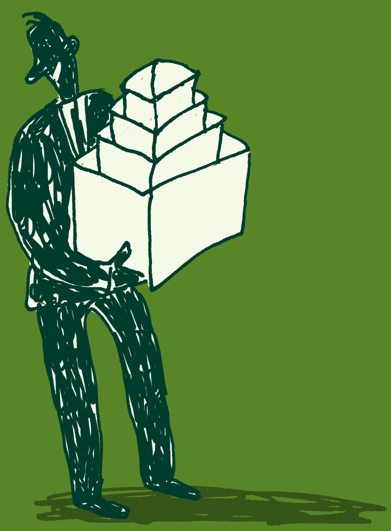
July 2015

comieco
Consorzio Nazionale Recupero e Riciclo degli Imballaggi a base Cellulosica


pt

51.7 kg

is the average
amount of
paper
and board
collected
separately
by each Italyn
citizen in 2014



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5.2

billion EUR is the net amount of community benefits derived from separate paper and board collection from 1999 to 2014

Preface

Several important events took place in 2015.

These include first and foremost the Expo, by which our country is now the focus of international interest. It is not a mere chance that it takes place in Milan, a city that is acknowledged for its historical excellences, such as fashion, design, and food, but also stands out at national level for separate paper and board collection and ranks first among European cities with more than one million inhabitants for separate waste collection, joint with Vienna.

Comieco is also celebrating a number of high-prestige achievements. Each recoverable and recyclable material has its own story. The story of separate paper and board collection and recycling is the story of Comieco.
For 30 years, Comieco has been striving to ensure that precious assets, like paper and board, are not wasted.
Back in 1985 a few companies in the paper sector founded the “Committee for Ecological Packaging” and designed a preliminary layout of the paper and board recycling system.
In 1997, the Ronchi Decree brought about a transformation of Comieco – as it did for other packaging materials – which gave life to the Supply Chain Consortia.
Since then, the Consortium has been ensuring that the paper and board collected separately in Italy are recycled through an efficient network spreading across the national territory.
The input of all the players in the supply chain has triggered a virtuous process that saw municipal separate paper and board collection increase threefold, from one to three million tons a year. Over just more than 15 years, almost 40 million tons of paper and board were retained from landfills and recycled.

This year, like every year in the past two decades, Comieco is releasing its Report on Paper and Board Collection, Recycling and Recovery. According to data, after five years of stable collection, also due to a decline of consumptions, a more than positive recovery (+4%) is consolidated in 2014 for the second year in a row: separate paper and board collection totals again more than 3 million tons, mostly as a result of household collection. Improvements do not just occur where good results were already in place.

The South, where interception is historically more limited, has made up for the gap and recorded the highest percent increase (+10.6%). Part of this achievement comes from the multiple activities implemented by the Consortium in cooperation with the institutions and the Cities involved in the agreements. In addition to the by-now consolidated cooperation with the Eco-Champion City Clubs, now in place also in Sardinia and Puglia, in addition to Campania, Comieco and ANCI have called a tender to provide financial support to small-medium sized Cities with collection yields below 22 kg per inhabitant per year. With this Tender, Comieco provided non-refundable grants to as many as 89 administrations with a 1.7 million EUR investment. This amount was used to buy the necessary equipment to implement or optimize separate collection services, supported with punctual local communication activities.
This year, the Tender is repeated – with 2 million EUR resources – and Comieco has designed a true “Plan for the South,” sponsored by the Ministry of the Environment and of Territorial and Sea Protection: with an additional 7 million EUR, it raises the total resources provided to the Cities with collection deficits to 9 million EUR.

Also in terms of economic resources provided to the Cities involved in the agreements, just less than 95 million EUR were transferred in 2014, vs. 88 million EUR in the previous year. The increase is mostly due to the implementation of the new ANCI-CONAI General Agreement.

In order to improve the quality of the available paper for recycling, the Consortium and the recoverers’ Associations are making their best effort within the framework of collected paper processing contracts.
While in 2014 packaging recycling accounted for 80%, the use of paper for recycling by Italian paper mills and exports are substantially stable at 4.7 million tons and 1.7 million tons respectively.

The main role of Comieco is to ensure and promote paper and board recycling. These activities are certainly important for the environment, but also for the economy, and their value is enhanced by involving all the players in the supply chain: the citizens that trigger the recycling process with their daily engagement; the Cities operating collection services; the sorting plants; the paper mills and paper industries that transform paper for recycling into new packaging and products. Our commitment is to continue to increase this value with all of you. Giving new life to paper for 30 years. Together.

Ignazio Capuano
Chairman, Comieco

94.6

million EUR is the amount transferred by way of considerations to the Italian municipalities under the agreements in 2014

Paper and board collection and recycling: A positive performance of Italy

1.
2014: Consolidating recovery

The year 2014 sees a new leap forward of separate paper and board collection, following substantial stability achieved in 2010.

Municipal collection totals above three million tons with a 4 percent point increase, equal to approximately 120thousand tons of newly collected materials. This is a significant achievement, equal to the addition of a new Italian region to the 20 existing ones. Positive changes are recorded for the three macro-areas of the North (+1.6%), Centre (+4.7%), and South (+10.6%). However, the different absolute weight of these macro-areas vs. overall collection should be taken into account.

Both collection circuits are responsible for this increase. In particular, household collection (+5%) is growing more dynamically than trade collection (+3%).

Contrasting data, albeit generally positive, is recorded for the individual regions in each macro-area. In the North, in particular, while Liguria (+6.7%) displays a change of attitude, Piedmont (-5.1%) records a negative result within a general decrease of waste observed in the past few years.

While the performance of Latium (+9.9%) stands out for the Centre, Tuscany (-0.5%) and Umbria (-1.6%) show a moderate decline. In the South, Campania achieves remarkable results (+29,700 tons), whereas Sicily records a 7.1% decline.

The historical trend shows that separate paper and board collection has increased more than threefold in just more than 15 years, from one to three million tons per year. Wherever good results were already in place, improvements were also achieved. The South, where yields were significantly lower, made up for the gap and the increase was most remarkable: collection volumes increased 12-fold from 50thousand tons in 1998 to over 600thousand tons in 2014.

2.
Italians: some pass, others fail

If per-capita collection data is considered, it turns out that each Italian citizen collects an average of 51.7 kg of paper and board per year. This value falls into a very broad range, from over 83.1 kg/ab/year in Trentino Alto Adige – where citizens are most virtuous – to 15.2 in Sicily.

An analysis of results for the three macro-areas shows that the Centre and North record similar data – 63.4 kg/ab/year on average – whereas the South is still lagging behind with just 29.9 kg/ab/year.

While this difference does point out to varying collection levels, it should also be referred to the actual per-capita production of urban waste, which is lower in the South compared to the North and Centre.

Certain Cities in the South – albeit still quite few – should be acknowledged for achieving top level results. These include, for example, some members of the Club of Eco-Champion Cities – 67 Cities in Campania in 2014 – where per-capita paper and board collection yields are far above the national average (almost 60 kg/ab/year).

There is still broad variability between regions in per-capita waste production and in separate paper and board collection. While the national amount of overall urban waste is 496 kg/ab/year at national level, the results of the regions range between 667 kg/ab/year (Emilia Romagna, 35% above the national average) and 351 kg/ab/year (Basilicata, 29% below the national average). This is due to macro-economic factors – including consumptions and the presence of manufacturing and commercial activities – but is also the result of the decision to assimilate special waste and of the collection methods in use.

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3. Collection under the agreements

Comieco had 901 agreements in place across the national territory in 2014.
In the North, 159 agreements cover 77.5% of the inhabitants. Each agreement involves 130thousand inhabitants on average and provides for recycling of approximately 4,300 tons of paper and board per year. The so-called "partial operation" agreements are concentrated in this area (74 out of 112 in force in 2014 across Italy), and provide for the party to the agreement to only entrust some of its collection to Comieco.
In the Centre, 111 agreements cover 87.1% of the inhabitants, 93thousand on average per agreement. These are worth approximately 2,800 t/year each.
The remaining 631 agreements are in force in the Southern macro-area and cover almost 90% of the inhabitants, with 30,000 citizens covered by each agreement on average. About 800 tons are managed on average.
The amount of paper and board managed under the agreements with Comieco totalled just less than 1.5 tons in 2014, or 47.2% of municipal collection in Italy.

Section 4:
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FIGURE 5 ◂
FIGURE 6 ◂

4. A growing economic investment

Just less than 95 million EUR were transferred to the Cities under the agreements in 2014, vs. 88 million EUR in the previous year.
The economic investment of Comieco in favour of its members therefore increased by 7.6% vs. 2013, notwithstanding perfect stability of the managed amounts. The increase is, in fact, a result of the punctual enforcement of the General Agreement between ANCI and CONAI as of April 2014.
Higher contributions result into practical support to the parties to the agreements.

Section 5:
FIGURE 7 ◂
FIGURE 8 ◂

5. Metropolitan areas, a measure of consumptions and collection

A privileged viewpoint to review collection trends is offered by big cities. The six monitored metropolitan areas display substantial stability or a moderate recovery of total urban waste production (+0.4%).
If 2014 data is compared against 2013 data, part of this result clearly points out to an increase of separate collection (+9.4%) vs. non-separate waste (-4.3%).
One exception is Turin, where fluctuations are limited to few decimals – albeit according to the same dynamics. In Milan, the increase of separate collection is close to 19% following the introduction of new services for the collection of organic fractions and the adoption of transparent bags for non-separate waste. This is a significant achievement, by which Milan is now a reference model among big European cities.
Figures for Rome are also interesting: here, the expansion of door-to-door collection continues gradually and has resulted into a reduction of non-separate waste by over 120thousand tons, even if the effects are still negligible for paper and board fractions.
Lastly, Palermo deserves specific consideration. The capital city of Sicily epitomizes regional criticalities. Overall waste production is increasing (+2.9%), and so does separate collection (+2,700 t), but poor interception (7.9%) cyeart make up for the combined growth of non-separate waste by over 7,000 tons.

Section 6:
TABLE 7 ◂

6. The ANCI-Comieco Tender: an investment for the South

In 2014 Comieco launched a Tender alongside ANCI for the supply of collection equipment aimed at small-medium sized Cities with collection yields below 22 kg/ab/year to ensure practical support to initiatives aimed at improving separate paper and board collection in the South. The Technical Commission approved 89 out of 150 applications received from the Cities under the agreements, which were funded with 1.7 million EUR.
The non-refundable grant provided by Comieco was used to buy the necessary equipment to implement or optimize separate collection, including dumpsters, bells, bins, bags, etc.
The second edition of the Tender, aimed at medium-small sized Cities with a reference collection index updated at 27 kg/ab/year, is now in force, with an additional 2 million EUR fund.

7. Checks confirm the high quality of the collected materials

The monitoring of the quality of separate paper and board collection confirms the trend of previous years. The performed set of tests (over 1,800 sampling sessions) highlights a moderate decline of average quality that, however, still satisfies the first-level standards set out in the ANCI-Comieco CTA.

As is known, two reference brackets have been in force since 2010 for the quality of separate paper and board collection: the first quality bracket provides for a maximum 3% tolerance of foreign materials in 1.01+1.02, whereas the limit is 1.5% for 1.04+1.05 for paper and board packaging alone.

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8. From paper for recycling to new products

The Consortium uses a network of third-party plants, including approximately 320 processing plants, to recycle the collected paper and board. This network allows conferment within an average distance just above 17 km from the collection area. Reducing the conferment distance is crucial to ensure the economic sustainability of services and a limited impact. At the same time, new technical and operating requirements have been established to ensure the best operational standards.

Recycling is ensured by 58 paper mills that collect paper for recycling across the national territory. These are supported by an allocation system based on auctions. Three auctions were organized in 2014 for a total of 590thousand tons, mostly aimed at domestic recycling.

With approximately 8.65 million tons in 2014, paper production in Italy has remained almost unchanged. The consumption of paper for recycling amounts to approximately 4.7 million tons (-0.3%), which account for 48.2% of apparent paper and board consumption.

The "apparent" collection of paper for recycling (consumption of paper for recycling +import+export) also remained substantially unchanged (+0.1%).

As far as the use of paper and board is concerned – net of paper for hygienic-sanitary use, whose main destination is outside separate collection circuits – recovery is observed in the use of packaging, which has returned to pre-crisis levels at 4.4 million tons.

The use of graphic paper decreased by 35% over the same period instead, or -1.4 million tons.

The new mix is confirmed by materials collected separately. Such trend was implemented in the new Technical Annex and, particularly, in the reference composition of 1.01+1.02, i.e. the paper and board collection flows mainly originating from the "household" channel. The rate of packaging made of this material – 33% when releasing this report – will be gradually raised to 35% and then settle by 2017.

The amount of collected paper and board in Italy, also including special waste and production scraps, is (6.1 million t).

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9. Packaging management

While the packaging recycling and recovery rate is 79.5%, overall recovery (also including energy recovery) is 88.1%.

The reduction vs. 2013 should not be intended as a decline of collection, but is rather a consequence of the inclusion of certain types of materials that were not part of the paper and board packaging category. Since January 2014, in fact, the so-called "cores", i.e. tubes and rolls, have also been defined as packaging and subject to the CONAI environmental contribution, unlike in previous years.

The recycling and recovery result net of these adjustments is therefore far above the targets set out in the environmental General Law, implementing the EU provisions.

Recycled paper and board packaging accounts for 43% of the total packaging recycled by the whole CONAI system.

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10. The value of recycling

Any cost and benefit estimate must be based on objective data.

Cost items include:

- the higher cost of separate collection;
- the missed benefit connected with energy recovery for the recycled amounts.

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On the other hand, benefits include:
- avoided emissions;
- avoided disposal cost;
- value of raw materials;
- impact on employment.

The net amount calculated for 2014 is just above 439 million EUR, as results from the difference between 565 million EUR benefits and 126 million EUR costs.

The main negative item is the higher cost of separate collection, whereas the main benefit is the avoided disposal cost. In other words, the benefits resulting from "technical" issues alone produce a value close to 250 million EUR in one year.
If compared against, and added up to the historical balance set, the result for 2014 of the total benefits produced as of 1999 is above 5 billion EUR.
The analysis of the "bonus-malus" effects was carried out as thoroughly as to obtain regional and macro-area estimates. The net benefit in the Centre-North, estimated vs. the population, is 8.5 EUR/inhabitant, almost twice as much as recorded in the South (4.7 EUR/inhabitant).
This difference between the North and South is the cost of not doing or, rather, of not doing good. In the South, in fact, the poor benefit obtained from avoided disposal has a significant impact, albeit with a much more limited separate collection cost delta compared to the Centre-North. In other words, low disposal costs hamper the development of separate collections, but this regularly results into "waste emergencies", whose costs are not recorded.
The best result at regional level is recorded for Marche, with 14.5 EUR/inhabitant. This achievement is mostly the outcome of a differential by which separate paper and board collection is more competitive than non-separate waste collection.
Something similar in this respect is also observed in Campania, where the differential of separate collection alone turns into a benefit of over 11 million EUR, probably due to high waste cycle management costs.
Among southern regions Campania, as well as Abruzzo and Sardinia – where integrated collection services are more developed – achieve per-capita benefits of more than 8 EUR/inhabitant, in line with the average value recorded in the Centre-North.
Benefits are still limited in Sicily (1.1 EUR/inhabitant) due to low collection volumes.

Carlo Montalbetti
General Manager, Comieco

88.8

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

Charts and tables

Acronyms

CTA	**Comieco Technical Annex**
FMS	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

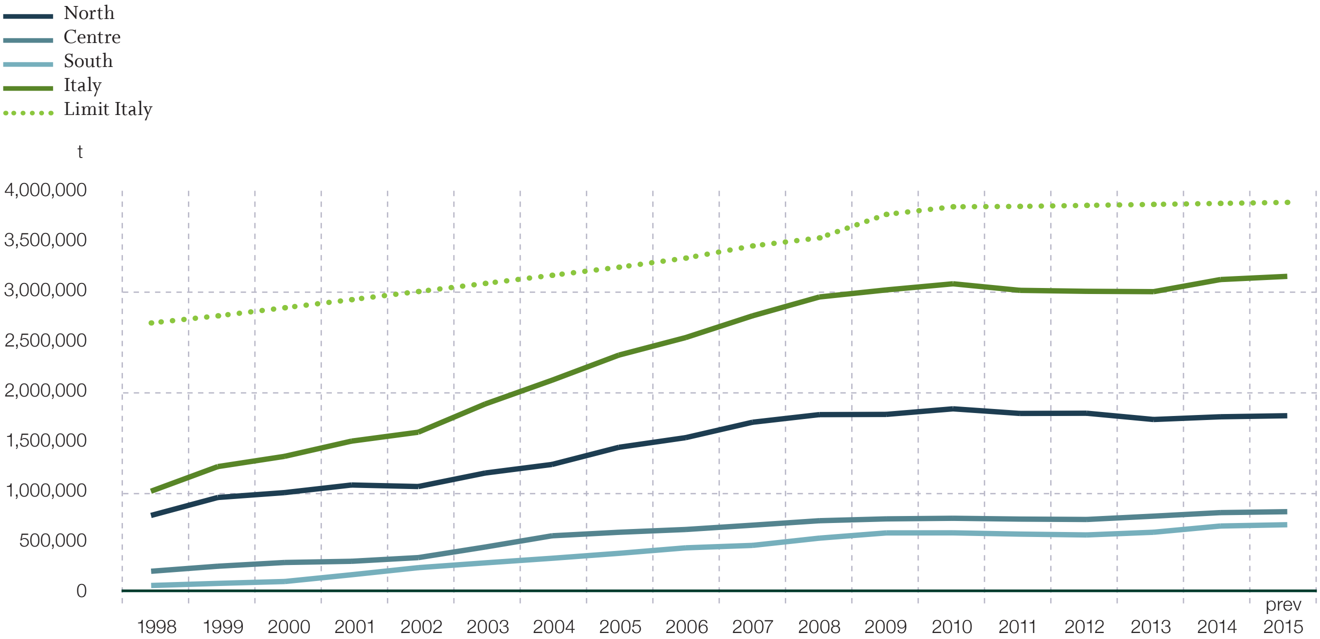
Table 1
Andamento della raccolta differenziata comunale di carta e cartone per regions. Anni 2013-2014.
(Source: Comieco)

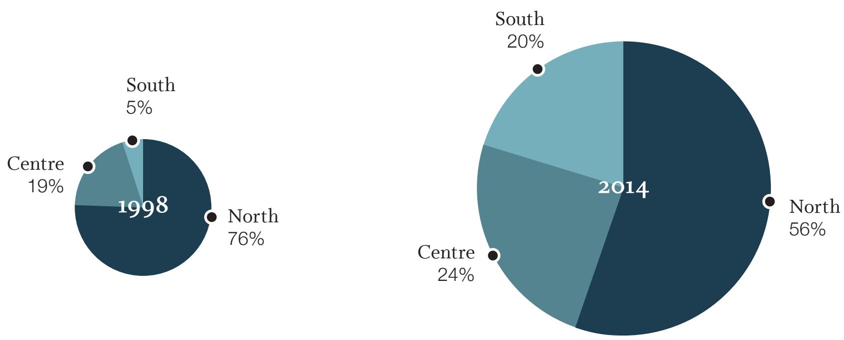
Regions	SC OF PAPER 2013 (Comieco)	SC OF PAPER 2014 (Comieco)	Δ 2013-2014	Δ 2013-2014
	t	t	t	%
Piedmont	282,424	267,896	-14,528	-5.1
Vallèe d'Aoste	9,582	9,336	-246	-2.6
Lombardy	531,646	548,759	17,113	3.2
Trentino Alto Adige	79,736	83,988	4,252	5.3
Veneto	289,325	293,582	4,257	1.5
Friuli Venezia Giulia	73,127	74,056	929	1.3
Liguria	85,446	91,158	5,712	6.7
Emilia Romagna	350,004	359,227	9,223	2.6
NORTH	**1,701,291**	**1,728,002**	**26,712**	**1.6**
Tuscany	269,098	267,782	-1,316	-0.5
Umbria	56,082	55,210	-871	-1.6
Marche	97,884	104,219	6,335	6.5
Latium	302,139	332,068	29,930	9.9
CENTRE	**725,202**	**759,280**	**34,078**	**4.7**
Abruzzo	58,364	67,990	9,626	16.5
Molise	6,313	6,565	252	4.0
Campania	168,864	198,572	29,709	17.6
Puglia	121,333	137,250	15,917	13.1
Basilicata	15,034	17,087	2,054	13.7
Calabria	36,417	47,074	10,657	29.3
Sicily	82,231	76,357	-5,874	-7.1
Sardinia	75,527	73,196	-2,332	-3.1
SOUTH	**564,082**	**624,091**	**60,008**	**10.6**
ITALY	**2,990,575**	**3,111,373**	**120,798**	**4.0**

NOTE: 2013 data adjusted for the regions of Lombardy, Friuli Venezia Giulia, and Emilia Romagna

The 4% increase recorded at national level confirms the recovery of separate paper and board collection. Some regions are declining despite the general growth, with positive signs particularly in the South.

Figure 1
Municipal separate paper and board collection. 1998-2014 trend and 2015 forecasts
(Source: Comieco)

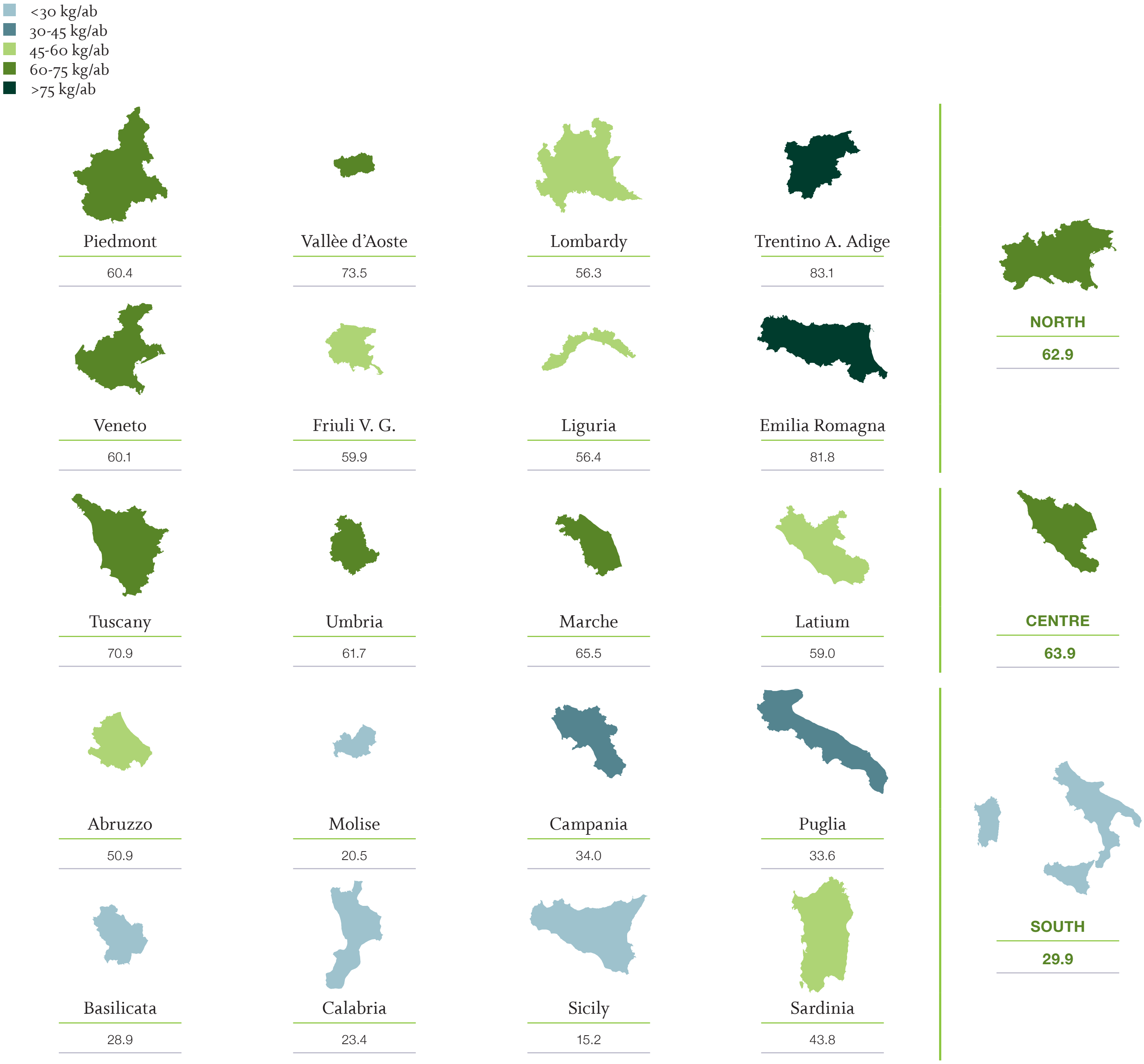




		1998	2014	2015 forecast	Δ 2014-2015
North	t	756,813	1,728,002	1,738,332	10,330
Centre	t	193,958	759,280	768,190	8,911
South	t	50,222	624,091	636,573	12,482
ITALY	t	**1,000,993**	**3,111,373**	**3,143,095**	**31,722**

There is still broad room for growth: 1 million tons, including 70% in the South.

Figure 2
Municipal per-capita separate paper and board collection by regions and by areas. Year 2014
(Source: Comieco)

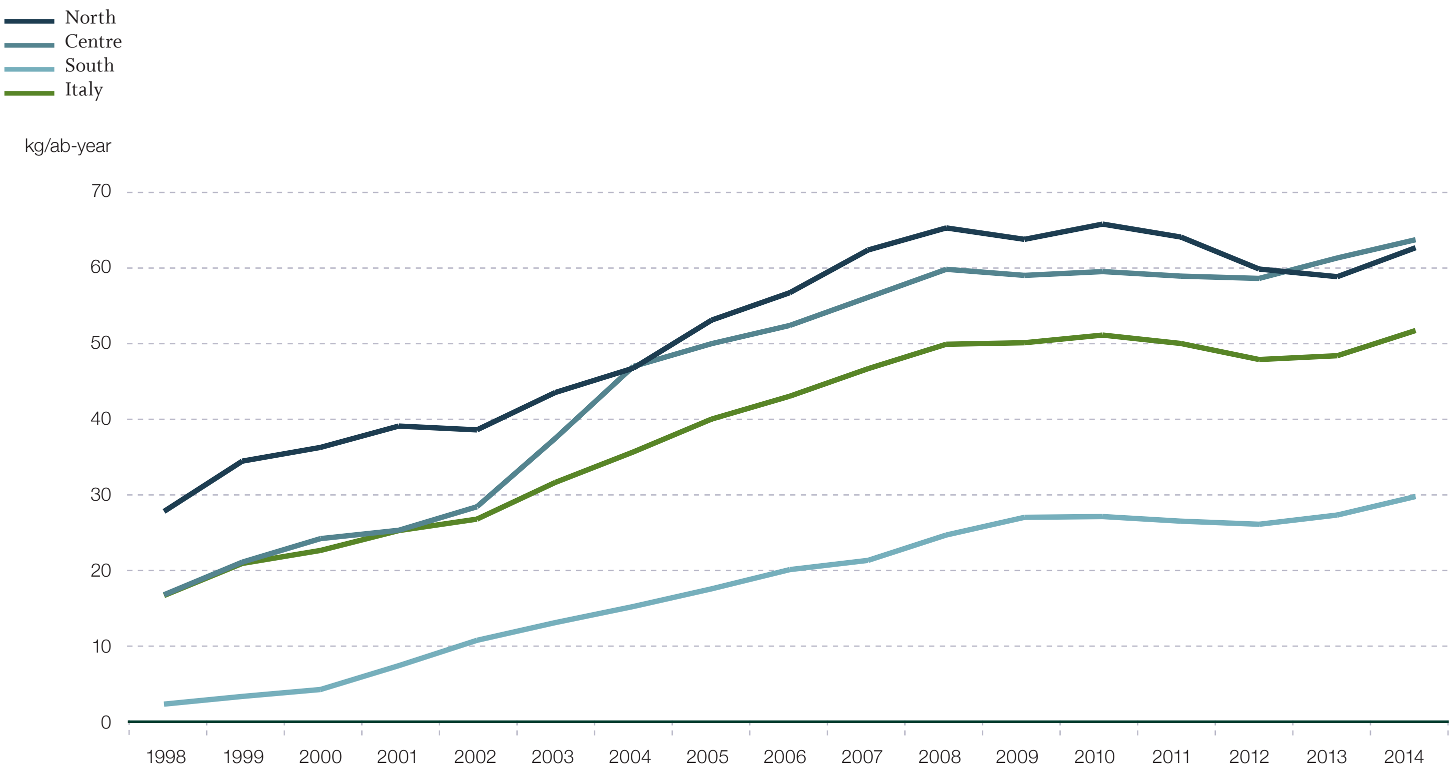


Area	Regions	tot UW	non-sep UW	SC of paper	SC of paper/tot UW
		kg/ab	kg/ab	kg/ab	%
North	Trentino Alto Adige	490.4	158.6	83.1	17.0
Centre	Marche *	476.3	174.5	65.5	13.7
North	Friuli Venezia Giulia	441.5	175.0	59.9	13.6
North	Piedmont	452.0	204.7	60.4	13.4
North	Veneto	452.6	152.2	60.1	13.3
North	Vallèe d'Aoste	571.3	300.5	73.5	12.9
	NORTH	**505.1**	**201.4**	**62.9**	**12.5**
North	Emilia Romagna *	667.0	278.9	81.8	12.3
Centre	Tuscany *	598.8	324.1	70.9	11.8
North	Lombardy *	481.4	169.4	56.3	11.7
	CENTRE	**560.5**	**340.5**	**63.9**	**11.4**
Centre	Umbria *	541.8	267.8	61.7	11.4
South	Abruzzo	449.6	256.4	50.9	11.3
Centre	Latium	561.7	410.1	59.0	10.5
	ITALY	**495.6**	**267.1**	**51.7**	**10.4**
North	Liguria *	565.7	363.2	56.4	10.0
South	Sardinia	444.0	217.7	43.8	9.9
South	Basilicata	351.3	260.5	28.9	8.2
South	Campania	436.4	242.3	34.0	7.8
South	Puglia *	458.4	332.5	33.6	7.3
	SOUTH	**446.1**	**311.7**	**29.9**	**6.7**
South	Calabria	414.6	353.2	23.4	5.7
South	Molise	386.8	309.9	20.5	5.3
South	Sicily	474.6	410.8	15.2	3.2

* Preliminary 2014 data. Other data Ispra 2013.

Italian citizens and separate paper and board collection.
The per-capita figure is a mean value and should be interpreted as such alongside other indicators.
The table shows the ranking in decreasing order based on separate paper and board collection vs. total urban waste.

Figure 3
Municipal per-capita separate paper and board collection by areas.1998-2014 historical data set.
(Source: Comieco)



The North and Centre achieve equal per-capita collection results. The South should improve.

Table 2
Per-capita municipal separate paper and board collection by areas. 1998-2013-2014 variations.
(Source: Comieco)

Area	1998	2013	2014	Δ 2013-2014	Δ 1998-2014	Δ 1998-2014
	kg/ab	kg/ab	kg/ab	kg/ab	kg/ab	%
North	28.3	62.0	62.9	1.0	34.6	122.4
Centre	17.1	61.0	63.9	2.9	46.8	273.4
South	2.4	27.0	29.9	2.8	27.5	1,144.3
ITALY	17.0	49.7	51.7	2.0	34.7	203.9

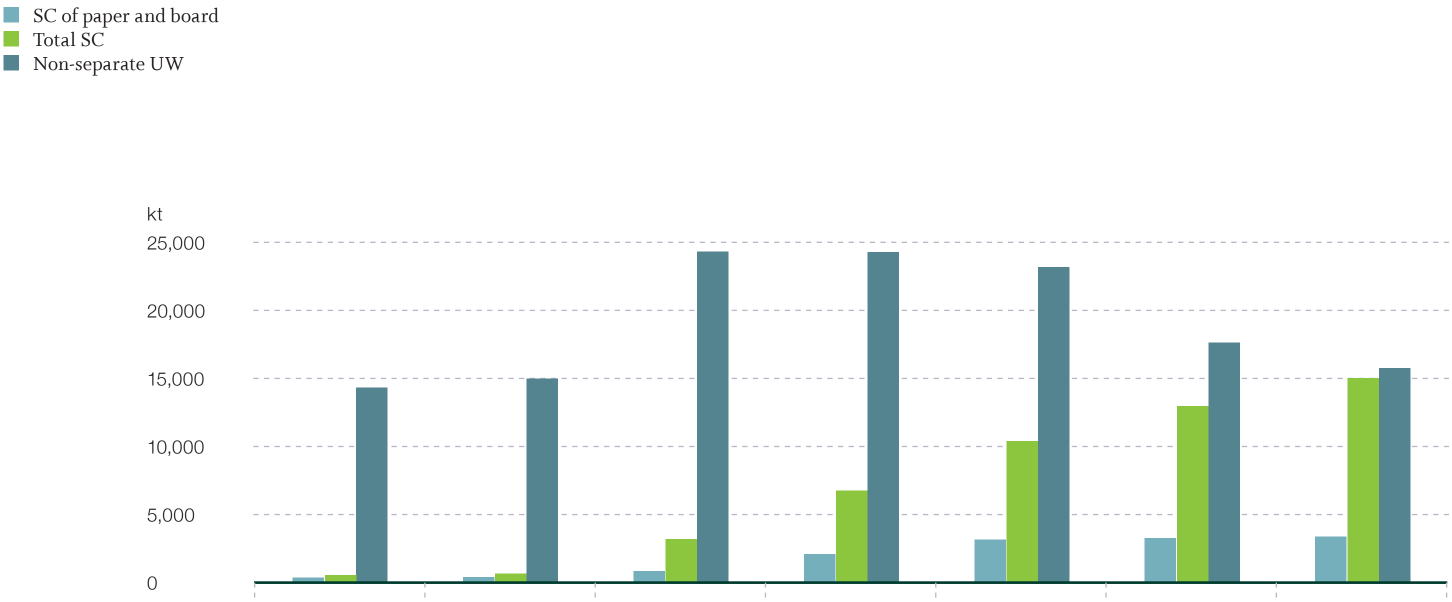
Collection increased threefold from 1998 to this day in Italy and grew over tenfold in the South.

Table 3
Comparison of urban waste production, overall separate collection, and municipal separate paper and board collection in Italy.
(Source: ISPRA and Comieco)

		1998	2003	2008	2013	2014	Δ % 1998-2014	Δ % 2013-2014
UW	kt	26,605	30,034	32,542	29,595	29,828	12.1	0.8
Total SC	kt	2,980	6,450	10,008	12,519	14,553	388.4	16.2
Municipal SC of paper and board	kt	679	1,871	2,945	3,052	3,111	358.1	1.9
Total SC vs. total UW production	%	11.2	21.5	30.8	42.3	48.8		
Municipal SC of paper and board vs. total SC	%	22.8	29.0	29.4	24.4	21.4		

The 50% total separate collection target is close.
Paper is confirmed as one of the main fractions.

Figure 4
1985-2015: 30 years of separate collection in Italy.
(Source: ISPRA e Comieco)



	1982	1985	1997	2003	2008	2013	2015 (forecast)
what happened	Pres. Decree 915	Establishment of Comieco	Ronchi Decree	end of 1st ANCI-CONAI agreement	end of 2nd ANCI-CONAI agreement	end of 3rd ANCI-CONAI agreement	
SC of paper and board	185	250	679	1,871	2,945	3,052	3,143
Total SC	369	500	2,980	6,450	10,008	12,519	14,553
non-separate UW	13,841	14,500	23,625	23,584	22,534	17,076	15,275
Total UW	14,210	15,000	26,605	30,034	32,542	29,595	29,828

Activities supporting separate paper and board collection are aimed at anticipating the total symbolic 50% separate collection threshold and meeting the legal targets as soon as possible.

Table 4
Agreements signed in the 2001-2014 period and coverage rate of the agreements.
(Source: Comieco)

			2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
North	Signed agreements	n	170	215	225	224	228	211	208	202	203	202	186	177	166	159
	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	71.4	69.8
	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	78.9	77.5
Centre	Signed agreements	n	35	59	80	88	97	103	109	111	124	124	118	119	119	111
	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	68.2	67.0
	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	88.0	87.1
South	Signed agreements	n	124	197	281	328	334	302	329	414	428	454	487	492	608	631
	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	74.6	71.7
	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	91.7	89.7
Italy	Signed agreements	n	329	471	586	640	659	616	646	727	755	780	791	788	893	901
	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	72.0	70.0
	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	85.1	83.6

While agreements are thoroughly fragmented in the South, the North and Centre tend to optimize by concentrating collection bases and services.

Table 5

Local coverage by regions as at December 31, 2014.
(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	1,114	92.4	4,432,571	4,105,030	92.6	156,586	58.5
Vallèe d'Aoste	74	74	100.0	127,065	127,065	100.0	8,889	95.2
Lombardy	1,549	605	39.1	9,750,644	5,461,284	56.0	196,986	35.9
Trentino Alto Adige	331	311	94.0	1,010,328	938,975	92.9	50,999	60.7
Veneto	582	414	71.1	4,888,887	3,950,979	80.8	103,079	35.1
Friuli Venezia Giulia	219	205	93.6	1,236,844	1,194,632	96.6	33,034	44.6
Liguria	235	127	54.0	1,615,064	1,258,682	77.9	27,177	29.8
Emilia Romagna	345	318	92.2	4,389,696	4,236,581	96.5	106,188	29.6
NORTH	**4,541**	**3,168**	**69.8**	**27,451,099**	**21,273,228**	**77.5**	**682,936**	**39.5**
Tuscany	294	263	89.5	3,776,950	3,612,954	95.7	164,650	61.5
Umbria	92	52	56.5	894,222	762,015	85.2	17,459	31.6
Marche	248	200	80.6	1,591,969	1,381,392	86.8	51,219	49.1
Latium	378	163	43.1	5,626,710	4,605,182	81.8	73,973	22.3
CENTRE	**1,012**	**678**	**67.0**	**11,889,851**	**10,361,543**	**87.1**	**307,302**	**40.5**
Abruzzo	305	238	78.0	1,334,675	1,233,653	92.4	54,035	79.5
Molise	136	50	36.8	320,795	171,114	53.3	4,041	61.6
Campania	552	427	77.4	5,832,418	5,354,260	91.8	141,895	71.5
Puglia	258	234	90.7	4,079,702	3,856,728	94.5	121,566	88.6
Basilicata	131	79	60.3	590,601	479,323	81.2	11,488	67.2
Calabria	409	273	66.7	2,008,709	1,627,219	81.0	30,650	65.1
Sicily	390	367	94.1	5,037,799	4,881,825	96.9	71,065	93.1
Sardinia	377	167	44.3	1,671,001	1,131,598	67.7	44,120	60.3
SOUTH	**2,558**	**1,835**	**71.7**	**20,875,700**	**18,735,720**	**89.7**	**478,860**	**76.7**
ITALY	**8,111**	**5,681**	**70.0**	**60,216,650**	**50,370,491**	**83.6**	**1,469,097**	**47.2**

	Agreements	Average inhabitants under the agreements	Average amount managed under the agreements
	n	n	t
North	159	133,794	4,295
Centre	111	93,347	2,768
South	631	29,692	759
ITALY	**901**	**55,905**	**1,631**

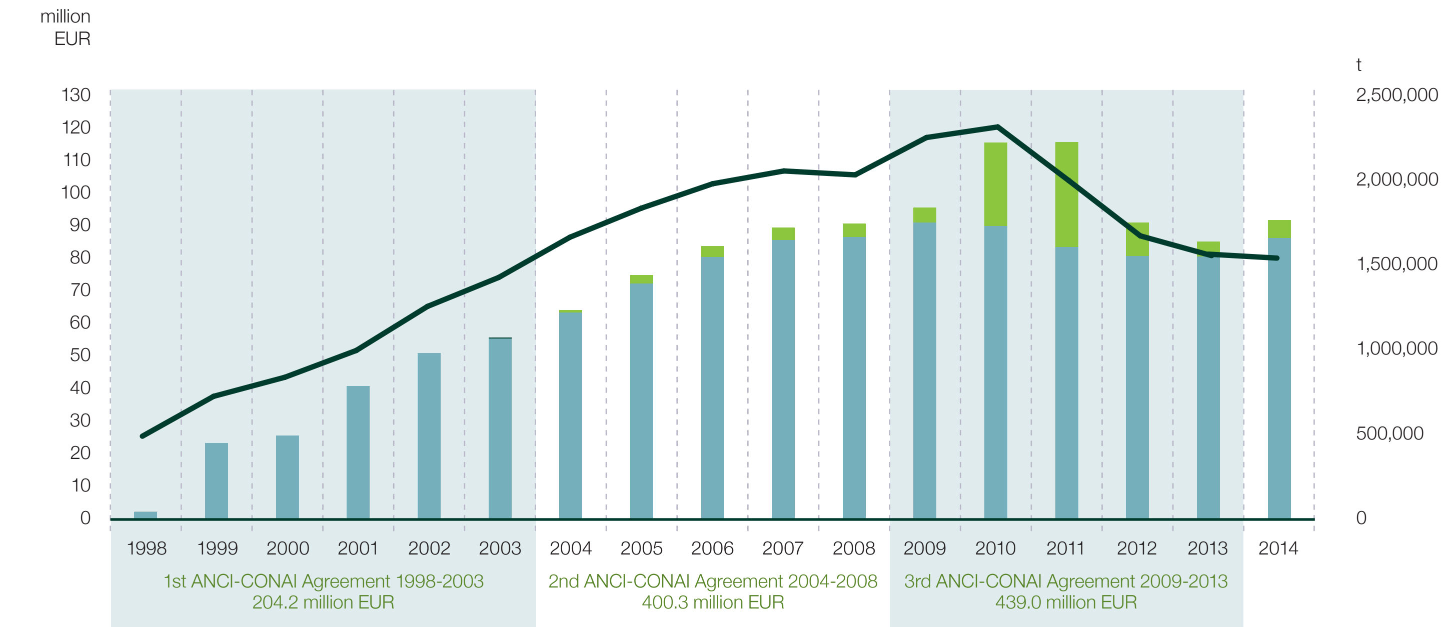
The rate of paper and board collection managed by Comieco under the agreements is less than 50%. While agreements for collection and for recycling assurance still play a crucial role in the South, Comieco still guarantees recycling in support to the market.

Table 6
Resources allocated to the parties under the agreements in 2014. Detailed by areas.
(Source: Comieco)

		Amount				Economic investment			
	Inhabitants under the agreements	Managed packaging	FMS	Packaging	FMS	Packaging	FMS	Packaging	FMS
	n	t	t	kg/ab	kg/ab	EUR	EUR	EUR/ab, under agr.	EUR/ab, under agr.
North	21,273,228	461,257	221,679	21.7	10.4	43,437,909	2,575,881	2.04	0.12
Centre	10,361,543	207,259	100,043	20.0	9.7	19,435,867	1,140,700	1.88	0.11
South	18,735,720	296,177	182,682	15.8	9.8	25,974,703	2,092,444	1.39	0.11
ITALY	50,370,491	964,693	504,404	19.2	10.0	88,848,479	5,809,025	1.76	0.12

Resources available to the cities increase as the new General Agreement (2014/2019) comes into force.

Figure 5
Economic investment. 1998-2014 historical data set.
(Source: Comieco)



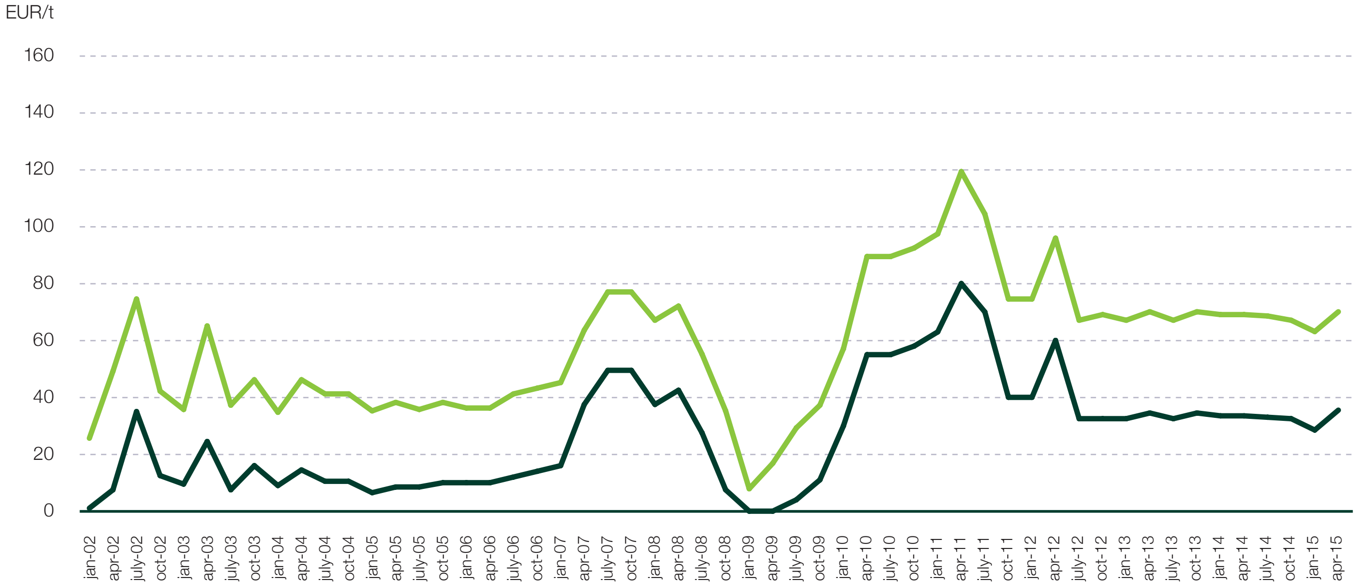
The new ANCI-CONAI agreement resulted into a 7.6% increase of the resources available to the Cities in 2014.

		ANCI-CONAI Agreement 1998-2003						ANCI-CONAI Agreement 2004-2008				
		1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
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
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
Managed collection	t	485,358	705,530	810,800	958,595	1,201,757	1,361,939	1,584,066	1,747,523	1,878,988	1,949,623	1,928,063

		ANCI-CONAI Agreement 2009-2013					Agreement 2014-2019	
		2009	2010	2011	2012	2013	2014	TOTAL
Economic investment Comieco	million EUR	93.8	92.8	86.1	83.2	83.1	88.8	1,132.3
Economic investment FMS	million EUR	4.9	26.5	33.3	10.7	4.8	5.8	101.7
Managed collection	t	2,134,203	2,192,664	1,895,370	1,591,170	1,482,299	1,469,097	25,377,046

Figure 6
Monthly recording of mean paper for recycling values (EUR/t). January 2002-April 2015 period.
(Source: Chamber of Commerce of Milan)

Mixed non-selected paper and board (1.01)
Paper and corrugated board (1.04)



* 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.

Paper for recycling estimates were stable in 2014, with signs of improvement since the spring of 2015.

Figure 7
Waste collection in the sample cities Turin, Milan, Florence, Rome, Naples, and Palermo.n 2004-2014 per-capita data.
(Source: Comieco)

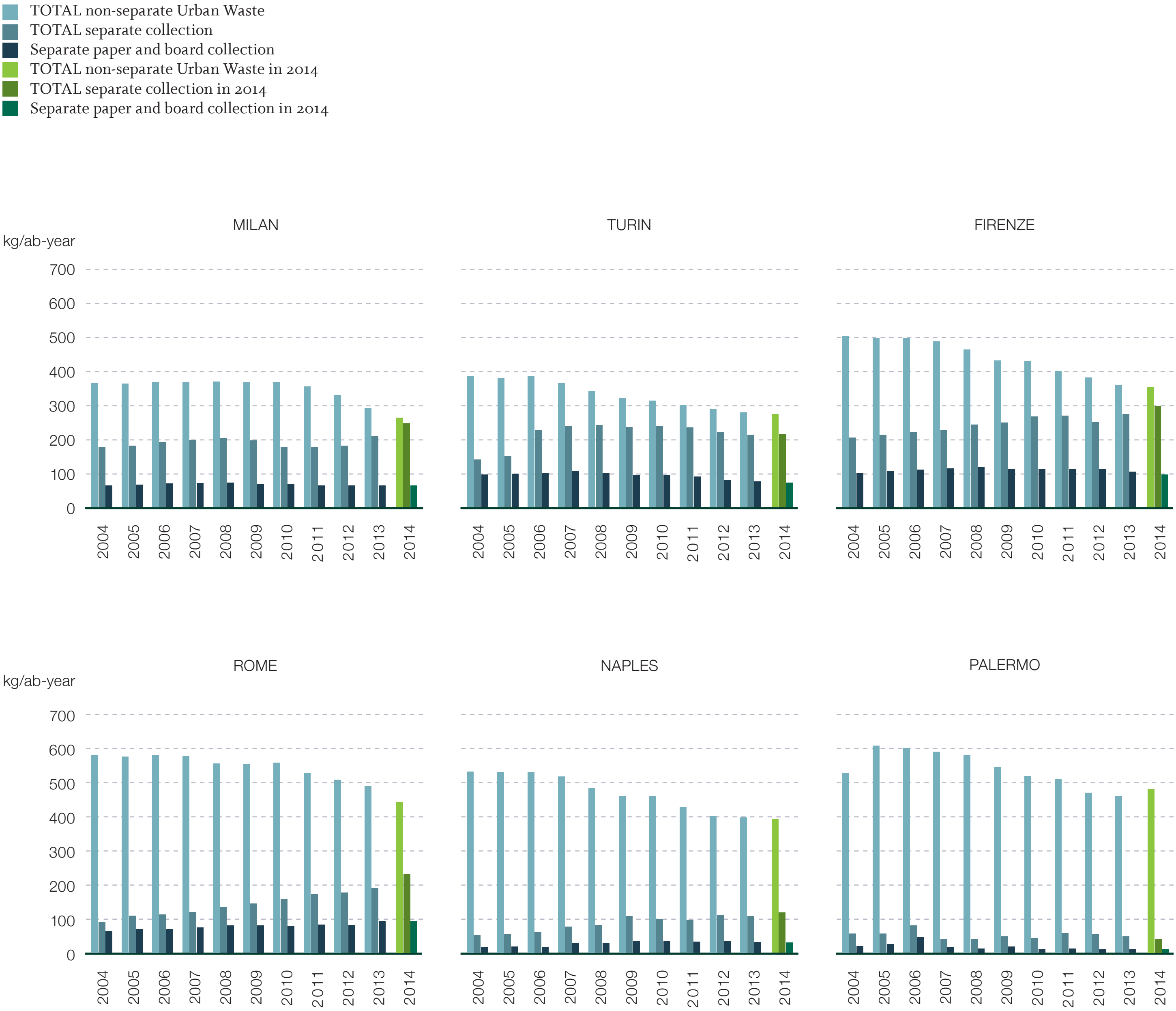
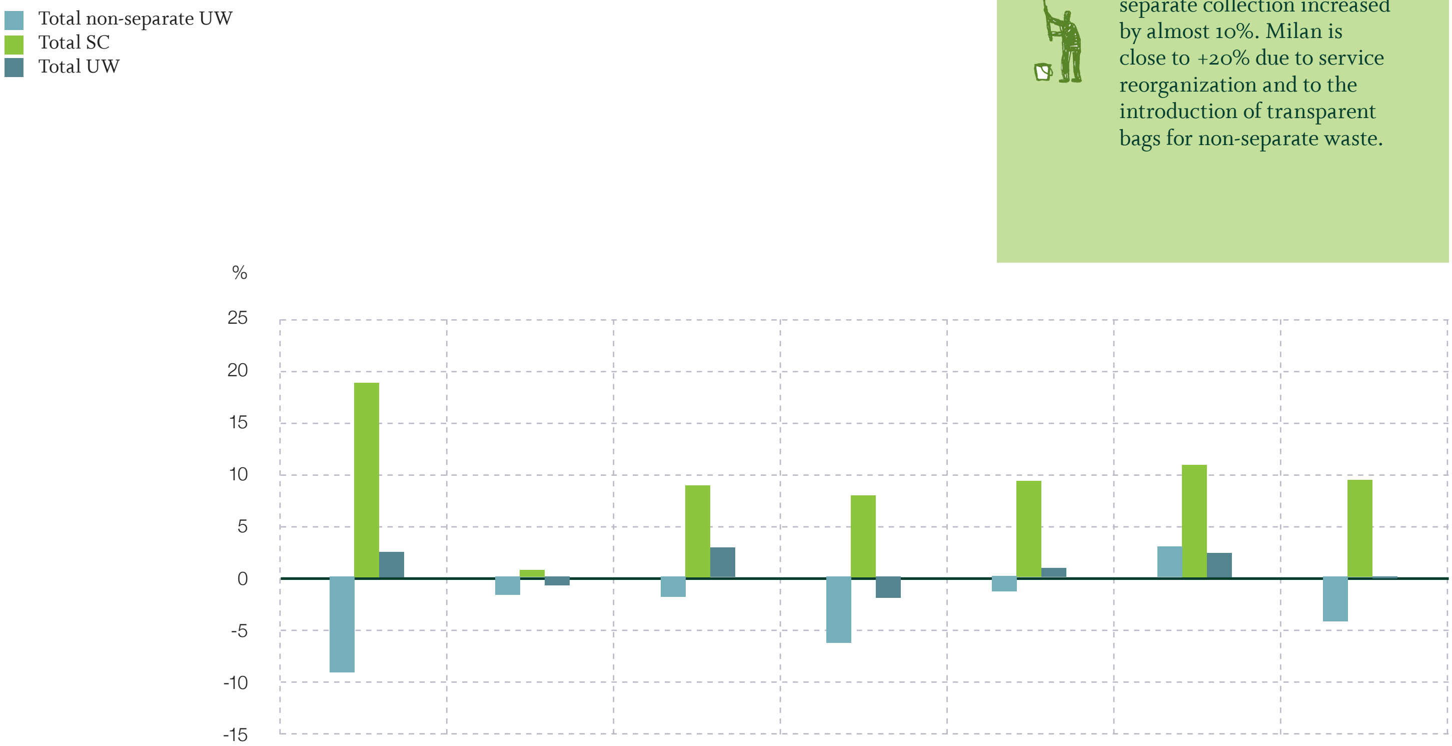


Figure 8
Waste collection in the sample cities Turin, Milan, Florence, Rome, Naples, and Palermo.
2013-2014 variations.
(Source: Comieco)

While urban waste production in metropolitan cities was stable in 2014, the incidence of separate collection increased by almost 10%. Milan is close to +20% due to service reorganization and to the introduction of transparent bags for non-separate waste.



		Milan	Turin	Firenze	Roma	Naples	Palermo	Aggregated data
Δ 2013-2014 TOT non-separate UW	%	-9.3	-1.7	-1.9	-6.4	-1.4	2.9	**-4.3**
Δ 2013-2014 TOT SC	%	18.9	0.6	8.9	7.9	9.3	10.9	**9.4**
Δ 2013-2014 TOT UW	%	2.4	-0.8	2.8	-2.0	0.8	2.3	**-0.1**

Dati 2014		Milan	Turin	Firenze	Roma	Naples	Palermo	Aggregated data
TOT SC	t	322,097	192,729	109,456	648,370	115,929	27,299	**1,415,880**
TOT UW	t	665,641	439,037	238,989	1,737,804	501,669	345,313	**3,928,453**
SC/UW	%	48.4	43.9	45.8	37.3	23.1	7.9	**-**
NON-S UW	t	343,544	246,308	129,533	1,089,434	385,740	318,014	**2,512,573**

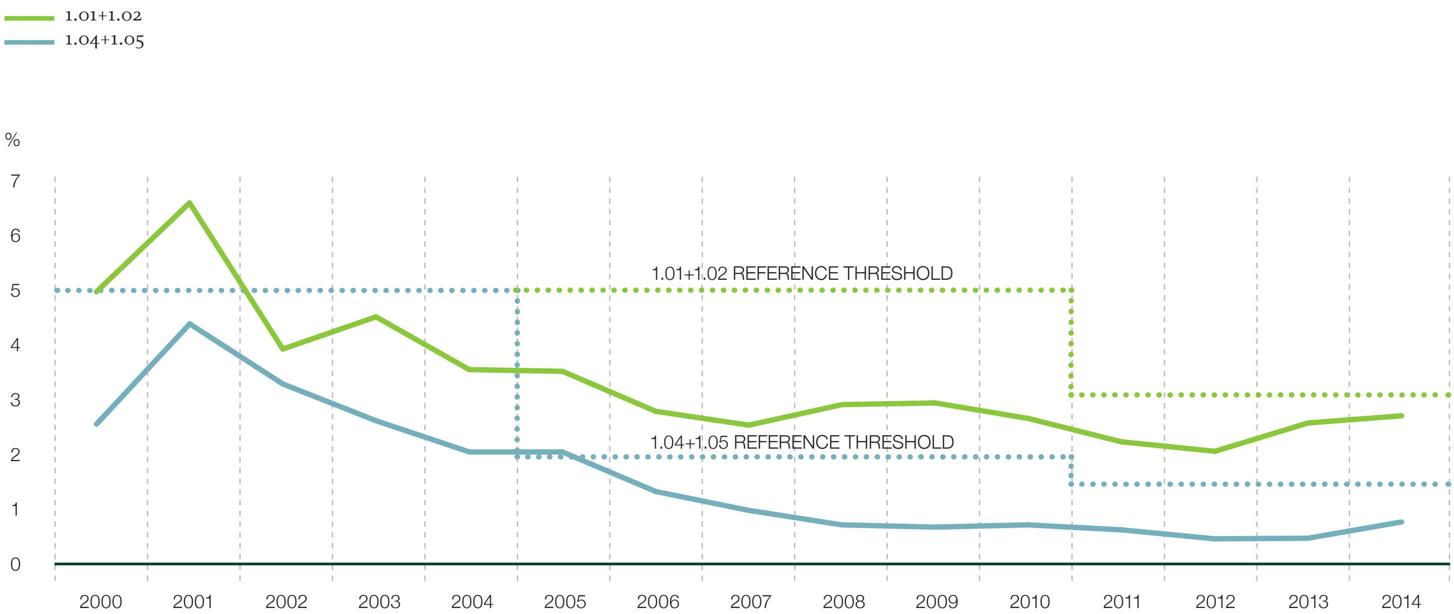
Table 7

Comieco-ANCI tender for the purchase of equipment to support separate paper and board collection. 2014 edition. Detailed by regions.
(Source: Comieco)

Area	Regions	Cities	Inhabitants	Funded amount
		n	n	EUR
South	Abruzzo	10	8,027	18,585.24
South	Basilicata	3	33,757	45,842.77
South	Calabria	18	97,753	248,213.58
South	Campania	17	242,813	529,152.98
Centre	Latium	18	160,285	247,705.68
South	Molise	3	59,290	48,372.20
South	Puglia	14	252,833	311,628.36
South	Sicily	8	117,569	245,138.34
Centre	Tuscany	1	3,367	9,160.00
TOTAL		**89**	**941,937**	**1,703,799.15**

Support to collection is provided through considerations, as well as through additional technical and communication activities. In particular, with the Comieco-ANCI 2014 Tender, 89 Cities with 50thousand inhabitants or less and with collection deficits received non-refundable grants to buy equipment to strengthen the service. The tender is repeated with new grants in 2015.

Figure 9
Quality of the collected material (mean trend of foreign fractions). 2000-2014 period.
(Source: Comieco)



			1st ANCI-CONAI Agreement				2nd ANCI-CONAI Agreement					3rd ANCI-CONAI Agreement					4th ANCI-CONAI Agr.
Collection	**Data**		**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
1.01+1.02	Performed analyses	n	27	171	275	533	443	321	772	930	990	1,174	1,302	1,054	949	863	724
	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	198,471	184,365	142,961
	Foreign fractions	%	4.90	6.50	3.87	4.45	3.50	3.47	2.75	2.50	2.87	2.90	2.62	2.20	2.03	2.54	2.58
1.04+1.05	Performed analyses	n	26	122	165	281	335	291	779	1,041	1,145	1,176	1,068	1,041	1,051	936	571
	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	201,014	182,703	97,230
	Foreign fractions	%	2.50	4.30	3.22	2.56	2.00	2.00	1.29	0.95	0.69	0.65	0.69	0.60	0.44	0.45	0.58

Notes
- An integrated collection flow was included until 2005, then removed from the CTA.
- Data since 2005 is updated vs. last year's report consistently with the definition mode of the foreign fraction rates provided for by the CTA.
- 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.

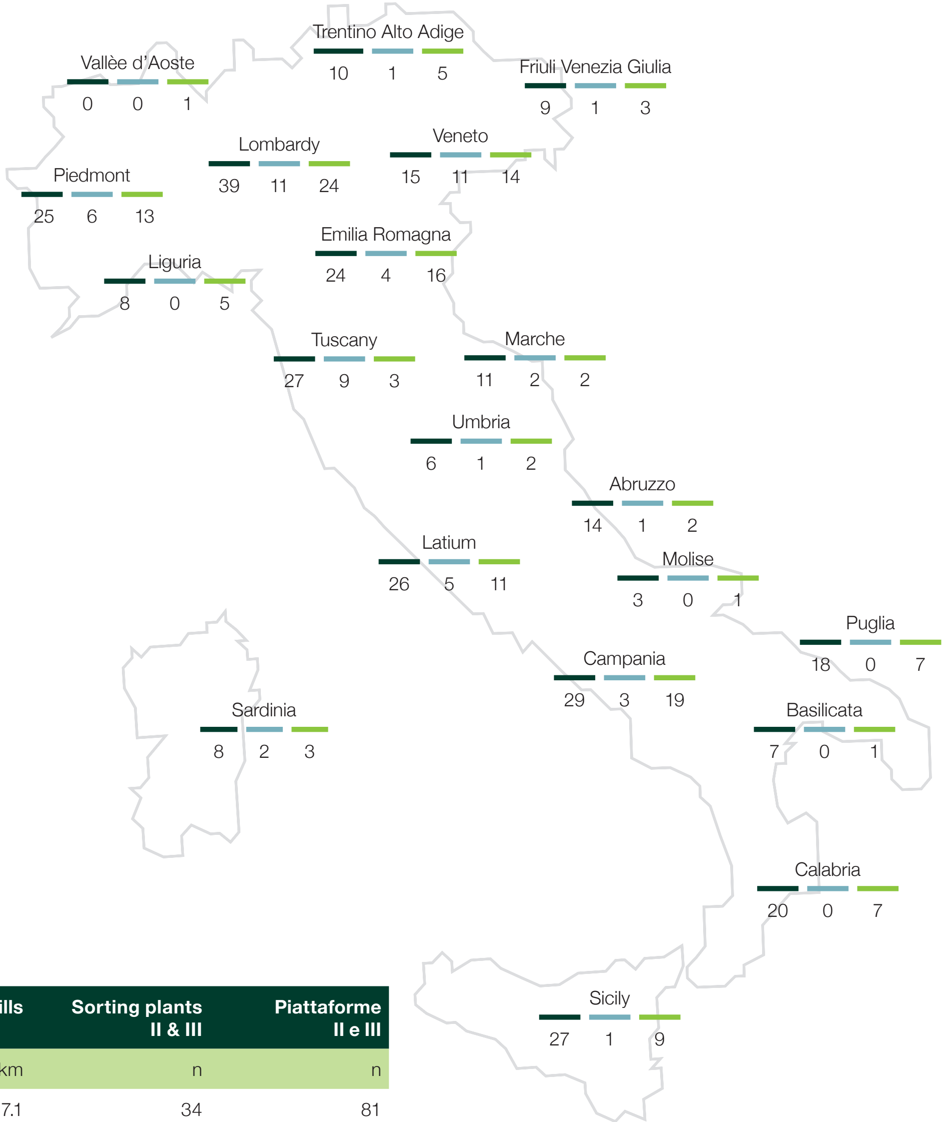
Table 8
Quality of the collected material (mean trend of foreign fractions). 2013-2014 comparison by macro-areas.
(Source: Comieco)

	Year 2013		Year 2014		Δ 2013-2014
	Analyses	Foreign fraction	Analyses	Foreign fraction	Foreign fraction
	n	%	n	%	%
1.01+1.02					
North	311	1.83	231	2.12	0.29
Centre	171	2.73	130	2.66	-0.07
South	381	3.04	363	2.84	-0.20
ITALY	**863**	**2.54**	**724**	**2.58**	**0.04**
1.04+1.05					
North	401	0.28	186	0.51	0.23
Centre	222	0.53	104	0.55	0.02
South	313	0.60	281	0.64	0.04
ITALY	**936**	**0.45**	**571**	**0.58**	**0.13**

Checks point out to high-quality collection, also in the light of new and more accurate testing methods.
The quality and checks area poses the main challenges to the new General Agreement.

Figure 10
The recycling network, year 2014.
(Source: Comieco)

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



Area	Sorting plants	Paper mills	Sorting plants II & III	Piattaforme II e III
	n	km	n	n
North (*)	130	17.1	34	81
Centre	70	16.3	17	18
South	126	17.6	7	49
TOTAL	**326**	**17.2**	**58**	**148**

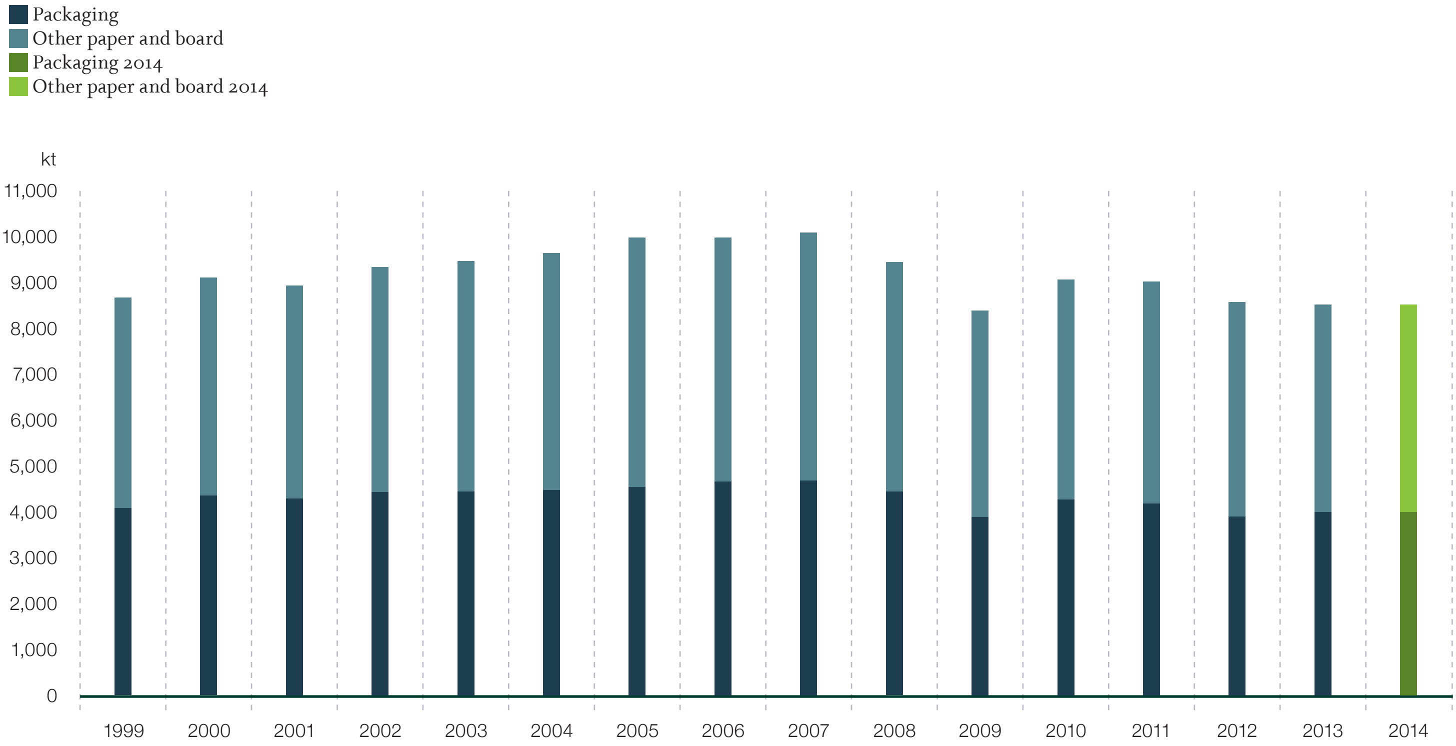
(*) one paper mill is based within the territory of the Republic of San Marino

Table 9
Paper and board production in 2014.
(Source: ISTAT data processed by Assocarta and Assocarta estimates)

		Production (A)	Import (B)	Export (C)	Apparent consumption (A+B-C)
PACKAGING (paper and board)	t	4,123,379	2,664,231	1,346,374	5,441,236
Δ vs. 2013	%	**0.4**	**6.6**	**3.7**	**2.5**
OTHER PAPER AND BOARD (paper for graphic and hygienic-sanitary use)	t	4,525,723	2,285,845	2,496,276	4,315,292
Δ vs. 2013	%	**-0.4**	**0.0**	**2.1**	**14.4**
TOTAL PAPER PRODUCTION	t	8,649,102	4,950,076	3,842,650	9,756,528
Δ vs. 2013	%	**0.0**	**3.4**	**2.7**	**0.6**

Domestic consumption of paper for recycling is established vs. an upswing of import volumes.

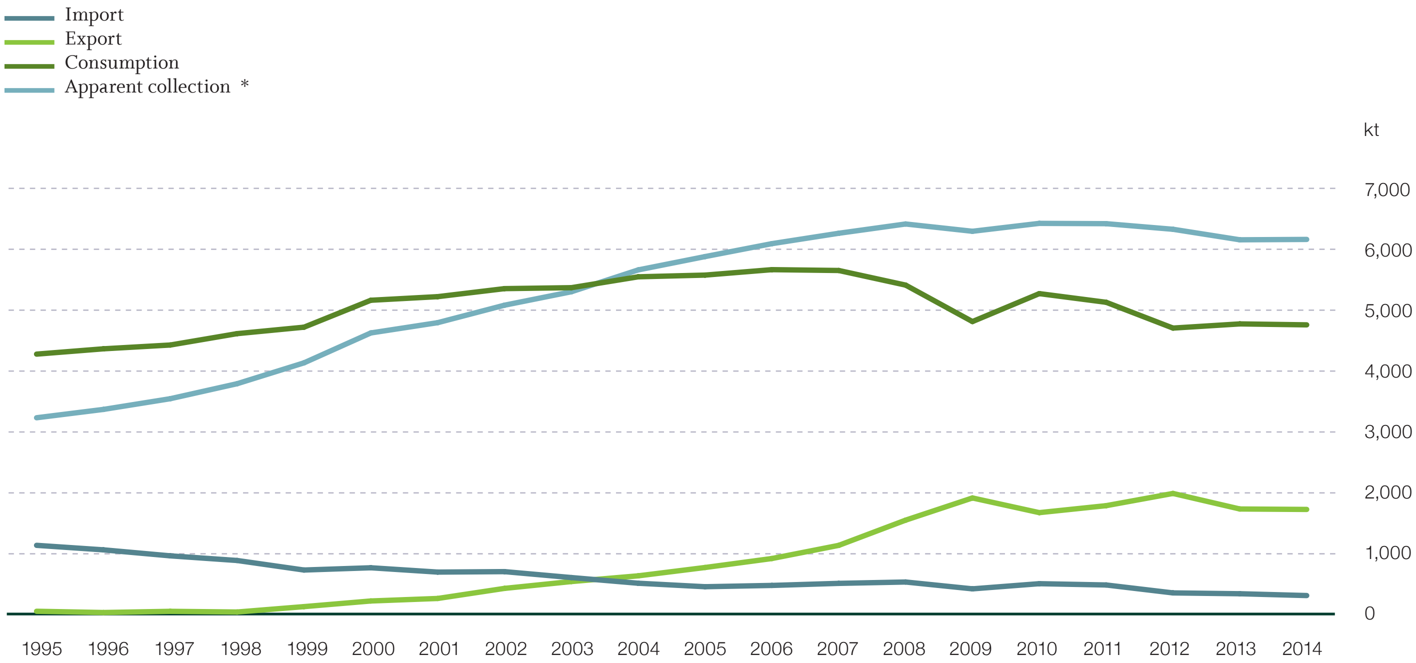
Figure 11
Paper and board production. 1999-2014 historical data set.
(Source: ISTAT data processed by Assocarta and Assocarta estimates)



	Paper production (kt)															
	1999	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
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	4,109	4,123
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	4,543	4,526
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**	**8,652**	**8,649**

Cellulose-based product manufacturing is stable.

Figure 12
Consumption, import, export of paper for recycling and apparent collection* - 1995-2014 period.
(Source: Assocarta data processed by Comieco)



*Apparent collection: Consumption + Import – Export

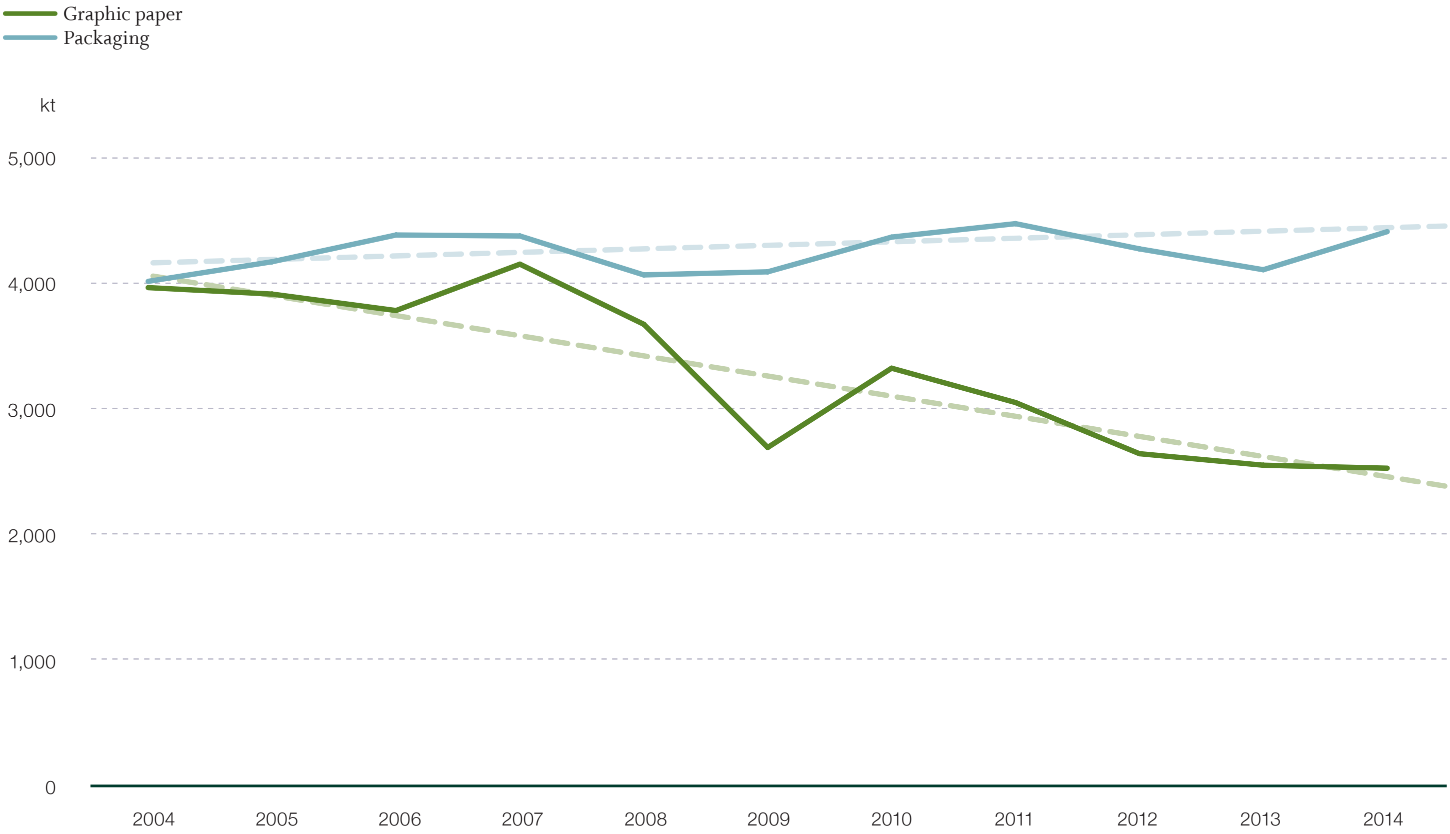
Table 10
Consumption, import, export of paper for recycling and apparent collection*- 2013-2014 variations.
(Source: Assocarta data processed by Comieco)

	2013	2014	Δ 2013-2014
	kt	kt	%
Import	338	310	-8.4
Export	1,685	1,678	-0.4
Consumption	4,715	4,700	-0.3
Apparent collection	6,062	6,068	0.1

*Apparent collection: Consumption + Import – Export

The crucial role of export is confirmed for the management of the collected paper for recycling.

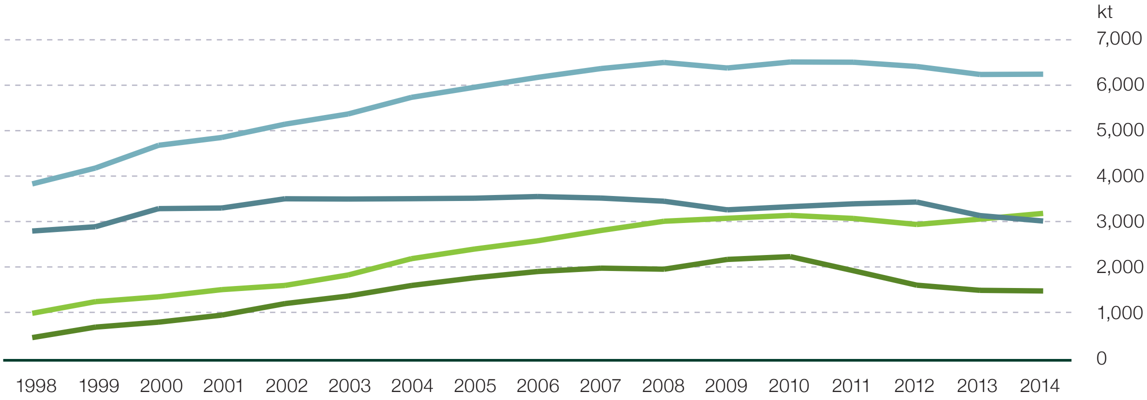
Figure 13
Use of cellulose-based products by macro-categories. 2004-2014 historical data set.
(Source: Assocarta data processed by Comieco)



The use of packaging is moderately increasing.
On the other hand, the use of graphic paper decreases. The trend was implemented in the new Technical Annex, which provides for a 35% incidence of packaging vs. mixed paper collection by 2017.

Figure 14
Overall and municipal paper and board collection in Italy.
1998-2014 historical data set.
(Source: Comieco)

Apparent paper and board collection
Private collection
Separate paper and board collection
Separate paper and board collection under the agreements

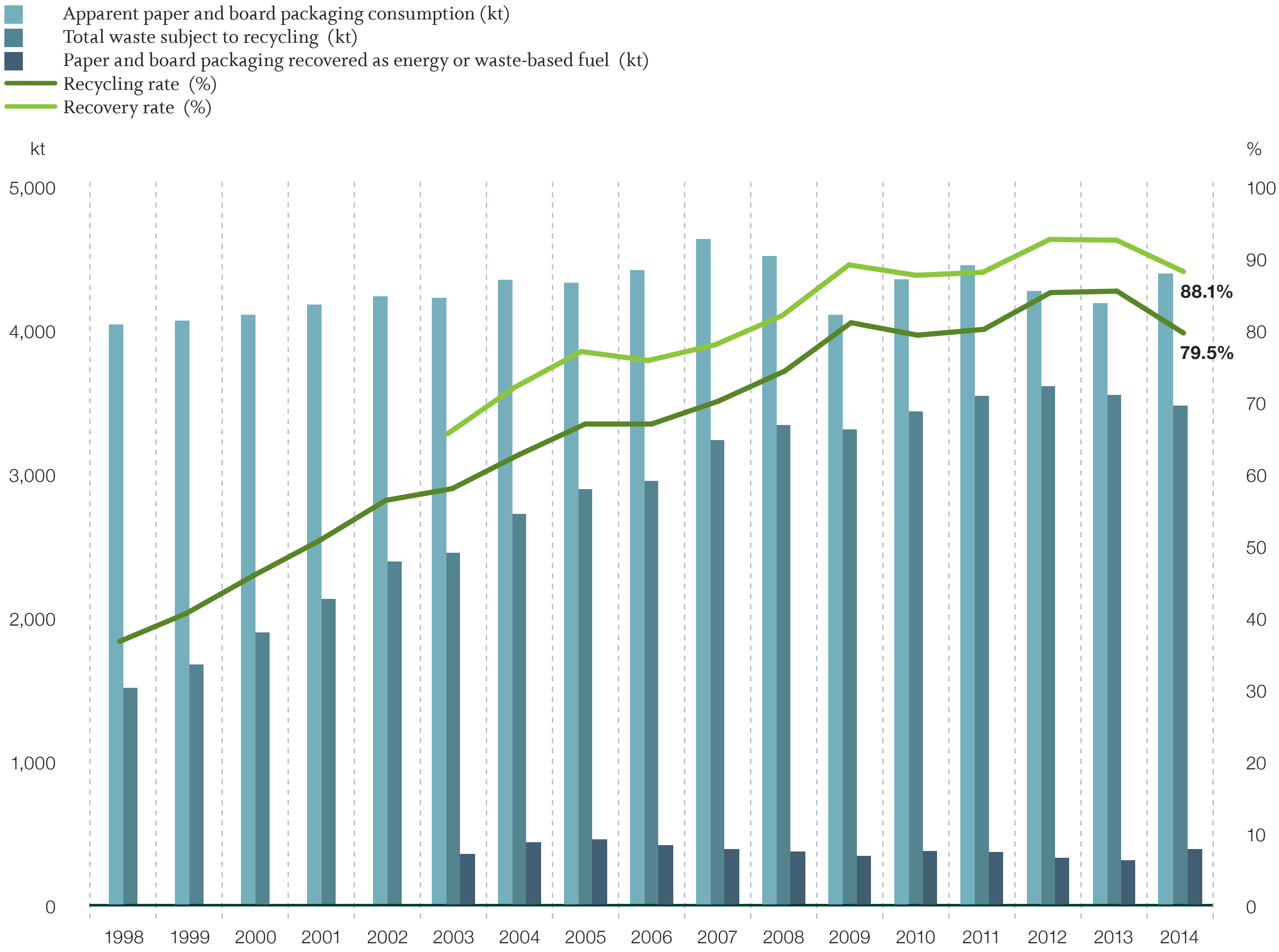


Comieco is a major player in the general management of paper and board collection, thus confirming its supporting role on its market.

		1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Apparent paper and board collection	kt	3,749	4,084	4,565	4,730	5,011	5,227	5,578	5,792	6,001	6,187
Municipal SC of paper and board	kt	1,001	1,247	1,349	1,501	1,589	1,810	2,154	2,358	2,532	2,750
Municipal SC of paper and board under the agreements	kt	485	706	811	959	1,202	1,362	1,584	1,747	1,879	1,950
Private collection	kt	2,748	2,837	3,216	3,229	3,422	3,417	3,424	3,434	3,469	3,437
Municipal SC of paper and board under the agreements vs. apparent collection	%	**12.9**	**17.3**	**17.8**	**20.3**	**24.0**	**26.1**	**28.4**	**30.2**	**31.3**	**31.5**

		2008	2009	2010	2011	2012	2013	2014	Δ t 1998-2014	Δ% 1998-2014
Apparent paper and board collection	kt	6,316	6,199	6,326	6,321	6,231	6,062	6,068	**2,319**	**61.9**
Municipal SC of paper and board	kt	2,945	3,008	3,069	3,004	2,877	2,991	3,111	**2,110**	**210.8**
Municipal SC of paper and board under the agreements	kt	1,928	2,134	2,193	1,895	1,591	1,482	1,469	**984**	**202.9**
Private collection	kt	3,371	3,191	3,257	3,317	3,354	3,071	2,957	**209**	**7.6**
Municipal SC of paper and board under the agreements vs. apparent collection	%	**30.5**	**34.4**	**34.7**	**30.0**	**25.5**	**24.4**	**24.2**		

Figure 15
Achieved paper and board packaging recovery and recycling targets.
1998-2014 historical data set .
(Source: Comieco)



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

Table 11
Paper and board packaging recovery and recycling targets achieved in 2014.
(Source: Comieco)

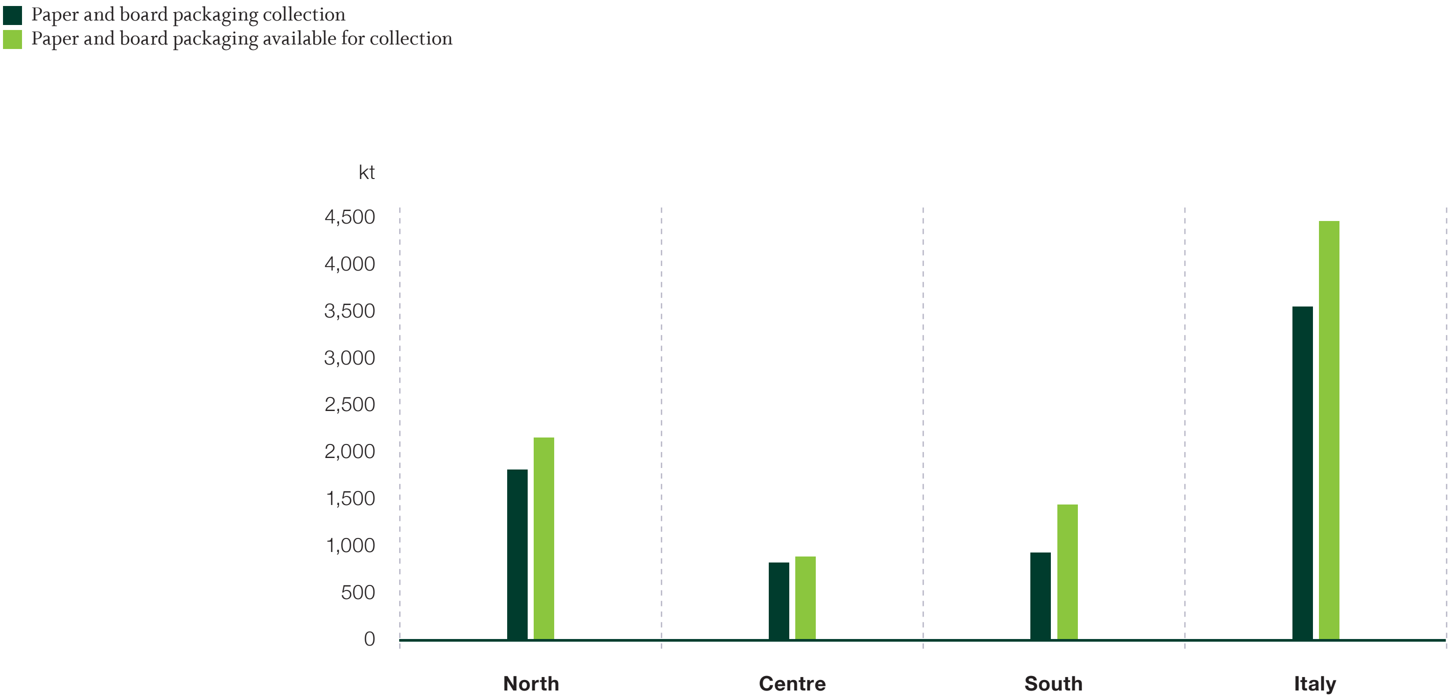
Calculation of recycling and recovery rates (values in tons)	Year 2014	Δ 2013-2014
Apparent paper and board packaging consumption*	4,377,829	5.0%
Paper and board packaging from 1.01+1.02 (paper and packaging) recycled in Italy	387,102	7.0%
Paper and board packaging from 1.04+1.05 (packaging only) recycled in Italy	1,990,302	-1.4%
Paper for recycling originating from packaging recycled abroad	1,104,145	-4.1%
TOTAL RECYCLED PAPER AND BOARD PACKAGING	**3,481,548**	**-1.4%**
PAPER AND BOARD PACKAGING RECOVERED AS ENERGY	**377,722**	**27.3%**
RECOVERED PAPER AND BOARD PACKAGING	**3,859,271**	**0.8%**

RECYCLING %	**79.5%**
ENERGY RECOVERY %	**8.6%**
RECOVERY %	**88.1%**

*The apparent consumption data for 2013 was adjusted by Conai, the apparent consumption data for 2014 includes tubes and rolls subject to the environmental contribution as of 1/1/2014

Rate calculation criteria changed during the year: data on apparent consumption includes tubes and rolls subject to the Conai environmental contribution as of 1/1/2014. Notwithstanding this, recycling and recovery results are confirmed above the pipeline targets.

Figure 16
Paper and board packaging collection indexes achieved in 2014 by macro-areas.
(Source: Comieco)

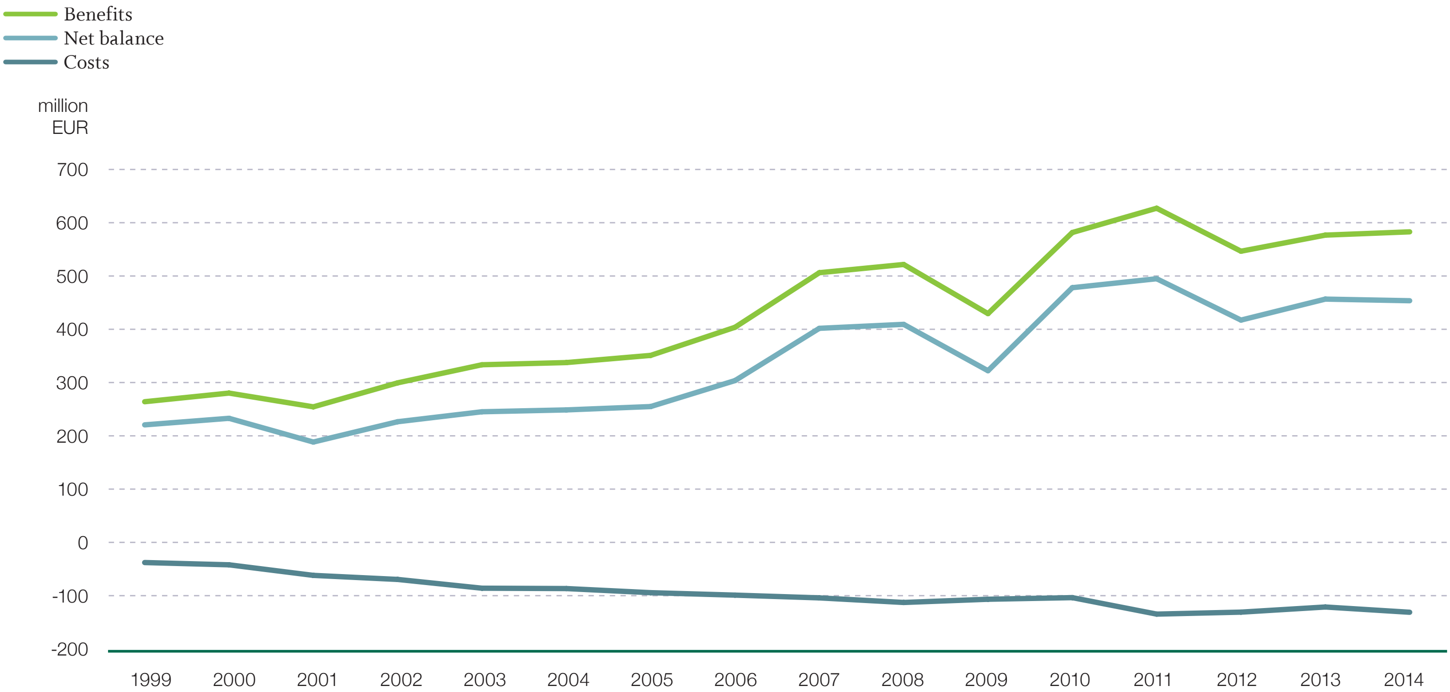


		North	Centre	South	Italy
Paper and board packaging collection	kt	1,775	799	907	**3,481**
Collection index	%	84.2	92.7	64.6	**79.5**

Note:
The “Collection index” estimates the collection level in public and private areas vs. the apparent consumption of paper and board packaging available for collection.

Paper and board packaging collection can increase particularly in the South, where the Consortium has implemented projects to strengthen services and improve citizen information.

Figure 17
Annual balances of paper and board collection and recycling in Italy. 1999-2014 historical set.
(Source: Althesys model processed by Comieco)



		1999	2014	Total 1999-2014
Costs	SC differential	-35.9	-109.3	-1,230.7
	Non-generated energy	-7.3	-17.2	-279.4
	TOTAL	**-43.2**	**-126.5**	**-1,510.2**
Benefits	Avoided emissions	50.9	21.7	938.5
	Non-disposal	106.1	356.8	3,554.3
	Generated raw material	68.7	101.2	1,156.9
	Generated employment	34.9	86.0	1,055.1
	TOTAL	**260.6**	**565.7**	**6,725.8**
Net balance	**TOTAL**	**217.4**	**439.2**	**5,215.7**

The economic benefits of separate collection amount to over 400 million EUR in 2014.
The total impact is above 5 billion EUR in 16 years.

Table 12
Annual balances of paper and board collection and recycling in Italy. Detailed by regions for 2014.
(Source: Althesys model processed by Comieco)

Regions	Inhabitants	SC of paper	Net benefit	Net benefit
	n	t	EUR	EUR/ab
Piedmont	4,436,798	267,896	36,046,264	8.1
Vallèe d'Aoste	128,591	9,336	1,360,485	10.6
Lombardy	9,973,397	548,759	66,904,053	6.7
Trentino Alto Adige	1,051,951	83,988	12,238,627	11.6
Veneto	4,926,818	293,582	46,068,522	9.4
Friuli Venezia Giulia	1,229,363	74,056	12,672,365	10.3
Liguria	1,591,939	91,158	11,487,582	7.2
Emilia Romagna	4,446,354	359,227	44,730,557	10.1
NORTH	**27,785,211**	**1,728,002**	**231,508,454**	**8.3**
Tuscany	3,750,511	267,782	34,040,136	9.1
Umbria	896,742	55,210	7,697,370	8.6
Marche	1,553,138	104,219	22,471,621	14.5
Latium	5,870,451	332,068	44,138,145	7.5
CENTRE	**12,070,842**	**759,280**	**108,347,271**	**9.0**
Abruzzo	1,333,939	67,990	11,343,125	8.5
Molise	314,725	6,565	557,488	1.8
Campania	5,869,965	198,572	51,085,393	8.7
Puglia	4,090,266	137,250	10,859,050	2.7
Basilicata	578,391	17,087	1,359,334	2.4
Calabria	1,980,533	47,074	4,857,930	2.5
Sicily	5,094,937	76,357	5,740,791	1.1
Sardinia	1,663,859	73,195	13,577,759	8.2
SOUTH	**20,926,615**	**624,091**	**99,380,871**	**4.7**
ITALY	**60,782,668**	**3,111,373**	**439,236,597**	**7.2**

Effective and efficient separate paper and board collection is still an untapped opportunity across the national territory.

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tons of paper for recycling were recycled every minute in 2014 in Italy

Note on the method

In order to ensure appropriate understanding of data, it should be noted that challenges were still encountered in collecting the complete data of the individual southern regions, except for Puglia and Sardinia, where careful monitoring is in place. The new timeframe for publication of the ISPRA 2014 Waste Report (with 2013 data), released at the end of July of last year, was very helpful in that it made up for the one-year gap characterizing the releases of previous years.

This provides a fundamental tool both to carry out detailed checks on paper and board data and for the possibility to review paper and board management within the broader context of urban waste and separate collections. Estimates could therefore be improved by analyzing trends for all the fractions. The ANCI-CONAI data base operated by ANCITEL Energia & Ambiente was also very helpful.

Several changes were made vs. the previous edition.

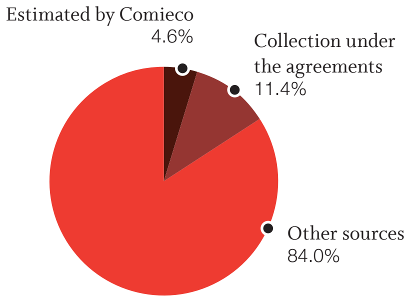
The figure for collection in Emilia Romagna, Lombardy, and Friuli Venezia Giulia and the related data (area and national total, per capita, etc.) was updated vs. the year 2013.

The share of separate paper and board collection not managed by the Consortium was defined using data processed by several organizations that monitor, or manage, waste flows (ISPRA; Regions, Agencies, Provinces and Work Groups, ANCI, Cities, operators, plants, etc.).

The data available to Comieco within the framework of the management of agreements was compared against data obtained from "third-party" sources to check for consistency and, if necessary, for focused analysis.

Whenever "official" data was not available, Comieco estimated the provincial level of collection 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, albeit at different efficiency levels. In other words, whenever a different data source was not available, the per-capita data on collection by the parties under the agreements was applied with province-based detail also to the inhabitants not involved in the agreements with the Consortium. As to evaluations vs. 2014, constituting the object of this Report, 84.0% of collection data comes from third-party sources, and partially overlaps to the data available to Comieco; 11.4% 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 4.6% is based on estimated amounts.

Sources and methodology.



80%

is the recycling rate of paper and board packaging collected in 2014

Comieco

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of Paper and Board Packaging

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