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25 anni comieco

Collection, Recycling,
and Recovery of paper
and board

15th Report

2009

July 2010

comieco
Consorzio Nazionale Recupero e Riciclo
degli Imballaggi a base Cellulosica

52.6 kg

is the quantity of paper and board
collected separately on average
by each Italian citizen in 2009

Contents

Increase of paper and board quantities collected in 2009:

+5.2%

Happy birthday, Comieco!

No crisis for separate paper and board collection – this is definitely the one most important message conveyed by the 15th Report for the year 2009. From Autumn 2008 through the best part of 2009 consumptions and production declined significantly in Italy and all over the world: paper production fell by 11.2% in 2009, back to the 1998 level; packaging consumption decreased by 9% compared to the previous year, and municipal separate collection grew by 5.2% to above 3 million tons.
While on one hand this last figure shows that separate collection is a widespread good habit, now established also in the south where collection grew by 11.8%, on the other it demonstrates that the guaranteed recycling system implemented with the CONAI-Consortia agreements can work without interrupting collection also at times of reduced industrial demand and collapse of secondary raw material markets, unlike in other Countries, where collection was about to stop for lack of outlets.
The paper and board recycling chain in Italy, coordinated by Comieco, from the Cities to the paper mills, continues to ensure the recovery of the material collected throughout the national territory and the payment of the considerations defined by the new ANCI-CONAI Agreement, finalized in the second half of the year.
In the last months of 2009, the demand for recovered paper improved both in Italy and abroad, promoting the recycling of the material collected from households, as well as at commercial and industrial level.
In this context, the paper and board packaging recycling rate further increased and is now above 80%: in other words, 4 out of 5 paper and board packaging units used are now collected separately and recycled.
Back to the total paper and board collection, the analysis of environmental cost-benefit ratios for the community sees a positive balance of about 300 million EUR for 2009. The cumulative data for the 1999-2009 period points out to a net benefit of over 3 billion EUR.
But why this title for the introduction?
This year Comieco celebrates its 25th birthday, in that it was established by paper manufacturers and processors as a voluntary organization for the promotion of recycling in 1985, long before turning into a Consortium, pursuant to the rules on packaging recycling, in 1998.
These twenty-five years have seen the establishment of municipal separate collection in

our Country, the achievement – for once in due time based on the European rules – of the packaging recycling targets, and the independence from foreign countries for the procurement of the recovered paper required for the paper recycling process, which ranks among the first four in Europe by size.
In twenty-five years, municipal separate paper and board collection grew from 250thousand to over 3 million tons, generating significant environmental and economic benefits and helping turn the industrial recycling sector into the backbone of the Italian green economy.
Recyclable paper and board packaging obtained from renewable sources is often produced with recovered paper obtained from separate collection and, at the same time, has greatly reduced the use of raw materials, energy, and processing scraps.
New challenges for the future include further increasing paper and board collection, improving the quality and efficiency of collection, striking a balance between duties and the market in preserving the recycling guarantee throughout the national territory for all the collected amounts, achieving the EU target of recycling at least 50% of domestic paper and board waste, optimizing paper and board packaging in line with the European strategy for sustainable production and consumption.
Happy birthday, Comieco.

Piero Attoma
President, Comieco

The paper and board recycled
from 1999 to 2009 equals the volume

of 196 landfills

that were not built in Italy
thanks to separate waste collection

Introduction

The Annual Report of Comieco on separate paper and board collection is now at its fifteenth edition. This achievement comes in a very complicated year for the paper sector, which obviously started suffering from the impact of macroeconomic conditions on the global market as early as at the end of 2009.
A few analytical elements had already been introduced with the past edition. This year's report completes the overview of 2009 and frames it within an historical data set that provides interesting food for thought about the future of collection and recycling in the next few years.
Separate paper and board collection becomes more and more established as a daily practice of the Italian citizens also through collection facilities whose efficiency and collection yields are constantly improving. This phenomenon concerns all parts of the country, except for certain local situations that are reviewed more closely below.
This translates into an estimated net environmental benefit still above 300 million EUR for 2009.

1.
No crisis for recycling

In what can be referred to as the “annus horribilis” of the paper industry, recycling is one of the few sectors that did not suffer from the crisis.
Separate paper and board collection at municipal level is close to 3.1 million tons, and increased by just more than 150thousand tons (+5.2%).

While this increase is below last year’s figure, it falls within a general picture that sees a decline of urban waste production, but a growth of all separate collections (+9%, in line with 2009). In other words, the amount of waste meant for disposal or recovery beyond recycling declined by 4%, or 900thousand tons. The growth of paper and board collection was particularly strong in the northern regions of the country, which contributed with 50% (76thousand tons, equal to +4.9%). The most encouraging sign comes from Liguria, which always ranked last in the past few years. For 2009 it shows an interesting 11.3% increase, by which it is now in line with the national average per-capita collection rate (52.3 kg/inhabitant per year). Lombardy, the best performing region in absolute terms, was close to 600thousand tons, and collection in the region improved year after year at a high, gradually increasing, and regular pace.

In terms of absolute growth, the north was followed by the south. After exceeding 500thousand tons in 2008, it now recycles 60thousand tons – 16% up – of newly collected material, despite some critical conditions in such important regions as Sicily (-7.4%) and Calabria (-1.8%). In these two regions, even more than last year, financial and management challenges – e.g. the case of Palermo – resulted into a decrease of about 7thousand tons of the collected paper and board.

On the other hand, Campania contributed with over 50% to the improvement in the South with +30thousand tons, and Sardinia, with 46 kg of per-capita collection, was the only southern region with figures comparable to the Italian average. Puglia also deserves mentioning: with a 13% growth it is starting to take profit from the investments made in the past few years in services.
In the centre (+2.6%), a growth was

recorded in all four regions, though with some distinctions.
In Tuscany (+1.7%), collection can now be deemed mature, while Marche and Umbria are improving at rates above the national average. Latium, and Rome in particular, seem to be at a standstill. The growth rate (+1.9%) was half of the 2008 figure – when Rome was a driving force – and the per-capita yield was the only figure below the national average in the four regions considered. This region can be certainly identified as a major focus for future activities, considering its growth potential and a significant and well-established local production capacity.
Overall, with a stable or slightly declining urban waste production, a growth of separate collection in line with the previous year (8-9%) is expected for 2009, corresponding to one million tons more.
If the focus is shifted to the present year, projections for separate paper and board collection allow to quantify further growth in over 100thousand tons.

An analysis of the period starting in 1998 – when the consortium system was established – highlights an increase from 1 to over 3 million tons collected every year. Globally, over 24 million tons of paper and board were recycled and thus taken from other forms of disposal.
The growth amounted to 142% in the north, with a value of over 1.8 million in 2009 alone. In the centre, 700thousand tons collected last year amounted to two and a half times the quantity collected in 1998. The south increased from 50thousand tons in 1998, now the amount collected in Abruzzo alone, to over 560thousand tons. This means that each southern citizen last year collected in one month as much as he or she had collected in the whole 1998 year.
It should further be noted that Sardinia, which used to be last in ranking, is now by far a reference region for the southern macro-area.
For the first time this year the review of volumes includes the outcome of developments in urban waste management starting from the 1980s, when the first rules on waste management were enforced and well-organized waste management practices were introduced.
The emerging picture is extremely interesting. Urban waste production grew from about 14 to over 32 million tons, starting from the mid 1980s and continuing through about 20 years, then stabilizing as of 2007.

Within this trend, the input of separate collections, until the second half of the 1990s, was only marginal.
The enactment of Legislative Decree No. 22 in 1997, also known as "Ronchi Decree", caused some discontinuity by implementing the EU principles for integrated management and shared responsibility, with particular reference to the identification of separate collection as the primary waste management form.
As of the late 1990s, the growth rates of separate collection were reversed and started gradually eroding the amount of non-separate waste to be disposed of in landfills or otherwise managed with methods hierarchically inferior to separate collection.
In this process, paper and board collection constantly accounts for 30%. Compliance with the legal targets as rates of separate urban waste collection introduced in 1997 and gradually increased with the rules amending and integrating the "Ronchi Decree" is still to be achieved.

In this scenario, Comieco was established in 1985 as an association of parties involved in the environment-friendly management of paper and board packaging. A strategic vision that, in those years, gradually turned into reality and contributed to the gradual development of paper and board collection as a driver for environment-friendly waste management.

2. Collection subject to agreements

The consortium activity falls within the above framework. In 2009, the operators entrusted 2.1 million tons of paper and board to the Consortium for subsequent recycling. This figure has grown by about 200thousand tons compared to the previous year. The share managed by Comieco is 69% of the total municipal separate paper and board collection and accounts for just more than one-third (24.4%) of the apparent recovered paper collection in the country.
For the best part of 2009 the recovered paper market saw its ability to ensure recycling significantly decline, and additional quantities were therefore included in the guaranteed agreement system. At this stage the Consortium, through the recyclers related to it, perfectly played its role of recycling

guarantor consistently with the rules, allowing a growing number of parties to contribute and thus ensuring a regular collection service.

3. Collection yields

Total per-capita collection in Italy amounts to 52.6 kg/inhabitant per year vs. about 50 in 2009. Trentino Alto Adige (83.5 kg/inhabitant per year) in the north, Tuscany (86.9 kg/inhabitant per year) in the centre, and Sardinia (46.4 kg/inhabitant per year) in the south are confirmed as first in ranking.
The other regions are in different situations. While Emilia Romagna (82.8 kg/inhabitant per year) and Piedmont (80.8 kg/inhabitant per year) threaten the primacy of Trentino in the north, in the centre the gap between Tuscany and the other regions is still significant, even if Umbria (61.0 kg/inhabitant per year) and Marche (51.6 kg/inhabitant per year) are moving forward.
In the south, the gap between Sardinia and the other regions is increasing, showing that interesting opportunities still exist. This assessment requires special attention. On one hand the inhomogeneous distribution of paper and board consumption through the different use channels (small and large business activities, services, households) should be taken into account; on the other, different collection rates for packaging paper and graphic paper fractions should be evaluated.
As to the first type, related to collection from business activities, the collection yields are homogeneous throughout the region and usually have a more than satisfactory quality. Household service requires more attention in order to improve collection yields, as well as the quality of the materials provided to the preliminary processing plants.

4. Considerations: significant resources

Higher managed quantities translate into increased resource transfers at local level.
The economic investment of the Consortium grows from 89.2 to 93.8 million EUR to which almost 5 million EUR paid directly by recyclers should be added.
Overall, just less than 100 million EUR/year are provided to support collection to cover the cost gap in services.
By the end of 2008, i.e. at the closing of the second ANCI-CONAI cycle, the total transfer amounted to 604 million EUR, or just less than 700 if the contribution for this first year of operation of the 2009-2013 agreement is considered.
In the 1998-2009 period, these resources allowed to recycle over 8.7 million tons of paper and board packaging.

5. Audits and quality

Higher collected amounts require interventions aimed at improving the quality of the collected materials.
The ANCI-CONAI General Agreement, effective as of April 1, 2001, saw a reduction of the first quality level from 5% to 3% for 1.01+1.02 and from 2% to 1.5% for 1.04+1.05.

Compliance with these parameters ensures maximum considerations and no additional charges for the provider.
These are ambitious values that demand careful and regular service provision. Moreover, the new thresholds are consistent with the information and results of almost 2,400 samplings performed during 2009.

The mean rate of foreign fractions in 1.01+1.02 is 2.9%, constantly below 3% since 2006.
An even more positive figure is recorded for board collection flows in business activities (1.04+1.05). The mean value of foreign fractions recorded last year was 0.7%, in line with the figure of the previous year and constantly below the first quality level for four years now.
At the same time as material monitoring, audits (a total of 183) continued, supported by three specialized organizations, on the parties involved in recycling (parties to the agreements, paper plants, and processors).

The aims of such activities include:
- ensuring clear and reliable data;
- providing guarantees on the system control level;
- ensuring the faultless operation of the system while minimizing litigations.

6. Status of collection in metropolitan areas

Cities are known to represent a privileged observation point to monitor waste management. The analysis of management in the regional capitals provides an overview of all the cases mentioned in the technical annex under the different possible agreement forms (partial, total, by flows, pre/post-processing, etc.).
At the same time, particularly in larger areas that constitute the object of specific focus, perspective elements emerge, which will be reviewed more carefully below.
Some cities deserve specific mention based on the data contained in Table 7.
The least brilliant situations are observed in Catanzaro and Palermo, now suffering an overall waste management crisis.
As far as strengths are concerned, the increase in Bologna has a dual origin: the return to the consortium of parts of collection that were managed outside the agreements in 2008, and a gradual intervention on service with a shift to single-material collection.
Also in the area of "modulation" of agreement options, Trento and Genoa made different choices. The main city of Liguria conveyed larger shares of collected materials through Comieco, while Trento adopted more often recycling channels other than the Consortium.
L'Aquila represents a special case. Despite the earthquake of April 6, 2009, waste management continued, albeit with obvious difficulties. The figure, though negative compared to 2008, is anyway higher than for 2007 and the first months of 2010 also yield encouraging data, confirming the commitment of the city's population, with projections for over 3thousand tons by the end of the year.
The four main regional capitals (Rome, Milan, Naples, and Turin), in addition to Florence, are monitored with special care. Urban waste production in these cities declined by a total of 1.3%. Waste production is stable in Naples (+0.3% or 2thousand

tons), while Rome still sees some increase (1.1%). Florence, Turin, and Milan recorded mean decrease rates around -4%, mostly due to consumption declines.

In general, the amount of produced waste as such is lower (-3.0%), with Rome (-0.5%) increasing the mean data for the most significant declines recorded in the other cities (up to -0.7% in Florence).
In two cases – Milan and Turin – a decline is also recorded in the amounts collected separately. The effect is such that the rate of separate collection still grows anyway.
In Naples, in particular, the improvement is 4.4 percent points, with a total (18.9%) still far from the legal targets anyway.

7.
Recovered paper as a raw material

The local basic processing network is consolidated. The conveyance of the collected material is ensured, within a mean distance of less than 17 km (16.8), by a network of 341 plants in charge of basic material processing.
The recycling of the processed recovered paper is ensured by 66 paper mills – 5 less than in 2008 – identified as terminals within the framework of the signed agreements.
The paper and board share managed by Comieco accounts for 34.4% of the apparent collection (calculated as recovered paper consumption + export – import) of recovered paper within the national territory.
In general terms, apparent recovered paper consumption and the production of paper products declined by over 11%, a result that is even more significant than the remarkable 7% decline of 2008. The most critical period was the first half of 2009, with decrease rates close to 20%. A decline was also recorded in the second half of the year, however combined with moderate signs of recovery.
The overall production of paper products amounted to 6.4 million tons, the lowest figure of the past decade and in line with 1998.
The mix of used raw materials included recovered paper (48.9%) plus new fibres (34.5%) and non-fibrous raw materials (16.6%), with a slight decline of the recovered paper share compared to 2008. In this context the recycling channel represented by exports becomes more important. While, in fact, apparent collection declines, the more limited domestic

consumptions decrease even further. In absolute terms, the net exports of recovered paper, which amounted to 600thousand tons in 2008, were close to one million in 2009.
The growth of exports was driven by a lower domestic demand, as well as by quotations of recovered paper, as reported by the Chamber of Commerce of Milan, that sharply recovered in the second half of 2009. The monthly price increases were unexpected, following the collapse recorded in late 2008, and reached their maximum historical level since 2002 at the beginning of 2010. Such demand mostly comes from Far East markets.

8. Packaging management

Paper and board packaging management is consistent with the general picture described above with respect to the paper sector.
The amount of recycled packaging used for energy recovery is slightly lower (a total of 60thousand tons) than in 2009. At the same time, the amount of apparent paper and board consumption decreases by 10%, from 4.5 to 4.1 million tons.
This data brings the recycling rate to above 80%, while recovery for energy production has an additional incidence of 8 percent points, a value similar to 2008.
Recycling therefore grows globally from 73.8 to 80.4% (+6.6) and total recovery reaches 88.5%. The recycling index grows accordingly, confirming a homogeneous picture for the macro-areas (80% in the north, 85% in the centre, 78% in the south).

9. Recycling generates a value for the community

Separate collection and paper and board recycling have significant positive impacts for our Country, both in economic and in environmental and social terms. These activities, in fact, improve the environment and the quality of life, creating at the same time related business and employment and distributing wealth throughout the territory. The cost and benefit analysis shows that Italy has achieved net benefits for about 3 billion EUR by collecting and recycling 23.3 million tons of paper from 1999 to 2009.

This section contains a brief description of the used method and summarizes the domestic cost-benefit balance calculated on the basis of the accounts of the individual regions.
Moreover, the benefits that the regions can still achieve by improving the present collection performance are described.

Methodology

The balance was built by means of the cost-benefit analysis, considering:

- the economic aspects, i.e. the costs (or missed benefits) and the benefits (or avoided costs) connected with paper and board collection and recycling;
- the environmental impacts, i.e. the costs (missed benefits) and environmental benefits (avoided costs) connected with the collection-recycling system;
- the socio-economic impact of the collection and recycling activities, including the new related business and employment.

The values of the different cost and benefit items were then updated to take into account their distribution in time.
The analysis is founded on differential evaluations based on a comparison of two different scenarios:

- an "historical" scenario that considers the paper and board collection-recycling system from 1999, when separate collection was launched at national level following the "Ronchi Decree," to 2009;
- an alternative scenario that assumes the absence of any separate paper and board collection system and therefore figures out the non-separate management of such amounts; in other words, paper and board are disposed of together with urban solid waste.

The following logical categories are therefore considered:

- the costs of the historical scenario that could have been avoided;
- the benefits of the historical scenario that could have been lost if the alternative scenario had been in place;
- the costs of the alternative scenario that were avoided with the historical scenario in place.

The balance of paper and board recycling in Italy from 1999 to 2009

The national cost-benefit analysis is the result of an aggregation of the individual regional balances.
The separate collection volumes and the

different cost items were analyzed for each region. For some categories in particular, including separate collection and disposal costs, these cost items are closely tied to local peculiarities. In particular, the regions show differences in terms of morphology, socio-economic characteristics, and urban waste management infrastructures. This approach allows to draw a national balance closer to truth and to gain a deeper understanding of the territorial differences characterizing the Country.

In short, the balance for Italy as a whole highlights net benefits for almost 3 billion EUR, a cost balance of about 890 million EUR, and benefits for about 3.9 million EUR. The calculation is founded on different assumed values, subject to a sensitivity analysis of the key variables (collection cost, CO2 emission cost, disposal costs, value of the collected materials). The fair value falls within the range of 1.6 to 4.4 billion EUR.

Below is a brief description of the items considered.

Costs

Differential cost of separate collection:

this item estimates the higher cost of performing separate paper and board collection vs. the cost of non-separate collection of equivalent volumes in time. Reference was made to institutional sources, including the annual reports of ISPRA. The considered costs include the specific ones for each year and for each region. Such values show significant differences between regions (up to threefold between the minimum and maximum) and this may be due to the peculiarities of the different geographies, as well as to the different statistical representativeness of the ISPRA sample.

Costs due to non-generated energy

this item estimates the value of the energy that could have been generated through the incineration of the paper and board volumes collected separately. Based on the total quantity of incinerated waste per year (ISPRA data), it is estimated that about 3.6 million tons of paper and board were not processed from 1999 to 2009, with a non-generation of about 2.8 TWh of energy. The estimate was made at the average annual PUN price (source: GME).

Benefits

Environmental benefits from avoided emissions: this item highlights the positive impact of separate collection on the environment resulting from a reduction of CO_2 emissions due to a more limited use of new raw materials in paper production and to non-disposal, however net of the emissions due to separate collection. Overall, emissions for about 30.5 million tons were avoided. The CO_2 saving (estimated at 1.3 tons per ton of paper) was estimated at the mean annual market prices of emission certificates (EUA).

Economic benefits from non-disposal: in eleven years of separate collection and recycling, 23.3 million tons of paper were subtracted from disposal. The costs avoided through recycling were estimated based on the annual mix of waste management systems (ISPRA data) and on the disposal costs stated in some regional and Comieco reports (landfill disposal costs).

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

Social benefit from generated employment: estimates the benefits resulting from the creation of new activities, related business, and employment allowed by separate collection and related activities. This item is calculated with reference to the number of operators theoretically required to perform separate collection, based on mean technical and operational parameters and on a subsequent comparison with the actual trend of employment in the sector. The money value is based on the gross salary of urban hygiene operators according to the sector's national collective labour contract.

Compared to the balance for the previous year, the current one shows a lower amount despite the growth of volumes, due to multiple factors. These include primarily the lower value of CO_2 emission certificates and, particularly, the sharp decrease of recovered paper prices on the international markets; as much as 73% of the difference between the results for 2008 and 2009 can be attributed to the lower value of the collected paper.

The paper market, in fact, was also heavily affected by the global downturn, and recorded a collapse of secondary raw material prices.

Despite this situation, paper collection and recycling generated a value for the Country, and obtained a highly positive net cost-benefit balance even in negative economic conditions.

The local balances: benefits for the regions in the 1999-2009 period

Each region is characterized by different local, socioeconomic, demographic, and infrastructural conditions that result into quite different regional balances. Therefore the benefit per unit of collected paper can vary significantly.
The regional analysis shows significant differences between the collected volumes and the achieved benefits. The most virtuous regions in terms of unit benefits are mostly in the centre and north.
This reflects the peculiarities of these regions that show high average separate collection levels at competitive costs and the availability of appropriate waste processing and disposal plants. More severe problems are observed in some of the southern regions, where separate collection is still limited and costs (both for separate and non separate collection) are high, also due to severe infrastructural gaps.
Below is a description, by way of example, of a few peculiar situations.
Lombardy shows the maximum paper and board collection value (approximately 5.5 million tons) and the maximum net benefit (approximately 697 million EUR) for the 1999-2009 period. This performance results from the high benefit from non-disposal (the highest among all the regions: about 487 million EUR) due to the prominent use of incineration, which is the most expensive disposal form. Moreover, the region is characterized by low costs both for non-separate urban waste collection and for separate paper and board collection (the lowest at national level for the latter).
On the other hand, **Latium** shows a low net benefit (approximately 142 million EUR) vs. a collected volume of about 1.7 million tons.
This results from the limited benefits from non disposal (148 million EUR) due to the low cost of landfills, which represent the main destination for waste in Latium (75%). However, the costs of separate paper and board collection are very high, also due to the moderate total collected volume. This translates into a cost spread for separate collection (about 134 million EUR) higher than in Lombardy (119 million EUR), which collects volumes about three times as high. In short, Latium has the lowest unit benefit after Calabria and Molise.
Critical situations still exist in Southern Italy. **Calabria**, for example, has the lowest net benefit (67 EUR/t), limited separate paper collection levels (about 289thousand tons in the

1999-2009 period), and a moderate net benefit (about 19 million EUR) resulting from high separate and non-separate collection costs (a higher cost of separate collection of about 21 million EUR, as in Veneto), as well as very low benefits from non-disposal (absence of incineration).
However, the situation is improving in some cases also in the south. **Campania**, in fact, increased separate paper and board collection by 20% in 2009 compared to 2008, thus generally improving its cost-benefit balance compared to the previous year. With a collection of 883thousand tons in the 1999-2009 period, it ranks first in the south in terms of net benefit (about 91 million EUR). Separate collection costs are not low, but anyway below the national average, whereas non-separate collection costs are still very high.

Untapped benefits: potentials vs. 2009

The collection levels achieved by each region allowed Italy to recover growing amounts of paper and board, and therefore create value for the Country as a whole. However some potentials remain untapped.
We estimated the benefits that can still theoretically be obtained on the ground of the collection potential for 2009 calculated by Comieco.
This potential is defined as the quantity of paper and board that can still be collected separately, vs. a technical and economic limit, taking into account the collection level achieved and the quantity that today is still finally disposed of, whatever the adopted methods.
Thus the regional cost-benefit balances for the year 2009 were calculated on the ground of the estimated potential annual separate collection quantities.
In view of calculating the value for the community, the possible increase of the collected paper and board amounts was estimated, along with the possible improvement in terms of efficiency and, therefore, of collection costs. Uniform optimal reference values for the costs of non-separate waste collection and separate paper and board collection were adopted for all the regions. The data of Lombardy, where paper and board collection costs are lowest among the regions, was considered as a realistic benchmark for the Country.
The net benefit for Italy in 2009 would amount to about 446 million EUR, which means 43% up. In this case too, the regional

situation appears quite diversified, ranging from null gaps for the regions that have already reached the estimated potential to 35 million EUR for Latium. While the North generally shows a gap of about 25%, the Centre is around 79%, and the South still shows a potential untapped benefit of about 72%. Thus the achievement of the full separate paper and board collection potential would provide additional net benefits to Italy for about 133 million EUR a year.

In conclusion, the analysis shows that, despite the significant progress made in time, there is still room for further quantitative and qualitative improvement.

However a few strong actions are required in several regions for actual generation of an additional value for the community.

First, more efficiency in separate paper and board collection would reduce or cancel the cost differential vs. non-separate collection.

In some regions, separate collection costs are very similar to non-separate collection costs.

Second, the disposal mode mix needs to be modified along with a reduction of its costs that, whatever the benefits of paper collection and recycling, steal environmental and economic value from the community.

Finally, all the stakeholders should become more conscious of the strategic value of paper collection and recycling, which allowed the Country to support the national industry and prevent significant imports of secondary raw materials from foreign countries (and even increase exports), thus providing a positive contribution to the Italian commercial balance.

Carlo Montalbetti
General Manager, Comieco

93.8 million EUR

were paid by Comieco
to the Italian Municipalities in 2009

Charts and tables

Acronyms

FMS frazioni merceologiche similari
(similar product fractions)
(non-packaging paper and board)
SC separate collection
UW urban waste

% percent rate
n number
t tons
ab inhabitants

Region	Total inhabitants	2009	Δ 2008-2009	Δ 2008-2009
		t	t	%
Emilia Romagna	4,199,669	347,552.1	22,140.7	6.8
Friuli Venezia Giulia	1,209,698	63,573.2	-351.8	-0.6
Liguria	1,609,288	84,188.4	8,537.7	11.3
Lombardy	9,497,939	597,942.2	5,259.6	0.9
Piedmont	4,347,344	347,596.4	28,112.3	8.8
Trentino Alto Adige	988,338	82,517.1	2,473.9	3.1
Vallée d'Aoste	124,263	9,231.0	161.2	1.8
Veneto	4,749,799	292,651.9	9,674.4	3.4
North	**26,726,338**	**1,825,252.2**	**76,007.9**	**4.3**
Latium	5,317,017	251,699.9	4,651.2	1.9
Marche	1,531,248	79,034.7	5,173.8	7.0
Tuscany	3,626,558	315,006.0	5,180.6	1.7
Umbria	869,968	53,105.6	2,743.3	5.4
Centre	**11,344,791**	**698,846.2**	**17,748.9**	**2.6**
Abruzzo	1,306,487	49,002.7	2,162.5	4.6
Basilicata	592,948	13,228.2	724.4	5.8
Calabria	1,999,791	37,905.1	-684.9	-1.8
Campania	5,788,644	181,907.6	30,707.5	20.3
Molise	320,466	5,925.2	1,400.2	30.9
Puglia	4,069,202	127,031.2	14,612.4	13.0
Sardinia	1,656,266	76,882.5	17,031.3	28.5
Sicily	5,014,927	75,283.5	-6,021.2	-7.4
South	**20,748,731**	**567,166.0**	**59,932.3**	**11.8**
Italy	**58,819,860**	**3,091,264.5**	**153,689.0**	**5.2**

Table 1
Trend of total separate paper and board collection by regions. 2008-2009 period.

(Source: Comieco)

Region	1998	1999	2000	2001	2002	2003	2004
	t	t	t	t	t	t	t
Emilia Romagna	114,270	133,787	137,269	149,123	138,111	170,324	194,390
Friuli Venezia Giulia	26,943	32,393	41,020	48,122	43,070	45,392	51,222
Liguria	25,832	30,715	38,362	39,923	41,096	43,798	58,577
Lombardy	361,176	437,058	447,029	459,568	424,133	448,347	464,767
Piedmont	85,589	113,813	119,283	121,956	163,933	196,203	200,371
Trentino Alto Adige	35,666	48,678	50,333	53,986	49,172	54,809	62,402
Vallée d'Aoste	2,449	2,790	3,250	3,948	4,964	5,384	5,999
Veneto	104,888	134,453	145,141	179,956	177,055	210,161	267,922
North	**756,813**	**933,687**	**981,687**	**1,056,582**	**1,041,534**	**1,174,418**	**1,305,650**
Latium	52,202	51,013	54,070	63,023	75,426	141,128	186,038
Marche	25,079	27,786	33,065	35,689	25,844	38,376	45,862
Tuscany	101,785	136,898	157,587	165,467	207,904	212,307	261,035
Umbria	14,892	18,907	23,331	25,895	16,451	35,679	42,892
Centre	**193,958**	**234,604**	**268,053**	**290,074**	**325,625**	**427,490**	**535,827**
Abruzzo	5,857	7,893	10,419	13,132	19,604	21,088	25,565
Basilicata	2,812	3,127	3,362	4,368	4,936	7,077	9,083
Calabria	2,541	3,348	5,430	8,789	21,352	27,215	31,329
Campania	8,116	11,680	22,876	55,986	71,138	74,418	81,764
Molise	605	726	1,325	1,910	927	1,197	1,500
Puglia	22,726	38,906	38,932	45,758	67,558	74,238	82,733
Sardinia	1,330	1,825	2,136	2,564	3,272	6,789	13,152
Sicily	6,235	10,975	14,733	21,478	33,603	56,707	67,852
South	**50,222**	**78,480**	**99,213**	**153,985**	**222,390**	**268,729**	**312,979**
Italy	**1,000,993**	**1,246,771**	**1,348,953**	**1,500,641**	**1,589,549**	**1,870,637**	**2,154,456**

Table 2
Trend of municipal separate paper and board collection by regions. 1998-2009 historical data set.

(Source: Comieco)

Region	2005	2006	2007	2008	2009	Δ '98/'09
	t	t	t	t	t	%
Emilia Romagna	234,753	249,211	297,815	325,411	347,552	204,1
Friuli Venezia Giulia	51,348	64,531	60,959	63,925	63,573	136,0
Liguria	61,945	66,567	60,689	75,651	84,188	225,9
Lombardy	488,688	518,525	576,058	592,683	597,942	65,6
Piedmont	284,076	302,188	330,105	319,484	347,596	306,1
Trentino Alto Adige	67,131	69,270	78,842	80,043	82,517	131,4
Vallée d'Aoste	6,718	7,856	8,523	9,070	9,231	276,9
Veneto	232,967	244,496	261,306	282,977	292,652	179,0
North	**1,427,627**	**1,522,643**	**1,674,296**	**1,749,244**	**1,825,252**	**141,2**
Latium	208,268	212,481	238,025	247,049	251,700	382,2
Marche	51,240	58,641	62,578	73,861	79,035	215,1
Tuscany	273,327	286,788	297,149	309,825	315,006	209,5
Umbria	36,938	38,664	40,471	50,362	53,106	256,6
Centre	**569,772**	**596,573**	**638,223**	**681,097**	**698,846**	**260,3**
Abruzzo	31,841	32,352	36,676	46,840	49,003	736,7
Basilicata	12,257	12,769	12,337	12,504	13,228	370,4
Calabria	34,412	37,165	36,437	38,590	37,905	1,391,7
Campania	87,508	102,893	118,066	151,200	181,908	2,141,3
Molise	1,962	3,880	3,601	4,525	5,925	879,4
Puglia	94,241	107,895	102,921	112,419	127,031	459,0
Sardinia	20,496	37,720	46,440	59,851	76,883	5,680,6
Sicily	77,978	78,990	80,734	81,305	75,283	1,107,4
South	**360,695**	**413,663**	**437,209**	**507,234**	**567,166**	**1,029,3**
Italy	**2,358,094**	**2,532,879**	**2,749,729**	**2,937,575**	**3,091,264**	**208,8**

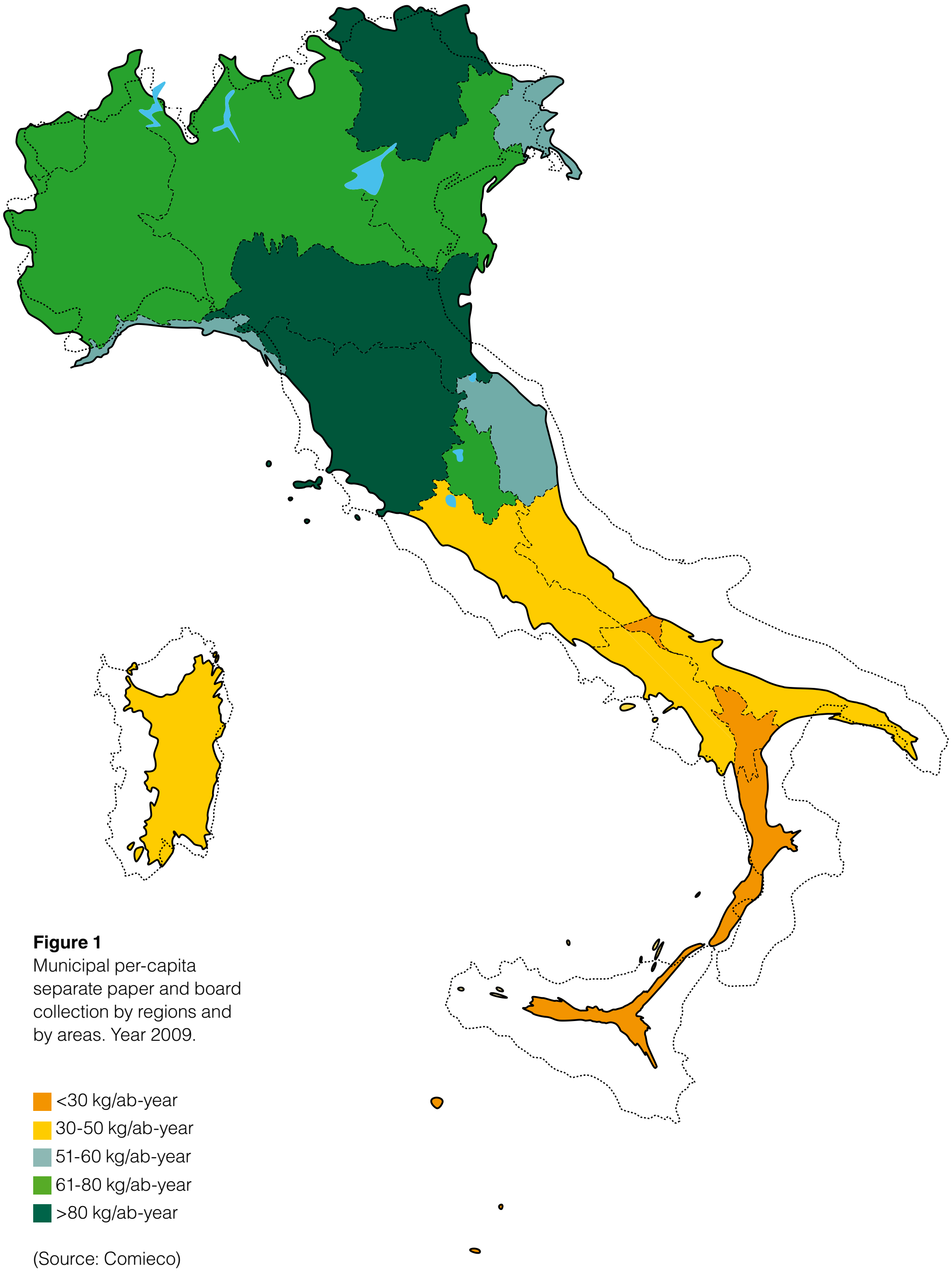


Figure 1
Municipal per-capita separate paper and board collection by regions and by areas. Year 2009.

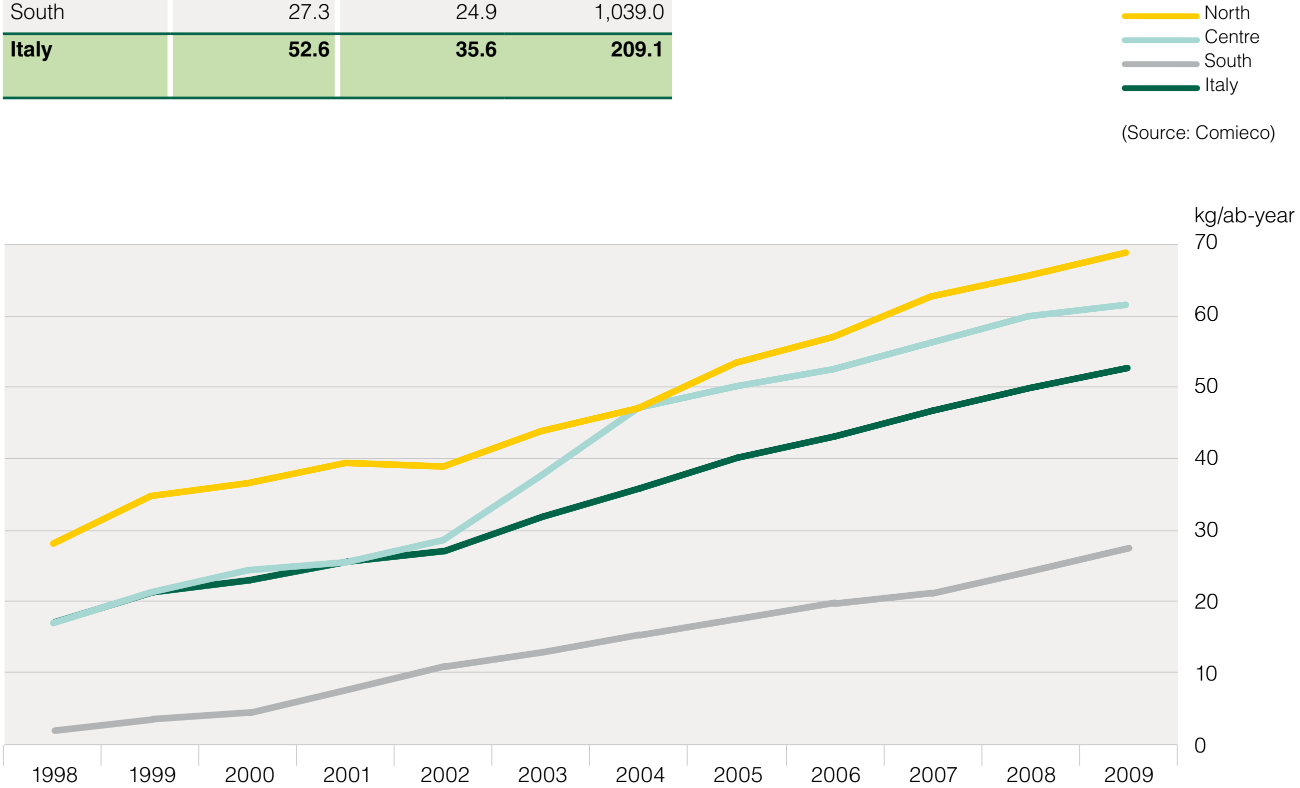
- <30 kg/ab-year
- 30-50 kg/ab-year
- 51-60 kg/ab-year
- 61-80 kg/ab-year
- >80 kg/ab-year

(Source: Comieco)

Region	kg/ab-year
Emilia Romagna	82.8
Friuli Venezia Giulia	52.6
Liguria	52.3
Lombardy	63.0
Piedmont	80.0
Trentino Alto Adige	83.5
Vallée d'Aoste	74.3
Veneto	61.6
North	**68.3**
Latium	47.3
Marche	51.6
Tuscany	86.9
Umbria	61.0
Centre	**61.6**
Abruzzo	37.5
Basilicata	22.3
Calabria	19.0
Campania	31.4
Molise	18.5
Puglia	31.2
Sardinia	46.4
Sicily	15.0
South	**27.3**
Italy	**52.6**

	kg/ab-year 2009	Δ kg/ab 1998/2009	Δ % 1998/2009
North	68.3	40.0	141.3
Centre	61.6	44.5	260.2
South	27.3	24.9	1,039.0
Italy	**52.6**	**35.6**	**209.1**

Figure 2
Municipal per-capita separate paper and board collection by areas. 1998-2009 historical data set.



(Source: Comieco)

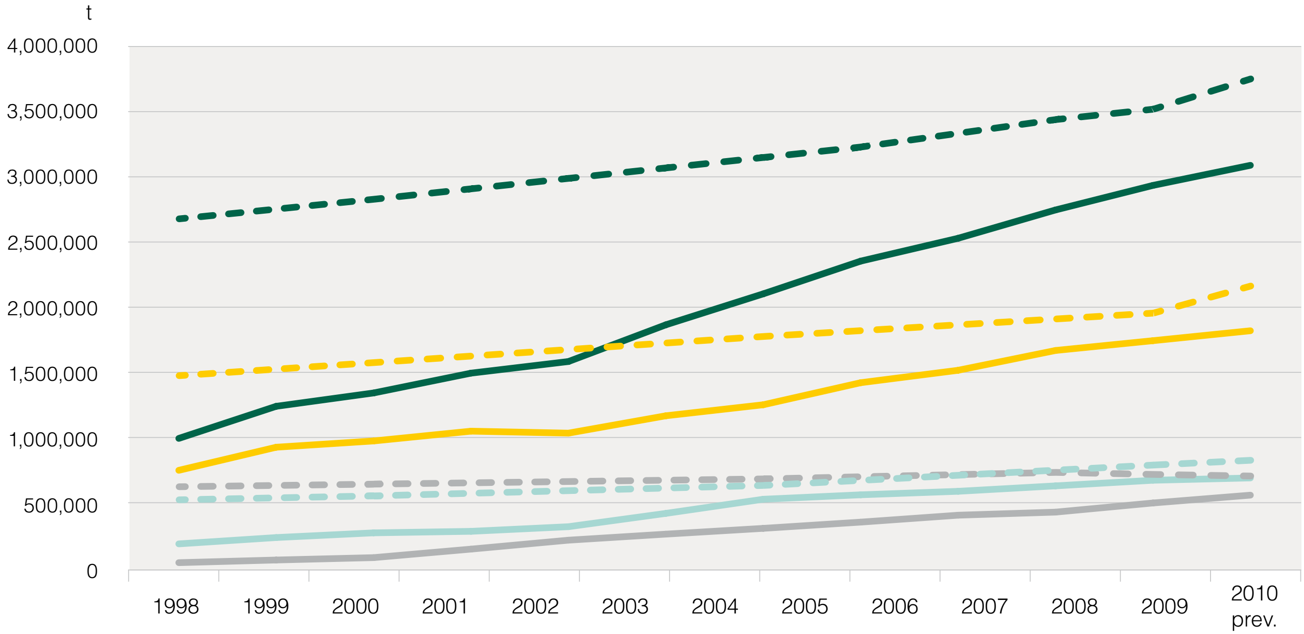
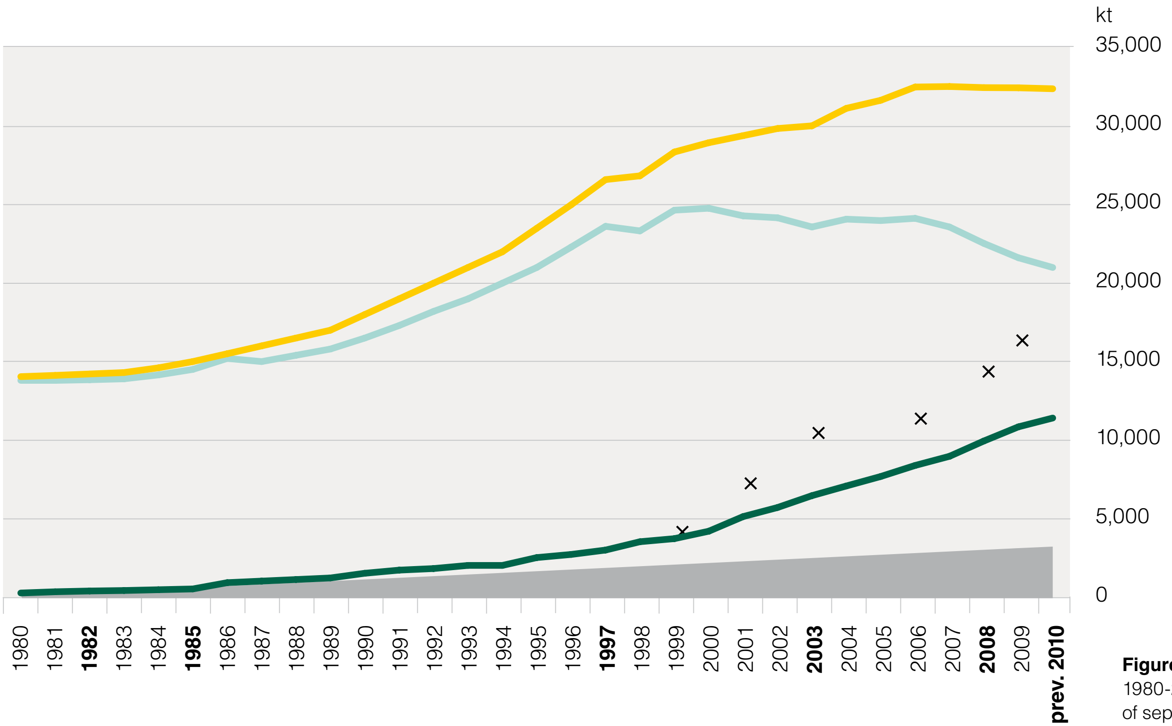


Figure 3
Municipal separate paper and board collection. 1998-2009 trend and forecasts for 2010.

North
Centre
South
Italy
Limit North
Limit Centre
Limit South
Limit Italy

(Source: Comieco)

		North	Centre	South	Italy
2009	t	1,825,252	698,846	567,166	**3,091,264**
2010 prev.	t	1,879,593	715,323	609,147	**3,204,063**



year		1982	1985	1997	2003	2008	2010
what happened		DPR 915	Establishment of Comieco	"Ronchi Decree"	termination of 1st ANCI-CONAI agreement	termination of 2nd ANCI-CONAI agreement	Forecast
urban waste production	kt	14,210	15,000	26,605	30,034	32,472	32,400
waste management with SC	kt	369	500	2,980	6,450	9,937	11,400
non-separate waste	kt	13,841	14,500	23,625	23,584	22,534	21,000
separate paper and board collection	kt	185	250	679	1,871	2,945	3,204

Figure 4
1980-2010: 30 years of separate collection development in Italy.

tot UW t
non separate UW
tot SC
paper and board SC
× tot SC targets to be achieved pursuant to the law

(Source: data processed by Comieco)

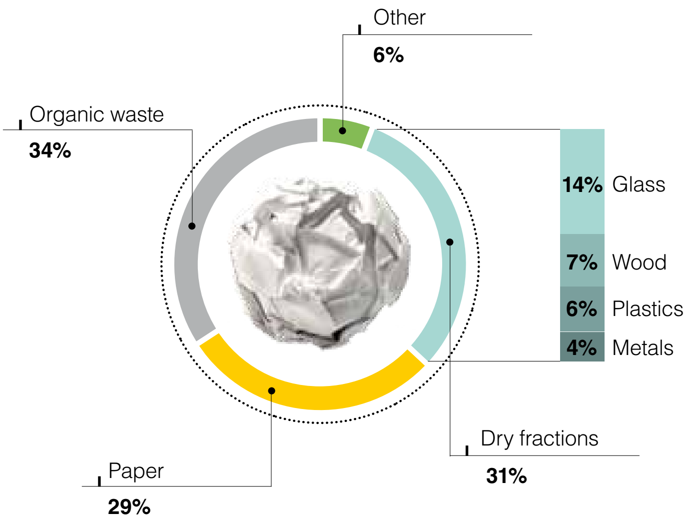
Table 3
Comparison of the production of urban waste, overall separate collection, and municipal separate paper and board collection in Italy.
2008-2009 period.

(Source: Comieco)

		Year 2008 (ISPRA data)	Year 2009 (processed by. Comieco)	Δ % '08-'09 (ISPRA 08/Comieco 09)
UW	t	32,471,591	32,446,092	-0.1%
total SC	t	9,937,200	10,822,748	8.9%
municipal paper and board SC	t	2,934,144	3,091,264	5.4%
% total SC vs. total UW production	%	30.6%	33.4%	
% municipal paper and board SC vs. total SC	%	29.5%	28.6%	

Figure 5
Rate of municipal separate paper and board collection vs. the overall separate collection estimated for 2009.

(Source: Comieco)



			2001	2002	2003	2004	2005	2006	2007	2008	2009
North	**signed agreements**	n	**170**	**215**	**225**	**224**	**228**	**211**	**208**	**201**	**203**
	covered Cities	%	58.5	63.7	69.9	71.8	75.4	76.5	78.1	77.4	81.0
	covered inhabitants	%	69.5	72.3	76.4	79.5	81.4	82.5	83.2	82.3	85.6
Centre	**signed agreements**	n	**35**	**59**	**80**	**88**	**97**	**103**	**109**	**109**	**114**
	covered Cities	%	62.5	63.7	70.3	72.2	77.4	78.4	80.1	79.1	77.9
	covered inhabitants	%	81.3	81.4	87.4	88.1	91.1	91.5	93.9	93.4	93.8
South	**signed agreements**	n	**124**	**197**	**281**	**328**	**334**	**302**	**329**	**380**	**395**
	covered Cities	%	44.7	47.8	57.1	63.2	68.6	75.6	77.8	78.3	79.1
	covered inhabitants	%	68.9	68.8	78.8	84.4	87.1	89.2	91.7	91.8	92.1
Italy	**signed agreements**	n	**329**	**471**	**586**	**640**	**659**	**616**	**646**	**690**	**712**
	covered Cities	%	54.6	58.6	65.9	69.2	73.5	76.5	78.2	77.9	80.0
	covered inhabitants	%	71.5	72.8	79.4	82.9	85.3	86.6	88.2	87.8	89.5

Table 4
Agreements singed in the 2001-2009 period and coverage rate of the agreements.

(Source: Comieco)

Table 5
Local coverage by regions as at December 31, 2009.

(Source: Comieco)

Region	Cities	Cities under the agreements		Inhabitants	Inhabitants under the agreements		Collection under the agreements
	n	n	%	n	n	%	t
Emilia Romagna	341	333	97.7	4,199,669	4,156,281	99.0	240,634
Friuli Venezia Giulia	219	183	83.6	1,209,698	1,073,991	88.8	51,060
Liguria	235	111	47.2	1,609,288	1,256,259	78.1	34,776
Lombardy	1,548	1,110	71.7	9,497,939	7,426,707	78.2	352,057
Piedmont	1,206	1,095	90.8	4,347,344	4,092,948	94.1	231,988
Trentino Alto Adige	339	335	98.8	988,338	977,470	98.9	61,971
Vallée d'Aoste	74	74	100.0	124,263	124,263	100.0	9,231
Veneto	581	438	75.4	4,749,799	3,773,335	79.4	154,870
North	**4,543**	**3,679**	**81.0**	**26,726,338**	**22,881,254**	**85.6**	**1,136,588**
Latium	378	248	65.6	5,317,017	4,935,617	92.8	152,379
Marche	246	194	78.9	1,531,248	1,358,955	88.7	58,962
Tuscany	287	262	91.3	3,626,558	3,514,356	96.9	236,199
Umbria	92	77	83.7	869,968	831,278	95.6	34,543
Centre	**1,003**	**781**	**77.9**	**11,344,791**	**10,640,206**	**93.8**	**482,083**
Abruzzo	305	212	69.5	1,306,487	1,179,775	90.3	46,904
Basilicata	131	74	56.5	592,948	450,129	75.9	10,249
Calabria	409	353	86.3	1,999,791	1,803,300	90.2	30,609
Campania	551	465	84.4	5,788,644	5,201,677	89.9	164,771
Molise	136	31	22.8	320,466	146,692	45.8	3,288
Puglia	258	219	84.9	4,069,202	3,832,892	94.2	115,405
Sardinia	377	281	74.5	1,656,266	1,495,486	90.3	69,351
Sicily	390	387	99.2	5,014,927	4,993,602	99.6	74,955
South	**2,557**	**2,022**	**79.1**	**20,748,731**	**19,103,553**	**92.1**	**515,532**
Italy	**8,103**	**6,482**	**80.0**	**58,819,860**	**52,625,013**	**89.5**	**2,134,203**

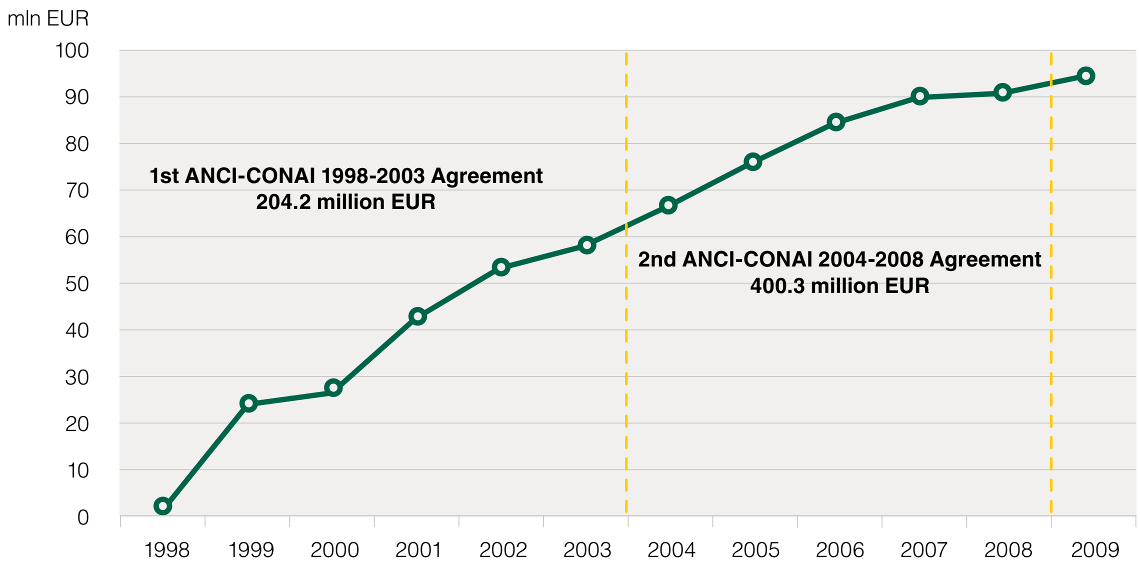
Table 6
Resources granted to parties under the agreements in 2009.
Detail by areas.

(Source: Comieco)

Area	**Inhabitants under the agreements**	**Packaging**	**Economic investment of Comieco** (packaging)		**Economic investment of recyclers** (similar product fractions	
	n	t	EUR	EUR/ab. under the agreements	EUR	EUR/ab. under the agreements
North	22,881,254	564,720.59	47,017,434.90	2.05	2,859,337.07	0.12
Centre	10,640,206	266,625.16	21,972,198.86	2.07	1,077,289.22	0.10
South	19,103,553	318,179.59	24,790,914.44	1.30	986,762.03	0.05
Italy	**52,625,013**	**1,149,525.34**	**93,780,548.20**	**1.78**	**4,923,388.31**	**0.09**

Figure 6
Economic investment of Comieco 1998-2009.

(Source: Comieco)



	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Totale
RTransferred resources * million EUR	2.2	24.0	26.4	42.0	52.5	57.1	65.4	74.5	82.9	88.3	89.2	93.8	**698.3**

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

City	Area	Inhabitants	2007	2008	2009	Δ 2008-2009	2009
		n	t	t	t	%	kg/ab-year
Ancona	Centre	101,687	5,396	5,389	6,082	12.9	59.8
Aosta	North	34,583	2,372	2,407	2,785	15.7	80.5
Bari	South	325,929	15,740	21,452	22,122	3.1	67.9
Bologna	North	374,054	5,695	7,458	13,387	79.5	35.8
Bolzano	North	99,193	7,265	7,465	7,842	5.0	79.1
Cagliari	South	170,505	4,371	6,871	8,856	28.9	51.9
Campobasso	South	51,279	1,026	1,287	1,281	-0.4	25.0
Catanzaro	South	94,627	1,525	2,613	1,835	29.8	19.4
Florence	Centre	367,194	31,435	33,436	31,994	-4.3	87.1
Genoa	North	618,088	19,322	7,038	14,914	111.9	24.1
L'Aquila	South	72,099	2,510	3,097	2,570	-17.0	35.6
Milan	North	1,304,312	93,539	94,577	89,283	-5.6	68.5
Naples	South	981,267	28,524	34,609	34,609	3.0	35.3
Palermo	South	669,249	9,726	7,940	7,543	-5.0	11.3
Perugia	Centre	161,816	4,158	5,621	9,070	61.4	56.0
Potenza	South	68,471	3,546	3,982	4,166	4.6	60.8
Rome	Centre	2,548,743	105,408	114,843	113,346	-1.3	44.5
Torino	North	899,652	62,509	65,991	65,970	-2.7	73.4
Turin	North	111,257	10,506	10,739	3,703	-65.5	33.3
Trieste	North	205,800	7,043	7,992	7,991	0.0	38.8
Venice	North	269,543	12,581	15,284	14,615	-4.4	54.2

Table 7
2007-2009 trend of separate paper and board collection under the agreements in the regional capitals.

(Source: Comieco)

note on Table 7:
Data only concerns the quantities managed under the agreements. The operator is only entitled to use the consortium's circuit to recycle the share (see e.g. Bologna, Genoa, or Ancona).

See specific focus for the highlighted cities.

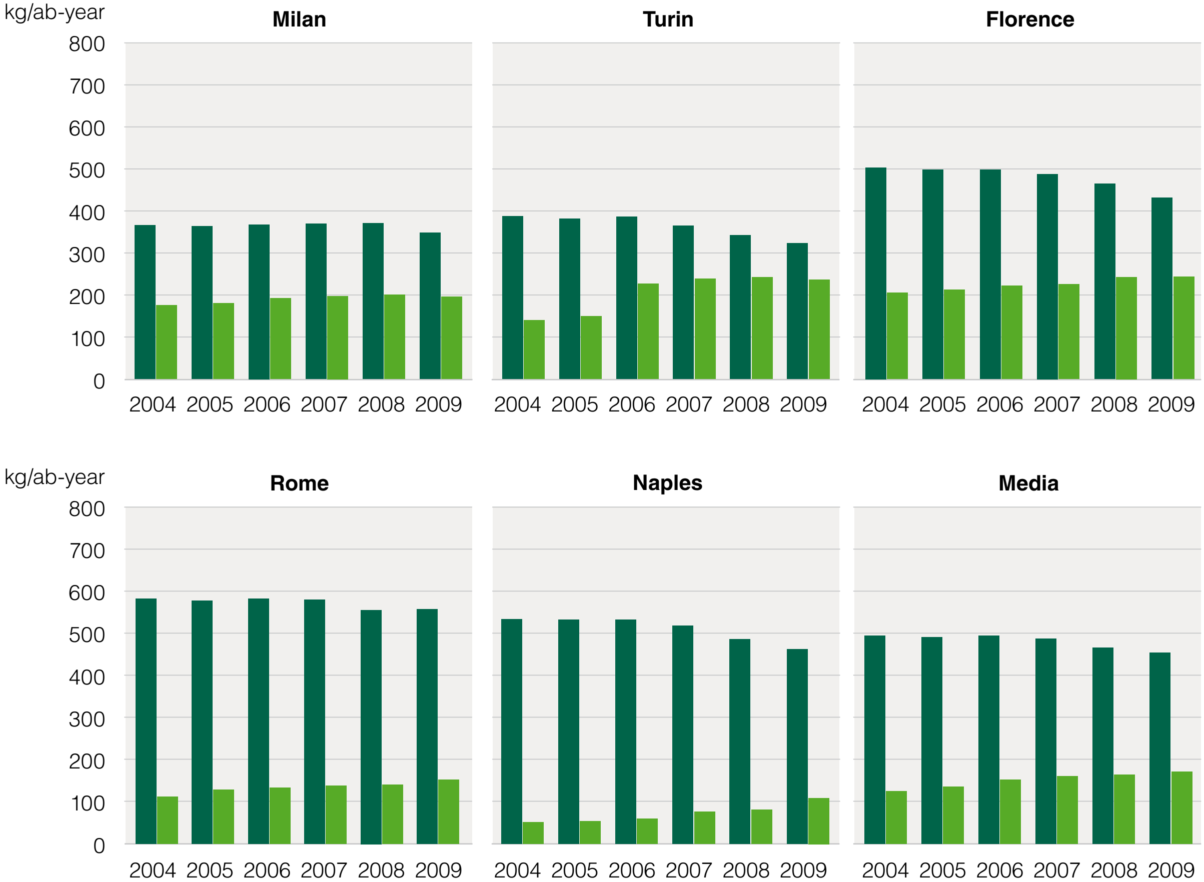
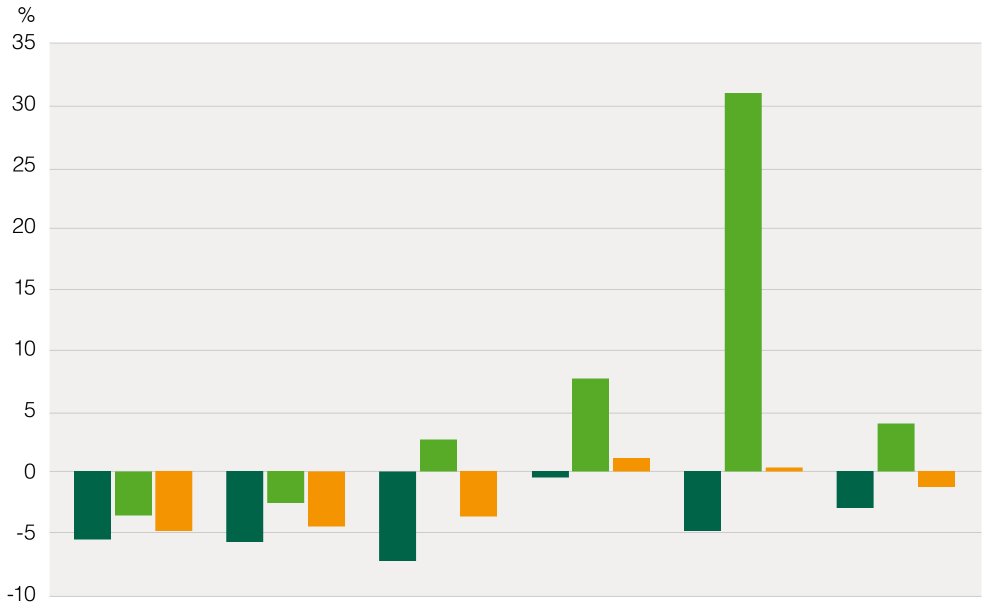


Figure 7
Per-capita waste collection in the sample cities Turin, Milan, Florence, Rome, and Naples.
2004-2009 data.

tot SC
non-separate UW

(Source: Comieco)



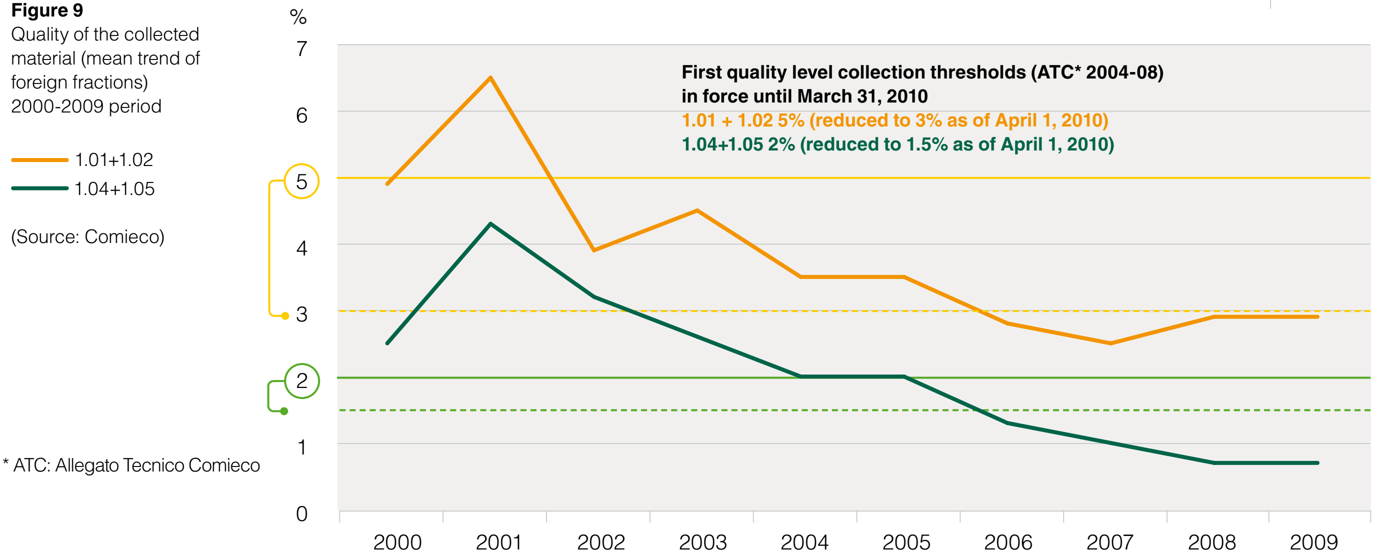
	Milan	Turin	Florence	Rome	Naples	Total
TOT SC	-5.6	-5.8	-7.0	-0.5	-4.9	**-3.0**
TOT UW	-3.6	-2.6	2.6	7.6	31.0	**3.9**
SC/UW	-4.9	-4.5	-3.7	1.1	0.3	**-1.3**

Figure 8
Waste collection in the sample cities Turin, Milan, Florence, Rome, and Naples. 2008-2009 variations.

(Source: Comieco)

Valori assoluti 2009		Milan	Turin	Florence	Rome	Naples	Total
TOT SC	t	255,813	212,464	91,445	369,740	105,937	**1,035,399**
TOT UW	t	711,188	502,397	249,649	1,788,448	560,527	**3,812,209**
SC/UW	%	36.0	42.3	36.6	20.7	18.9	**-**

Figure 9
Quality of the collected material (mean trend of foreign fractions) 2000-2009 period



(Source: Comieco)

* ATC: Allegato Tecnico Comieco

Collection	Data	1st ANCI – CONAI agreement				2nd ANCI – CONAI agreement					3rd agreement
		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
1,01+1,02	Analyzed amounts (kg)	n.d.	26,166	42,657	119,814	103,884	76,572	188,826	227,852	214,764	252,289
	Foreign fractions (%)	4.9	6.5	3.9	4.5	3.5	3.5	2.8	2.5	2.9	2.9
	Performed analyses (n°)	27	171	275	533	443	321	772	930	990	1,174
1.04+1.05	Analyzed amounts (kg)	n.d.	25,455	33,181	62,104	119,124	62,936	145,873	181,758	200,085	202,555
	Foreign fractions (%)	2.5	4.3	3.2	2.6	2.0	2.0	1.3	1.0	0.7	0.7
	Performed analyses (n°)	26	122	165	281	335	291	779	1,041	1,145	1,176

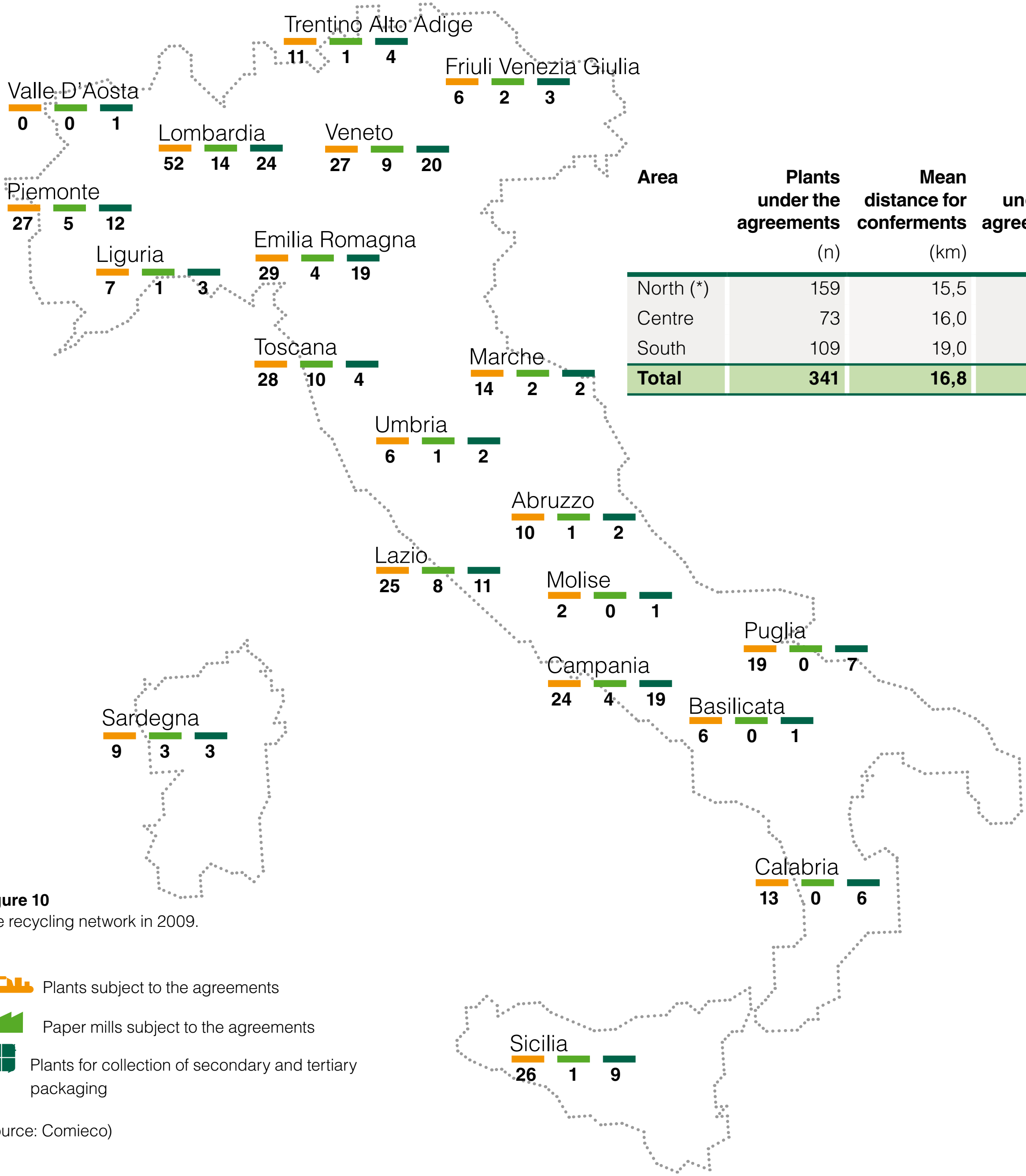
Notes: Until 2005 an integrated collection flow was also included, then excluded from the Technical Annex.
Since 2005, data is updated vs. the report of the previous year consistently with the method to define the % of foreign fractions provided for by the Technical Annex.
Since April 2010 the new ATC has been in force and has redefined the quality levels and lowered the 1st level specifications.

Table 8
Quality of the collected material (mean trend of foreign fractions).
Detail by macro-areas.
2008-2009 comparison

(Source: Comieco)

1,01+1,02	Year 2008		Year 2009		2008-2009 difference
	No, of analyses	Foreign fraction	No, of analyses	Foreign fraction	Foreign fraction
North	498	2.4%	598	2.4%	0.0%
Centre	234	3.1%	268	4.4%	1.3%
South	258	3.5%	308	2.4%	-1.1%
Italy	990	2.9%	1,174	2.9%	0.0%

1.04+1.05	Year 2008		Year 2009		2008-2009 difference
	No, of analyses	Foreign fraction	No, of analyses	Foreign fraction	Foreign fraction
North	572	0.6%	532	0.7%	0.0%
Centre	252	0.6%	277	0.7%	0.1%
South	321	0.9%	367	0.6%	-0.3%
Italy	1,145	0.7%	1,176	0.7%	0.0%



Area	Plants under the agreements (n)	Mean distance for conferments (km)	Mills under the agreements (n)	II & III plants (n)
North (*)	159	15,5	36	86
Centre	73	16,0	21	19
South	109	19,0	9	48
Total	**341**	**16,8**	**66**	**153**

Figure 10
The recycling network in 2009.

Plants subject to the agreements

Paper mills subject to the agreements

Plants for collection of secondary and tertiary packaging

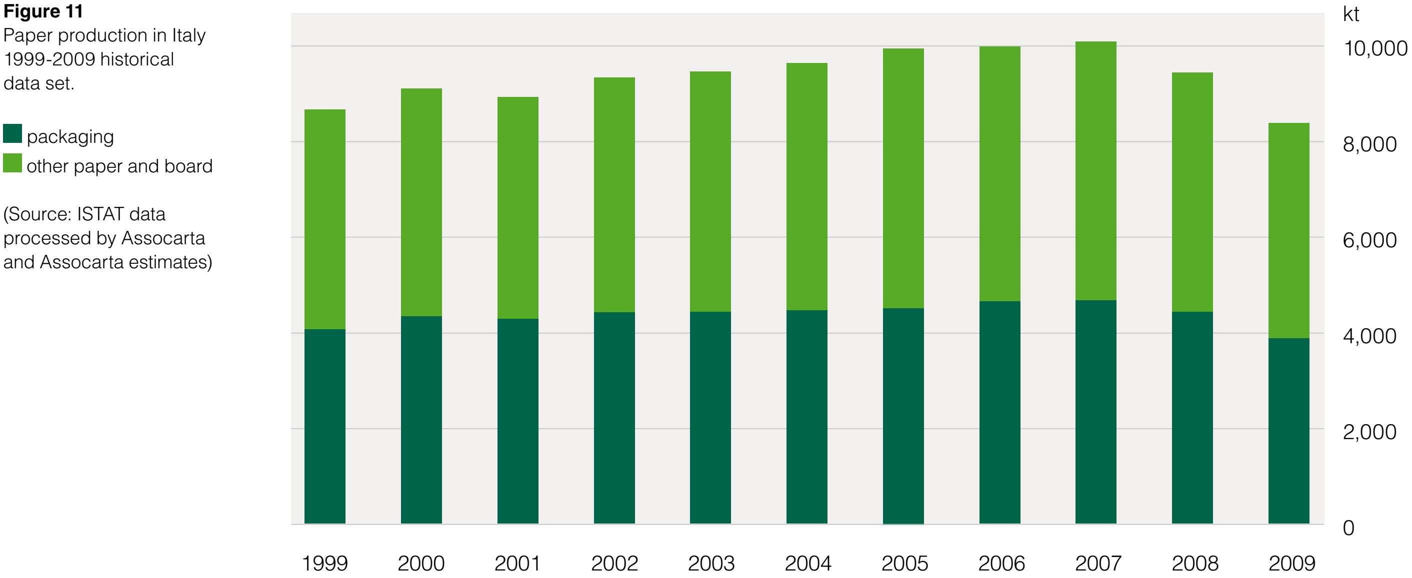
(Source: Comieco)

Table 9
Production, import, export, and apparent consumption of paper and board in 2009.

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

(valori in tonnellate)	Prodution (A)	Import (B)	Export (C)	Apparent Consumption (A+B-C)
Paper and board for corrugated board	2,168,823	1,281,674	121,945	3,328,552
Cardboard for cases	577,878	450,367	408,636	619,609
Other wrapping and packaging paper and board	1,130,307	483,736	571,282	1,042,761
Total packaging	**3,877,008**	**2,215,777**	**1,101,863**	**4,990,922**
Δ % Vs. 2008	**-12.6%**	**0.0%**	**-1.1%**	**-9.9%**
Paper for graphic use	2,846,484	2,230,319	1,364,704	3,712,098
Paper for hygienic-sanitary use	1,319,380	68,212	631,706	755,886
Other types of paper	361,298	63,951	49,035	376,213
Total other paper and board	**4,527,162**	**2,362,482**	**2,045,445**	**4,844,197**
Δ % Vs. 2008	**-10.0%**	**-14.1%**	**-8.5%**	**-12.7%**
Total paper production	**8,404,170**	**4,578,257**	**3,147,308**	**9,835,120**
Δ % Vs. 2008	**-11.2%**	**-7.8%**	**-6.1%**	**-11.3%**

Figure 11
Paper production in Italy 1999-2009 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
Packaging	4,071	4,347	4,287	4,429	4,440	4,471	4,541	4,661	4,681	4,434	3,877
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
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**

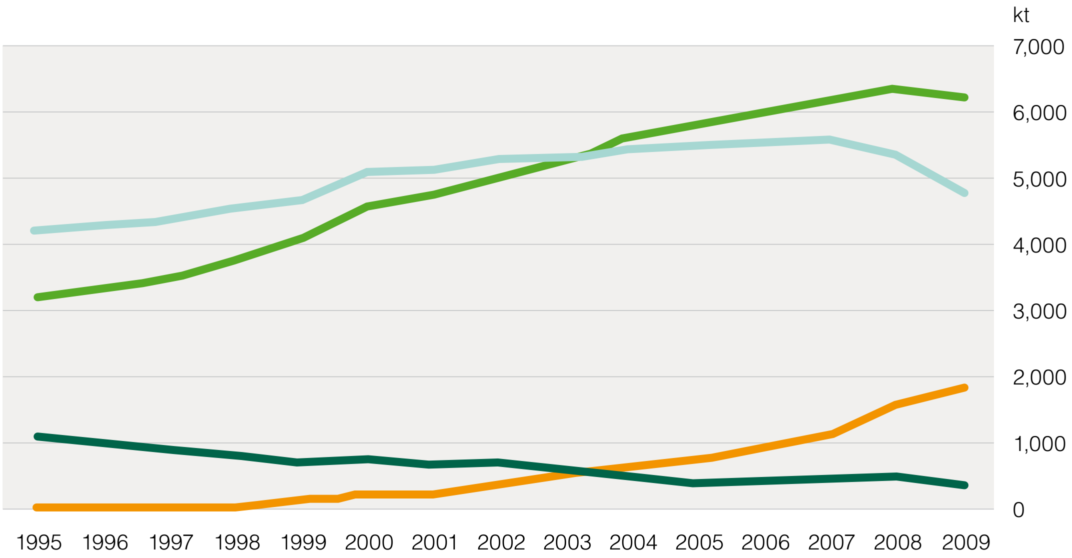


Figure 12
Consumo, import, export di macero e raccolta apparente*. Periodo 1995-2009.

Import
Export
Consumption
Apparent collection*

* Apparent collection:
Consumption + Export – Import

(Source: Assocarta data processed by Comieco)

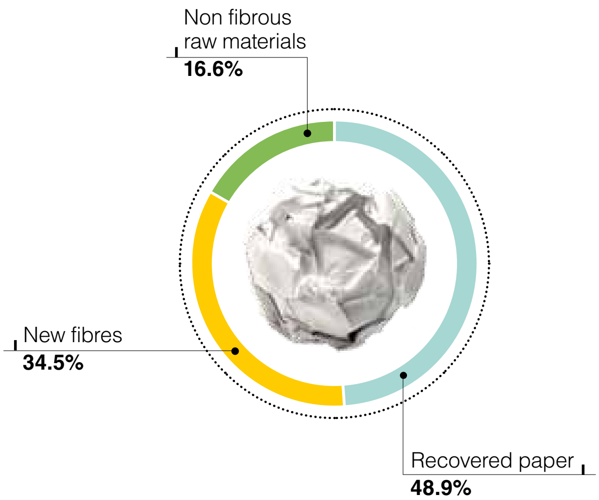


Figure 13
Raw materials of the paper industry in 2009.

(Source: Assocarta and Comieco)

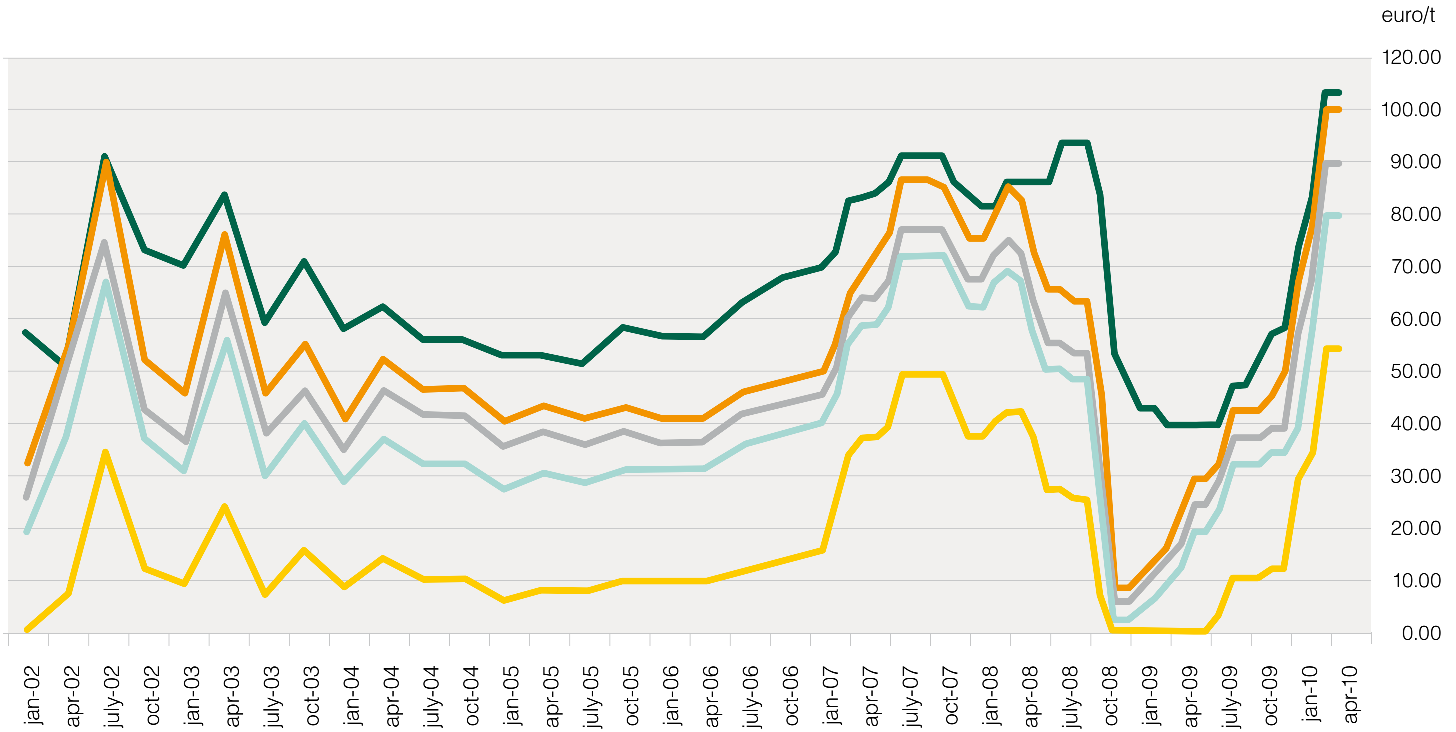
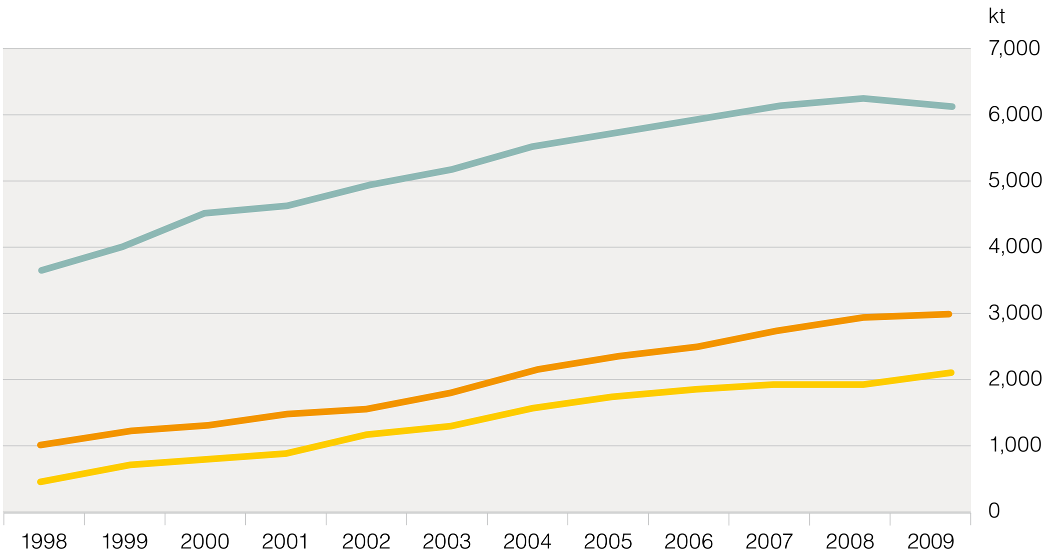


Figure 14
Monthly survey of mean recovered paper values* (EUR/t)
January 2002-April 2010 period.

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

* (Source: Milan Chamber of Commerce)

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



		1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Δ t '98/'09	Δ % '98/'09
Apparent collection	t	3,749	4,084	4,565	4,730	5,011	5,227	5,578	5,792	6,001	6,187	6,316	6,195	2,446	65.2
Municipal paper and board SC	t	1,001	1,247	1,349	1,501	1,589	1,810	2,154	2,358	2,532	2,750	2,945	3,101	2,100	209.8
Municipal paper and board SC under the agreements	t	485	706	811	959	1,202	1,362	1,584	1,747	1,879	1,950	1,928	2,134	1,649	340.0
% of municipal paper and board SC 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**	**30.5**	**34.4**		

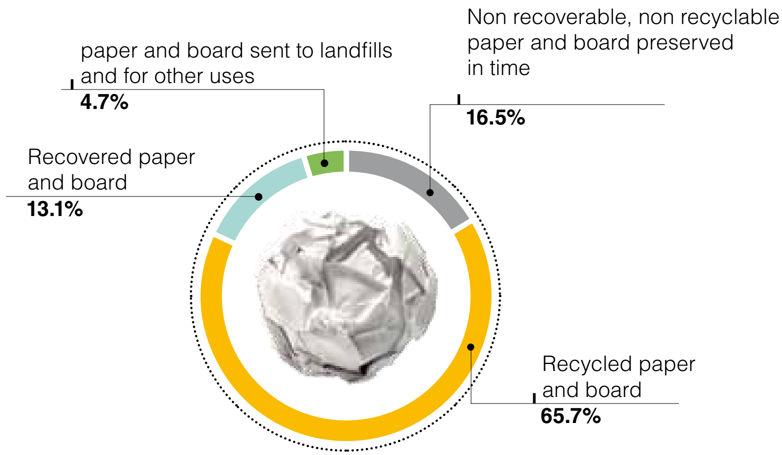
Figure 15
Overall and municipal paper and board collection in Italy. 1998-2009 historical data set

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

(Source: Comieco)

Figure 16
Destination of consumed paper and board in Italy in 2009.

(Source: Assocarta data processed by Comieco)



	kt
Non recoverable, non recyclable paper and board preserved in time	1,230
Recycled paper and board	4,910
Recovered paper and board	980
Paper and board sent to landfills and for other uses	350
Total consumption of paper and board products	**7,470**

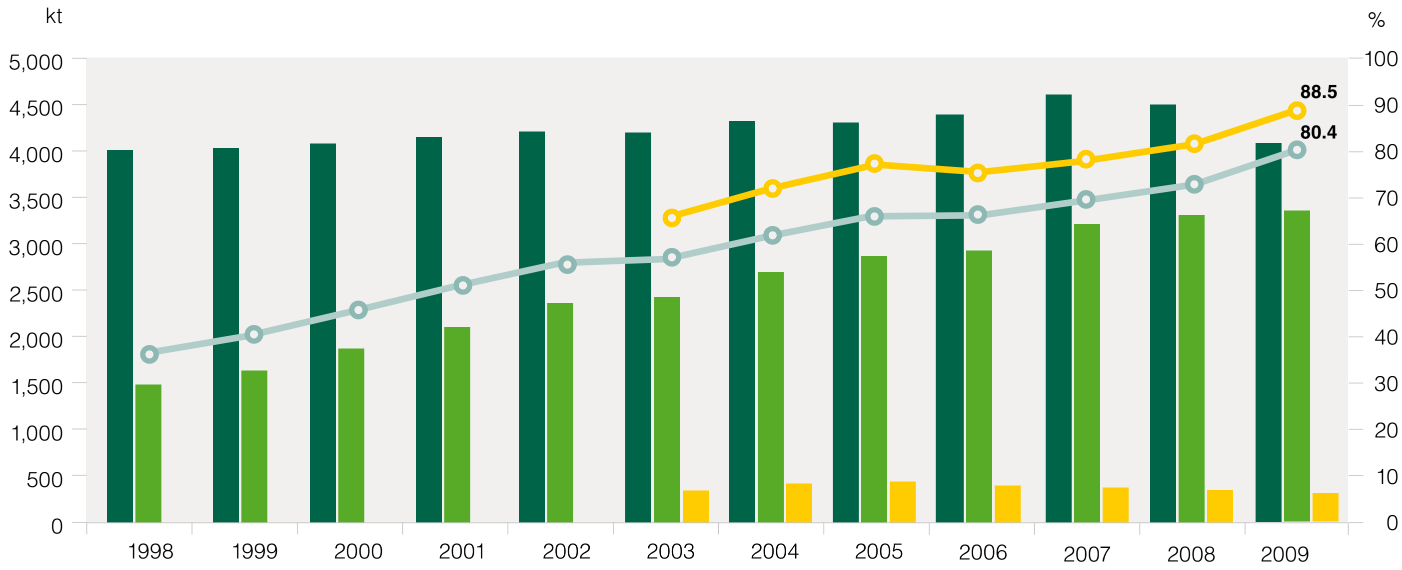


Figure 17
Paper and board packaging recovery and recycling targets.
1998-2009 period (kt and %)
(kt e %)

- Apparent paper and board packaging consumption (kt)
- Total waste subject to recycling (kt)
- Paper and board packaging recovered as energy or waste based fuel (kt)
- Recycling rate (%)
- Recovery rate(%)

(Source: Comieco)

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

Table 10
Paper and board packaging recovery and recycling targets achieved in 2009.

(Source: Comieco)

Calculation of recycling and recovery rates	t
Apparent consumption of paper and board packaging	4,091,522
Paper and board packaging from separate 1.01+1.02 (paper and packaging) recycled in Italy	311,683
Paper and board packaging from separate 1.04+1.05 (packaging only) recycled in Italy	2,051,357
Recovered paper originating from packaging recycled abroad	928,245
Total recycled paper and board packaging	**3,291,286**
Paper and board packaging recovered as energy of waste-based fuel	**327,892**
Total recovered paper and board packaging	**3,619,178**

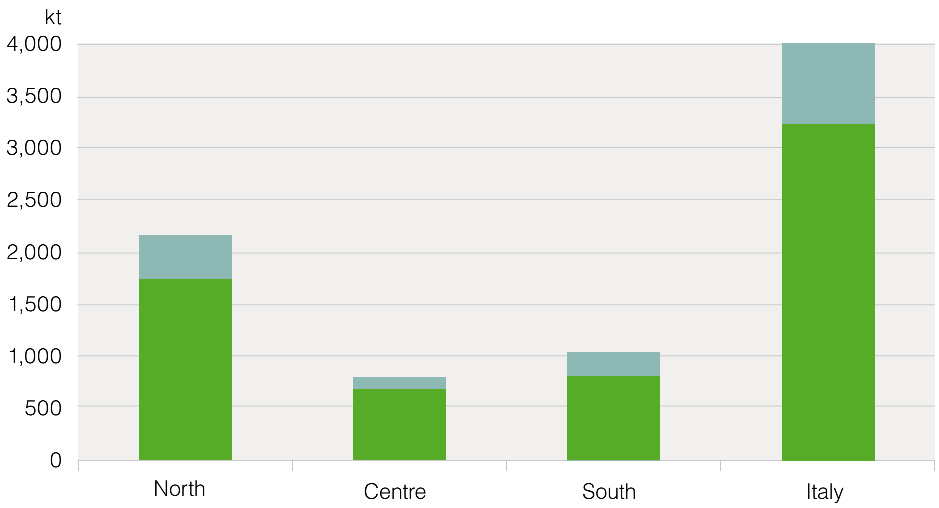
	%
Recycling	**80.4**
Energy recovery	**8.0**
Recovery	**88.5**

Figure 18
Paper and board packaging collection indexes achieved in 2009 by macro-areas.

Paper and board packaging collection

Paper and board packaging available for collection

(Source: Comieco)



2009		North	Centre	South	Italy
Paper and board packaging collection	kt	1,774	695	829	3,298
Collection index	%	80.4	84.9	77.8	80.6

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

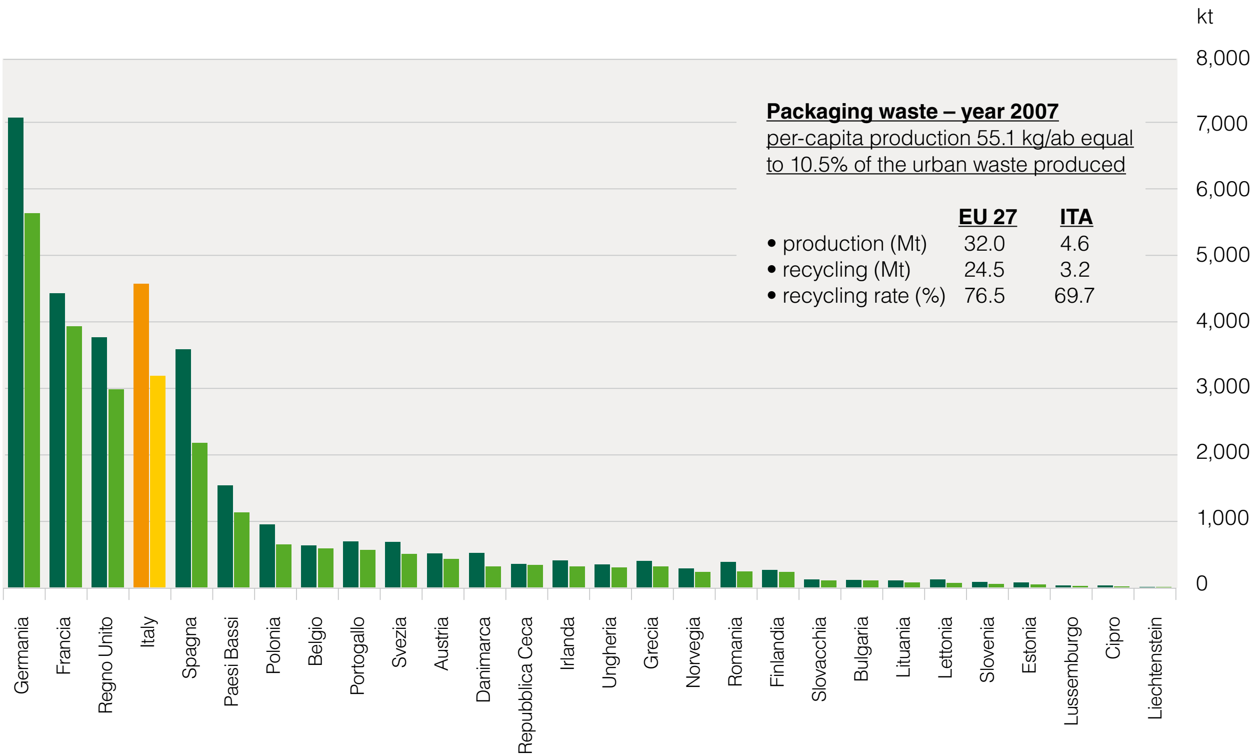


Figure 19
Quantity of paper and board packaging waste produced and recovered in member states. Year 2007.

- Packaging waste produced
- Recycled material
- Packaging waste produced in Italy
- Material recycled in Italy

(Source: European Commission)

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
						million EUR					
Costs											
Differential cost of separate collection	35.2	39.6	55.2	60.9	72.0	70.9	72.6	73.3	77.1	78.1	81.0
Cost due to non-generated energy	7.1	6.5	8.3	9.2	12.4	14.1	19.2	22.6	23.3	30.0	21.7
Total costs	**42.4**	**46.1**	**63.4**	**70.1**	**84.5**	**85.0**	**91.8**	**95.9**	**100.4**	**108.0**	**102.6**
Benefits											
Environmental benefits from avoided emissions	49.9	53.2	62.7	66.0	74.2	62.2	49.4	71.4	74.2	88.2	51.8
Environmental benefits from non disposal	109.8	118.4	141.3	151.3	172.3	191.4	206.8	222.3	236.2	259.6	266.3
Value of generated raw materials	67.4	67.8	4.8	29.2	28.0	26.6	25.2	31.5	107.6	78.6	15.9
Social benefit for generated employment	34.3	37.0	42.7	47.2	50.5	49.6	62.0	67.2	70.8	80.8	81.7
Total benefits	**261.4**	**276.3**	**251.4**	**293.7**	**324.9**	**329.7**	**343.4**	**392.5**	**488.8**	**507.1**	**415.6**
Net benefit (Benefits - Costs)	**219.0**	**230.3**	**188.0**	**223.7**	**240.5**	**244.8**	**251.6**	**296.6**	**388.4**	**399.1**	**313.0**

Table 11
Balance of benefits from paper and board collection and recycling in Italy. 1999-2009 period.

(Source: Althesys)

Table 12
Balance of benefits from paper and board collection and recycling in Italy. Total 1999-2009.

(Source: Althesys)

	Worst value	Fair value	Best value
	EUR	EUR	EUR
Costs			
Differential cost of separate collection	1,364,486,555	715,896,476	68,832,386
Cost due to non-generated energy	174,292,787	174,292,787	174,292,787
Total Costs	**1,538,779,342**	**890,189,263**	**243,125,173**
Benefits			
Environmental benefits from avoided emissions	530,181,026	703,106,197	855,877,110
Environmental benefits from non disposal	1,590,996,682	2,075,653,029	2,634,503,566
Value of generated raw materials	426,148,417	482,363,409	544,453,385
Social benefit for generated employment	623,761,064	623,761,064	623,761,064
Total Benefits	**3,171,087,189**	**3,884,883,698**	**4,658,595,124**
Net benefit (Benefits - Costs)	**1,632,307,847**	**2,994,694,435**	**4,415,469,951**

Table 13
Benefits from regional paper and board collection. 1999-2009 period.

(Source: Althesys)

Region	Paper and board SC	Net benefit	Unit benefit
	Mt	* 1000 EUR	EUR/t
Emilia Romagna	2,407	305,798	127
Friuli Venezia Giulia	516	81,999	159
Liguria	592	94,418	159
Lombardy	5,466	696,700	127
Piedmont	2,698	396,292	147
Trentino Alto Adige	670	96,880	145
Vallée d'Aoste	64	7,101	111
Veneto	2,369	393,573	166
North	**14,782**	**2,072,761**	**140**
Latium	1,715	142,445	83
Marche	534	55,944	105
Tuscany	2,710	347,268	128
Umbria	358	42,167	118
Centre	**5,317**	**587,824**	**111**
Abruzzo	281	36,102	128
Basilicata	84	15,619	186
Calabria	289	19,325	67
Campania	883	91,574	104
Molise	24	1,565	65
Puglia	830	72,460	87
Sardinia	268	29,680	111
Sicily	566	67,784	120
South	**3,225**	**334,109**	**104**
Total	**23,324**	**2,994,694**	**128**

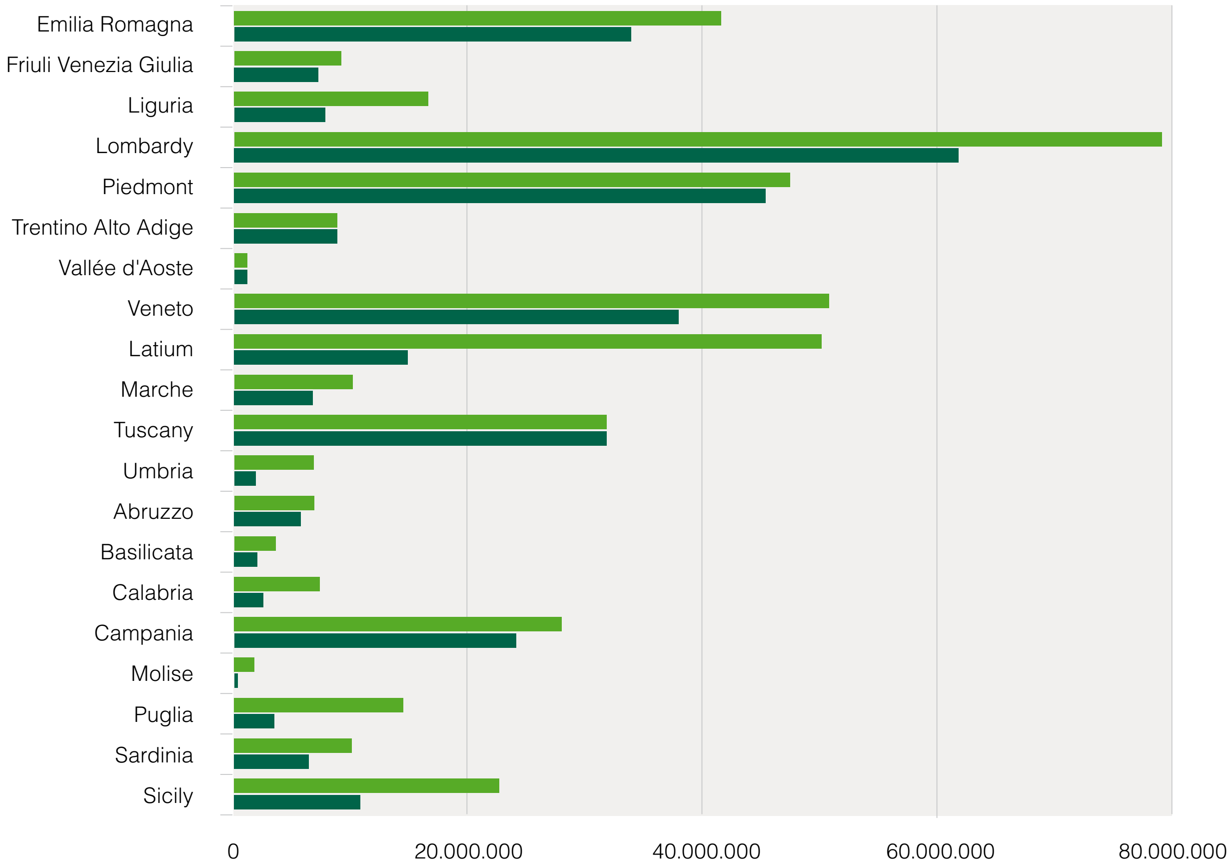


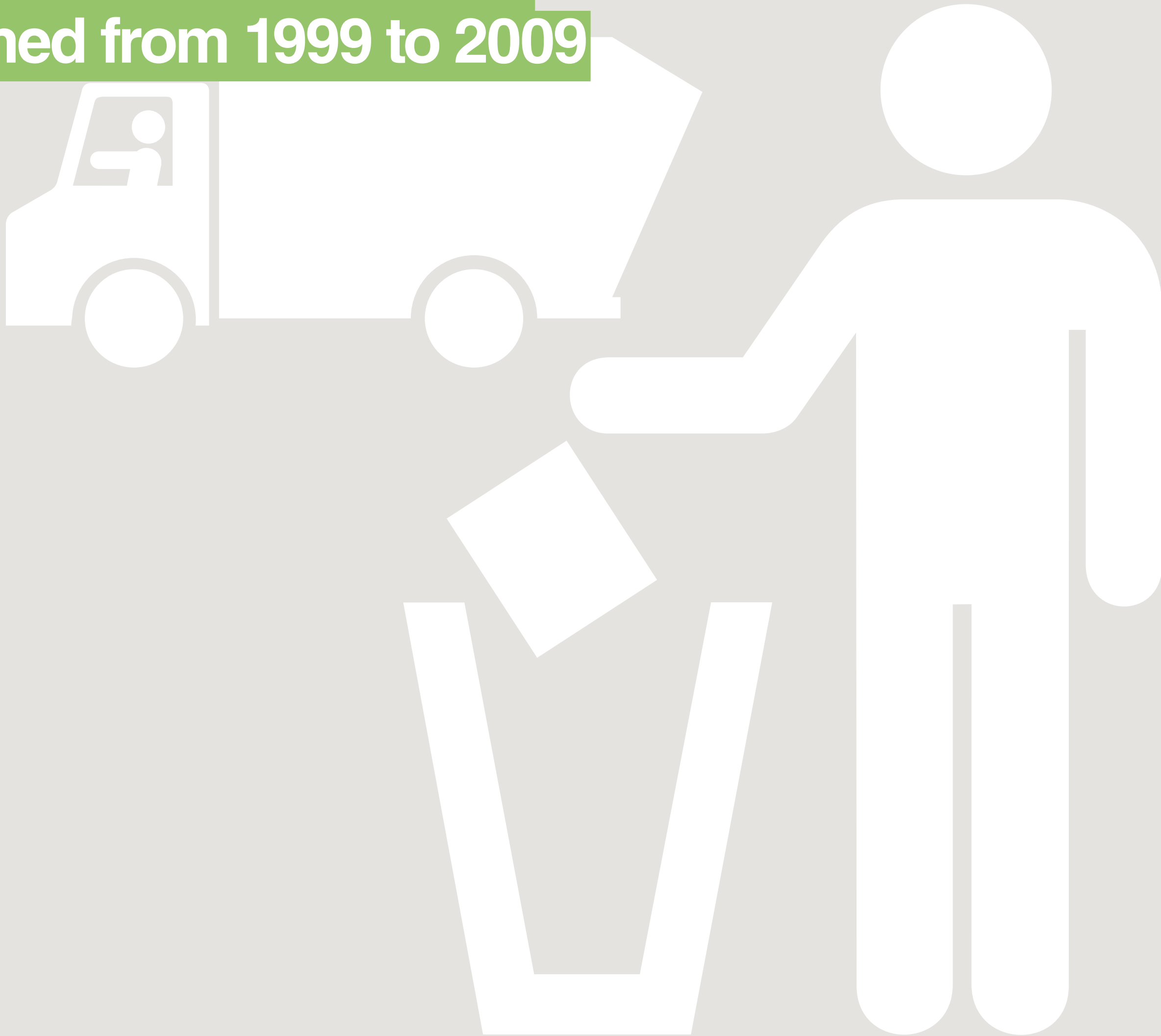
Figure 20
Potential benefits and gap by regions in 2009.
Values in EUR.

Present status 2009
Potential 2009

(Source: Comieco data processed by Althesys)

3 billion EUR

is the net benefit
for the community
resulting from the separate
paper and board collection
performed from 1999 to 2009



Note on the method

The definition of the separate paper and board collection share not managed by the Consortium was, more than in the past, the object of a survey aimed primarily at collecting official data. In particular Comieco, based on by-now consolidated co-operations, has established contacts locally with ISPRA, the Regions, the local Agencies, the Provinces and Work Groups, the Cities, the operators, etc. for data collection and checks on the evaluations of previous years. Only when no official data was available, did Comieco adopt the method described below.

Upon completing the survey, 66.2% of the collected data came from official sources, and partly overlapped with the data already available to Comieco; 28,4% referred to quantities managed directly by the Consortium or communicated by the parties to the agreements as provided for by the Technical Annex (without other official sources), and 5.4% was based on estimated quantities.
In order to estimate the quantities not managed by Comieco, and not available from the above-mentioned official sources, 3 groups of provinces were considered:

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

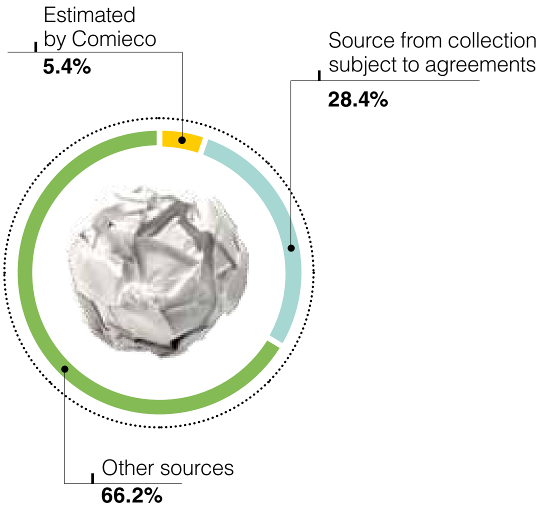
A direct survey was then carried out on the Cities and service companies, aimed at understanding how many of the Cities not involved in the agreements have introduced the separate paper and board collection service.
If the surveyed City provided information on the introduction, if any, of the collection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

On the other hand, if no data on quantities was available, attempts were made to identify the rate of inhabitants not subject to the agreements, but performing separate paper and board collection: for these, the same per-capita value recorded for the inhabitants under the agreements in that province was assumed.

Based on the above, the collection data was calculated and added to the data referring to the share managed by Comieco, so as to estimate total collection in the region considered.

Figure 21
Sources and methodology

(Source: Comieco)



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

Note
Certain values (in particular quantitative) stated in last year's report were updated in view of making comparisons homogeneous for the last two years.

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