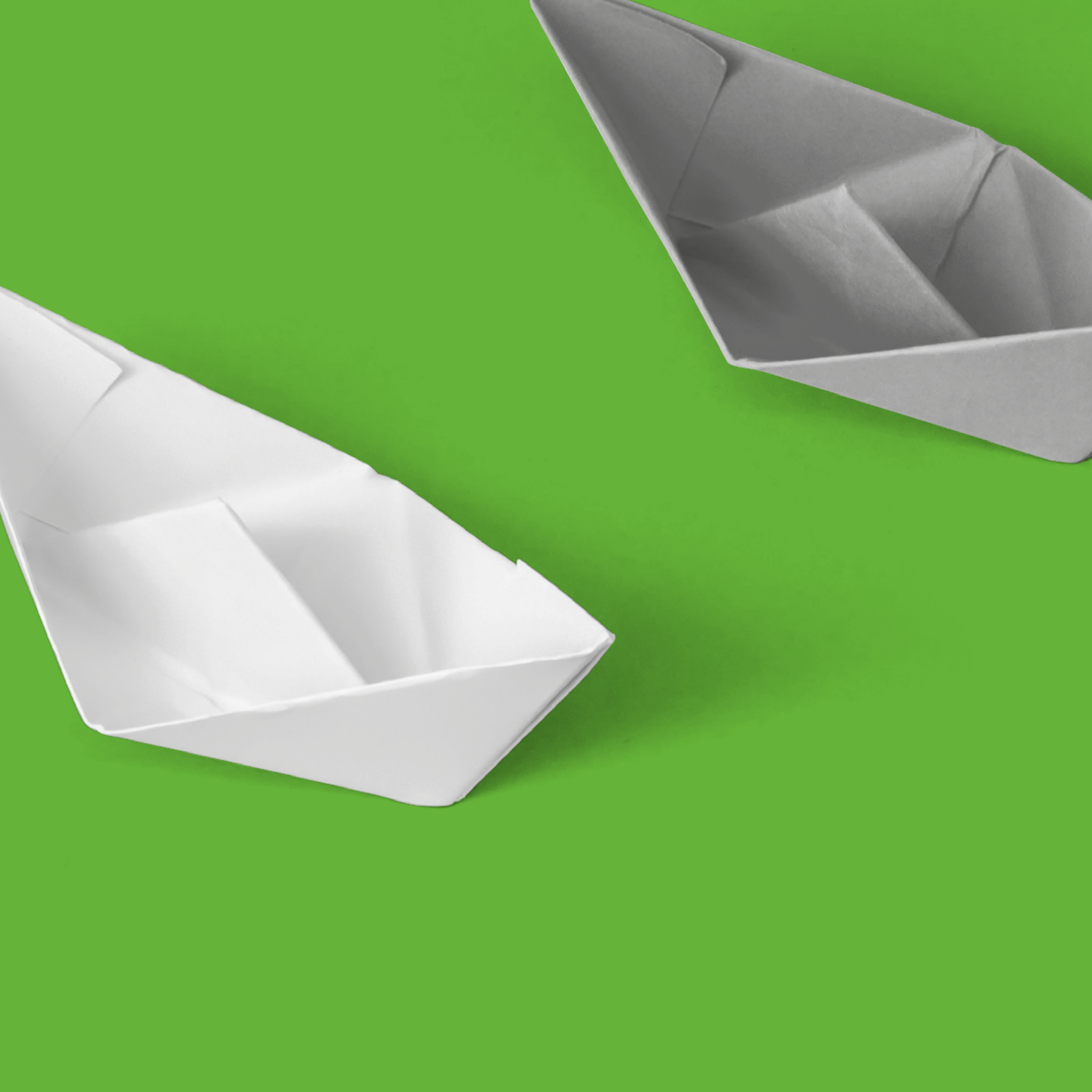
# 29th REPORT

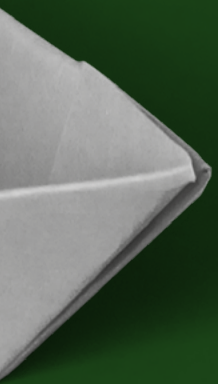
## Collection and recycling of paper and board

Data for the year
**2023**

July 2024

comieco
Consorzio Nazionale Recupero e Riciclo degli Imballaggi a base Cellulosica





**Scientific coordination**
Antonio Ciaffone
Roberto Di Molfetta

**Editorial coordination**
Elisa Belicchi
Eleonora Finetto

**Page setting and graphic layout**
Boutique Creativa
Communication Design - Milano

Printing completed
in July 2024

**Printed on recycled paper**

# TABLE OF CONTENTS

*“ What is not good for the hive*
*is not good for the bee.”.*

*Marco Tullio Cicerone*

# INTRODUCTION

## AMELIO CECCHINI
## CHAIRMAN

This year's report is one I particularly value. The numbers you are going to read in this paper are a measure of a record struck by our paper and board collection and recycling system, and display the results of a vision that started almost half a century ago. Next year, in fact, Comieco will celebrate its fortieth anniversary as the creation of people that, at a time when landfill disposal was indeed the only urban waste management approach, believed that an alternative model could be adopted.

They believed that the waste paper and board collected from each individual citizen, in co-operation with municipal services and public sanitization companies, could provide valuable materials for reprocessing by the industry of a country that was constantly hungry for resources, bringing together the environment and the economy, sustainability and competitiveness. Four decades later, the power of that vision helped raise Italy to the top of the list of virtuous European countries in terms of paper and board collection and recycling.

The numbers in this report give us confidence about the great challenges of the near future. Our model comes from far away, but is constantly ahead of time. More specifically, Italy surpassed the 90% paper and board recycling rate in 2023, thus hitting the target set by the European Union for 2030 seven years ahead of time. While this excellent result confirms the strength of the system, it should be considered more closely and according to the general context.

An analysis of the recycling rate in the 2021-2023 period highlights a reversal from the sharp decline of 2022 (-5%) to the rebound of 2023 (+7.7%). These figures almost offset one another, thus raising the recycling rate for both years to almost 86%, in line with the figures of the two previous years and, anyway, beyond the EU 2030 target (85%).
It should be noted, in fact, that the separate collection and recycling performance is directly influenced by industrial strategies and consumer choices that, in turn, depend on a variety of economic and social factors.

The clear difference between these two years is partly accounted for by fluctuating trends on the raw material and packaging consumption markets in the past period, heavily affected by the cost of energy and the increase of inflation. In 2023, these factors resulted into a faster turnover of the stocks collected (and officially provided for consumption) during 2022.

In short, recycling amounts were somewhat higher last year, however based on much lower apparent consumptions compared to the previous year. These were partly responsible for the 2023 achievement and invite to celebrate our domestic primacy, though being no reason to rest on laurels.

What data irrefutably confirms is that, since the creation of the consortium-based system in the late 1990s, separate collection has continued to grow, and its amount increased threefold in 2023. This demonstrates that recovering paper and board packaging from mixed waste is by now a customary activity of most of the population in Italy. However, there is still much more, and better, we can do, but we will soon get there.

Right now let us just acknowledge that, compared to last year's estimates, separate paper and board collection grew up to a global volume of more than 3.7 million tons (+107 thousand tons) with a yield per inhabitant/year of 63.8 kg. And this is quite noteworthy, particularly if we consider that, as you will read in this report, improvements are mostly the result of the input of sensitive areas on which the Consortium keeps a constant focus, such as Sicily and Rome, the latter hosting, not by chance, to the official disclosure of the report this year.

Remember that Comieco plays a subsidiary role vs. the market of recyclable waste and secondary raw materials, and offers support (in accordance with the technical agreement with ANCI) to the Cities and the operators even at times when the law of supply and demand, alone, could not be sufficient to ensure appropriate collection and processing of the post-consumption paper and board packaging provided by the population to the public collection system. For several years this market has been characterized by significant turbulence, also due to the impact of geopolitical instability on the macro and socioeconomic scenario.

This explains why in 2023 Comieco managed a total of 2.3 million tons of end-of-life paper and board materials, 17.7% more compared to the 2022 volumes. Overall, the contracts in force allowed to ensure collection for the Italian Cities against a resource investment by the Consortium of more than 190 million EUR, plus 54 million EUR for in-plant services in integrated contracts.

This confirms, once again, the strength of the system in bringing together the environment and the economy, while ensuring the continuity of separate collection and providing economic support to local entities even at most turbulent times, such as those the paper industry went through last year, when it was forced to continue to endure the impact of the energy shock in the months between 2021 and 2022, with packaging production (5 million tons) declining in parallel with domestic paper for recycling consumption (3 million tons). Meanwhile, exports to non-EU countries continued to grow (+0.7 million tons vs. 2022), particularly towards India.

These dynamics clearly and univocally invite to hold on and remain alert, not least because the complexity of our future challenges is proportional to the successes that characterized our forty-year life.

One of these is the quality of recycled materials, which is crucial to ensure the cost-effectiveness and sustainability of waste paper and board transformation into new paper.
In this respect, 2023 is a true turning point, particularly for household collection, traditionally the most critical; even if the national average is improving, with the rate of contaminants declining from 2.00% to 1.55%, data shows that collection still faces quality issues in one case out of four, and as much as one out of three in the South.

Business collection performs better, but 15% still fails to meet optimal standards. Collection quality is thus a strategic field of action for the entire system, a match that Comieco, local entities, and public service companies can play in the near future with the support of the tools provided by the new ANCI-CONAI agreement, closing its 5th cycle this year and preparing to start its 6th cycle (2025/2029).

Beside quality improvement, the main priorities for the players in the consortium-based system include the need to capture the amounts of post-consumption paper and board that remain to be collected across the national territory. This is a true urban reservoir, an unexplored area of at least 700thousand tons, mostly concealed in the mixed waste discarded by the population in southern regions and big cities.

As we have been doing for almost four decades, we will strive to keep such valuable resources away from landfills by strengthening our commitment and increasing our efforts.

We are already doing so with the Extraordinary Plan for support to the Cities in the development and strengthening of collection (the Plan for the South), and will continue to do so by also expanding our projects for the development of separate collection in fast-food restaurants, in the high-content bag sector, and in major events, and to improve the collection and recycling of a more and more strategic part of paper and board packaging – beverage cartons.

This is a clear example of how renewable and circular materials are encouraging more and more companies to use paper and board to protect, preserve, and market their products.

While the figures in this report show that we are ready for future challenges – and that, to some extent, we have always been – we need to retain the mindset that, forty years ago, gave life to Comieco – an ambitious and visionary, however steady and pragmatic one.

# THE NUMBERS OF THE COMIECO REPORT: PRESENT OVERVIEW AND FUTURE PERSPECTIVE

CARLO MONTALBETTI
GENERAL MANAGER

**The Italians and the value of separate collection**
There is a specific reason behind the graphic layout selected for the cover of this report, i.e. two stylized bees on a green background. Besides being signals of biodiversity, and thus guardians of life on the planet and a guarantee for renewable natural systems, bees are traditionally seen as a symbol for painstaking, relentless industriousness. In this respect, if we compare the Italian paper and board collection and recycling system to a natural element, this would be none other than a bee-hive – a complex, modular organization where each individual devotes to a specific task, however for the purpose of achieving a common goal.

Municipal separate paper and board collection exceeded 3.7 million tons in 2023, approximately 107thousand tons more (+2.9%) than in 2022, equal to the overall consolidated collection of Vallée d'Aoste, Umbria, and Basilicata. As we will see, this number is the result of the shared commitment of lots of tiny worker bees. All valuable, all – each in its own way – crucial to ensure the renewable and circular management of post-consumption paper and board packaging.

In the paper and board recycling hive, Italian citizens are mission-conscious bees. The average domestic per-capita yield in 2023 was close to 64 kilograms per inhabitant, and 50 kilograms in the South. The latter is a very significant number if we consider that it was far below 40 only five years ago, and that this growth took place in a very complicated context.

The numbers of this report actually confirm the extent to which appropriate waste management is a consolidated custom in the daily life of the Italian population, an added value that can have a positive impact on the quality of life of the entire community.

This trend goes hand in hand with the growing awareness of environmental issues in Italy: separate waste collection is, in fact, an important indicator of civic consciousness, capable to bring practical benefits to the community and where each one is requested to do his or her own share, as noted in the Work Group organized by Ipsos since 2001, in partnership with Comieco.

**Paper and board packaging recycling: consolidation of the achieved and surpassed EU's 2030 target**

In a year 2023 characterized by the pressure of inflation on consumptions, as well as by the aftermath of the energy crisis affecting the trend of the paper-making business, the apparent consumption of paper and board packaging declined to just more than 5 million tons, 6.6% less than in 2022.

In summary:

- total paper production decreased by over 1.2 million tons (-14%). Processed paper and board product imports also declined by 760thousand tons, with a trend reversal with respect to 2022 (-10.5%), just like exports (-11.8%);
- domestic recovered paper consumption recorded a small decline from 5.4 million tons in 2022 to 5 million tons in 2023. This is offset by the increase of exports by over 700thousand tons, with India and South-East Asian countries as the main market outlets;
- notwithstanding the above, recovered paper is still the main source of cellulose fibre for the domestic paper-making industry. More specifically, the recycled rate was 92.3% for packaging in 2023, beyond the EU targets set for the pipeline by 2025 (75%) and 2030 (85%).

After the turbulence of the past few years, connected first with the effects of the pandemic and then with geopolitical issues, the paper for recycling market remained substantially stable in 2023.

Following the shock in the summer of 2022, offset only in part by the rebound of quotations in the early months of last year, the price curve of paper for recycling remained flat until 2024 and set to medium-low values, comparable to those of the first half of 2019. On the other hand, signs of recovery appeared in the spring of 2024, with upward prices favoured by foreign demand, which resulted into greater user focus on the demand for raw materials.
Even if the 2020 and 2022 crises have gone, the paper for recycling market is still characterized by significant volatility.

**Best performers in the increase of paper and board collection: two in the North and two in the South**
While separate collection grew by almost three percent points at national level, a look at the local collection trend unveils a more varied scenario: in the 2023 edition of the "tour of Italy" of paper and board recycling, some jumped forward, but others slowed down or stopped. The best and worst performers for the most significant increases and decreases include, respectively, Sicily and Veneto (+9.9%) and the Marches (-2.2%).

The greatest increase in terms of volumes is recorded in the North, with over 51thousand tons more vs. 2022 (+2.8%). More than half of these volumes come from Veneto, Emilia-Romagna, and Liguria. The other regions are either positive or stable, except Vallée d'Aoste and Trentino-Alto Adige, which recorded negative values, albeit negligibly - just more than 200 tons. These numbers point out to a generally positive picture, but should be considered in the light of the new and broader definition of urban waste, which also includes a growing amount of business-related post-consumption packaging managed by manufacturers outside public services in the calculation of separate collections. The actual measure of these volumes should therefore be carefully considered.

The highest average annual increase among the three macro-areas is generally still observed in the South (+4.5%). The only region that declined vs. 2022 is Abruzzo, whereas all the others improved their performance. Sicily, in particular, with 22thousand tons more, is one of the drivers of the whole macro-area accounting, alone, for more than half of new volumes in the South and contributing to the national annual increase by about one fifth. A positive performance is also recorded for the other regions, including Sardinia, again a reference point for the South and one of the best experiences at national level. In terms of overall urban waste production, estimates on 2023 data, albeit based on a limited sample, point out to a substantially stable trend, vs an increase of separate collections (+250thousand tons) and of the subsequent erosion of the mixed waste volume (-190thousand tons.) The separate collection rate is thus close to 66%, whereas the rate of capture of paper and board – which are among the main components of separate collection – is about to reach 13% of total urban waste.

True to the mindset that has been driving the activity of Comieco for almost forty years, the Consortium intends to improve this result by capturing all the untapped resources of our urban reservoirs, particularly in southern regions and in big urban conglomerates, where part of paper and board packaging is still excluded from separate collection systems and ends up with mixed waste and, then, in landfills or incinerators, and therefore remains the main resource for the development of national paper and board collection.

The goal is to increase the capture rate to at least 14% in the medium term (3/4 years), finally surpassing the 4 million tons of collected paper-based material per year, over 300thousand tons more vs. last year's levels. In the longer term, instead, the goal is to increase capture to 15-16%, with an expected increase by at least 700thousand tons up to the threshold of a total of 4.5 million.

Based on the above projections, Comieco has already translated this ambition into practical actions, while confirming its commitment through the Extraordinary Plan for the South, a "master plan" of separate paper and board collection with a 3.5 million EUR allocation of resources within the framework of a project for development, aimed at engaging a population of over 3 million, 34 cities in the South (and beyond), and all the regions.

This plan is very important for the whole national paper pipeline in the light of the renewed recycling capacity of the Country and, thus, of the increase of the domestic industrial demand for paper for recycling.

The above confirms the strategic role of Comieco in bringing together sustainability and competitiveness.

**The agreement-based system: a tailor-made suit for the Cities**

Subsidiarity is another key word for Comieco. The recycling guarantee offered by the consortium-based system clearly emerged also in 2023 as a valuable safety net in these years of strong volatility on secondary raw material markets. The year 2022, characterized by a trade boost in the first half, saw a sudden trend reversal towards the end of the year due to the energy crisis.

In the light of uncertainties on the domestic and international paper and board market throughout 2023, the Cities have been striving to ensure the management and recycling of the paper and board collected locally through their agreements with Comieco. Therefore, the volumes managed by the Consortium increased by 350thousand tons vs. the previous year, and the year 2024 is also following the same trend.

Historical data, by now covering and describing over twenty-five years – from the implementation of EU directives through the so-called "Ronchi Decree" – outline a system that effectively combines stability with recycling assurance, market subsidiarity, measurement and transparency of results.

From 1998 to 2023, in fact:

- overall municipal paper and board collection increased from 1 to more than 3.7 million tons per year;
- over 70 million tons of paper and board were collected, including more than 60% (42.5 million tons) managed by Comieco;
- the Consortium allocated considerations for more than 2.5 billion EUR for collection;
- the recycling rate, at first 37%, is now constantly beyond the EU targets.

The ability of the consortium-based system to combine economic and environmental benefits is also confirmed by the 2023 data. The numbers in this report show that, with 2.3 million tons managed - including 1.5 million tons of packaging - Comieco allocated considerations for more than 191 million EUR, and sharply adjusted the CAC (the CONAI environmental contribution) to find the resources needed to ensure collection and monitor local entities.

Indeed, 9 Cities out of 10 entrust all or part of their collection to the Consortium using the options provided for by the ANCI-Comieco Technical Annex.

However, the number of agreements in force – almost one thousand, including over three-quarters in the South – shows that there is still a lot to do to rationalize services and ensure the same standards, acceptable quality levels, and cost reduction across the entire country.

**Paper and board collection and recycling, where and how to improve**

As mentioned above, one of the main goals of the Consortium for the next few years is to capture more than 700thousand tons of paper and board packaging at national level that are estimated to end up in landfills, including more than half in the South. However, the high potential of the South is not just in volumes, but also in collection quality.

In the South, in fact, contaminants in separate collection are still at the highest levels, despite an historical improvement. Non-optimal quality, due to wrong disposal and, thus, to the presence of contaminants in the collected materials, is still a structural issue, with consequences on the efficacy and cost-effectiveness of recycling, considering that the whole pipeline is required to take care of post-collection sorting and scrap disposal.

Therefore, according to the principle of the bee-hive, each player is requested to do his or her own share.

This starts from the citizens and other users, who can do much more to improve the quality of their collection: carefully sort paper and board packaging from other plastic or metal items (such as pins, cellophane, or sellotape), use paper bags for collection or, if this is not possible, remember that containers made of different materials (such as bioplastic bags) should only be used to carry packaging, and should not be placed in collection bins.

Service operators play a crucial role in this scenario: they are requested to adopt effective equipment and to ensure regular emptying and removal to minimize baseline impurities, reduce the need to work on materials upon sorting and, therefore, process scraps.

It should be noted that the packaging collected separately nourishes the Italian paper-making industry, which is a top performer in the EU by circularity and renewability. High-quality raw materials are required to retain and strengthen this primacy, which is the result of careful collection and recycling.
Alongside the quality challenge, the capture of the amounts that are still excluded from collection is a top priority for the Consortium.

In the past few years, the Plan for the South, with which Comieco enhanced its efforts in the South of Italy with an extraordinary 3.5 million EUR allocation, was integrated with punctual and focused strategies for the entire national territory – from the development of separate collection in specific sectors, such as fast food, high-content bags, and major events, to the commitment to increase the collection and recycling of composite paper-based packaging.

More and more companies choose this type of packaging for their products, which is at the focus of the new European packaging regulation (PPWR).

As to beverage cartons, then, the year 2023 saw the early results of the support provided by the Consortium to the plants to ensure smooth sorting. Actions are aimed at a variety of targets that take into account the specificities of collection, sorting, and recycling systems. The result is a final recycling rate of 41% of apparent consumption.

As to other composite packaging – cookie bags, paper cups, food trays – the ongoing diversification of the environmental contribution has already improved recyclability with other paper-based packaging (four out of five packaging items now contain more than 80% of cellulose fibre) and Comieco, upon agreement with CONAI, is working for broader implementation of the Aticelca method to determine actual recyclability.

This is an important step to stimulate “design for recycling” according to the guidelines of the new PPWR, which will soon be formally implemented.

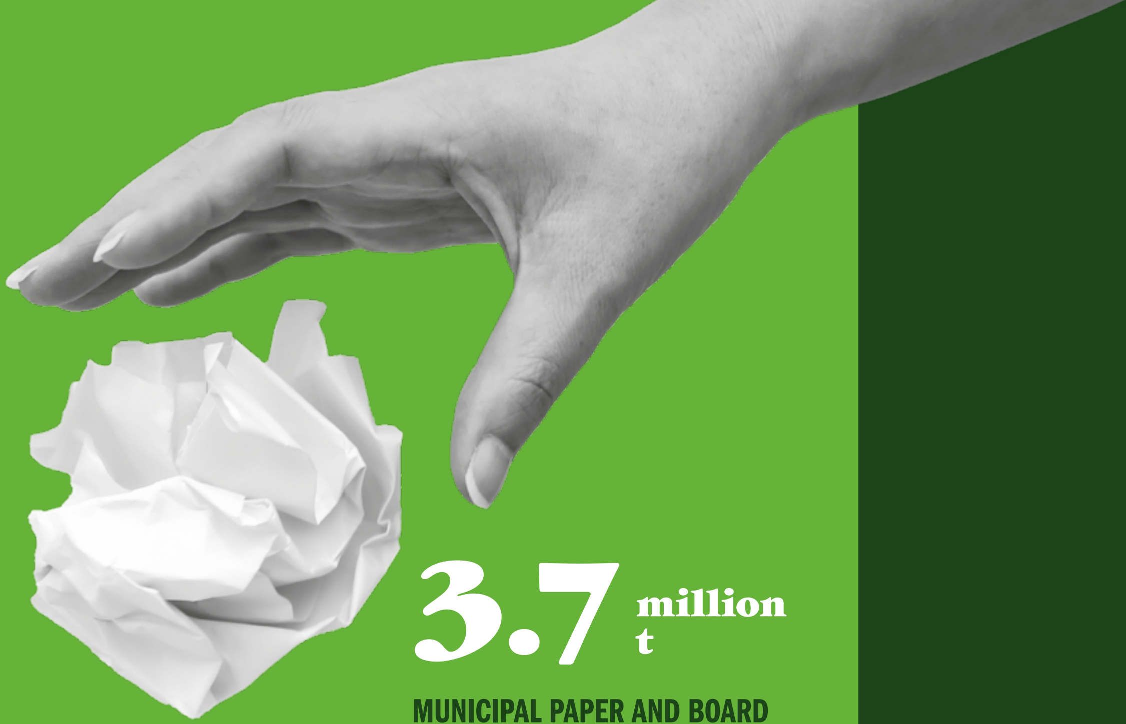
Another strategic issue is the industrial recycling capability available in our Country, which is expected to keep up with the growing amounts captured through separate collection. A huge contribution in this respect may come from the implementation of the plants provided for by the so-called "beacon projects" of the National Recovery and Resilience Plan, which allocates a global amount of approximately 106 million EUR to the paper sector, with 58 co-funded plants (including 39 in the Centre and South).

The leverage effect of these investments is amazing, particularly in the South: the estimate for Sicily and Campania, vs. a NRRP-less scenario, sees the annual incremental job increase rate in these two regions reach 14% and 4% respectively.

In addition to significant economic and employment-related impacts, company investments, combined with the NRRP contributions, will encourage a reduced use of landfills and strengthen the paper-making industrial pipeline. Thanks to the enhanced manufacturing capacity of the 16 paper mills and 42 waste paper-processing plants that will benefit from the funds, the separate waste paper collection potential can be increased by over 700thousand tons, including more than 400thousand in the South, with benefits also from the environmental viewpoint due to reduced landfill disposal and to greater plant energy efficiency, with a subsequent reduction of CO2 per product unit.

In short, everything is in place to confirm and even improve the achieved results, once again, as we have been doing for almost four decades, by combining environmental protection and economic growth with the sustainability and competitiveness of our industry.

In the light of the above-described scenario, this recipe provides the basic requirements to drive our actions over the next few years, designed and organized consistently with the goals of reduction and sustainability provided for by the new packaging and packaging waste regulation (PPWR), approved in April by the European Parliament.



**3.7** million t

**MUNICIPAL PAPER AND BOARD COLLECTION VOLUME**

**+107** thousand t

**VS. 2022**

# SEPARATE PAPER AND BOARD COLLECTION IN ITALY: THE STATE OF THE ART

# 2023: ONE MORE STEP AHEAD IN PAPER AND BOARD COLLECTION

If we were to compare the year 2023 to a natural system, this would be none other than a bee-hive. Municipal separate paper and board collection exceeded 3.7 million tons, with an increase by approximately 107thousand tons (+2.9% vs. 2022), equal to the overall consolidated collection of Vallée d'Aoste, Umbria, and Basilicata.

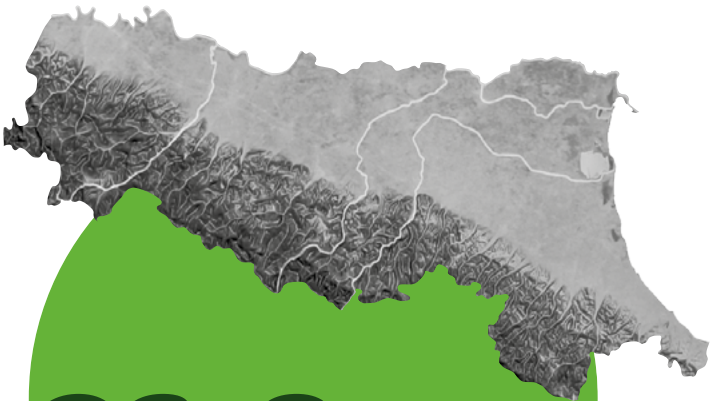
The average national per-capita yield is close to 64 kg/ab, and close to 50 kg/ab in the South. The latter is a very significant number if we consider that it was far below 40 kg only five years ago, and that this growth took place in a very complicated context.

***The greatest increase in terms of volumes is recorded in the North, with over 51thousand tons more vs. 2022 (+2.8%).***

Over half of these volumes come from Veneto (+28.5thousand tons, +9.9%), followed by Emilia-Romagna (+11thousand tons, +2.7%), and Liguria (+8.3thousand tons, +8.1%).

The other regions are either positive or stable, except Vallée d'Aoste (in countertrend vs. last year) and Trentino Alto-Adige (closing with negative numbers for the second year in a row), the only ones with negative results, however by just more than 200 tons.

These numbers point out to a generally positive picture, but should be considered in the light of the new and broader definition of urban waste, which also includes a growing amount of waste managed by manufacturers outside the collection circuits of the cities or operators in the calculation of separate collections.



**93.2 kg/ab**

**REGION WITH THE BEST PER-CAPITA RESULT: EMILIA-ROMAGNA**

In the Centre, with 13thousand tons more vs. 2022, overall growth is limited (+1.5%), and the main input comes from Latium (+10thousand tons, mostly from Rome), Tuscany (+4.8thousand tons), and Umbria (+600 tons).

A negative result is recorded for the Marches also in 2023: -2.3thousand tons that, added up to the amounts lost in 2022, result into a 6.6% decrease for the region in the 2021/2023 period.

***Renewed growth in the South: +4.5%, equal to +42.3thousand tons.***

The only region that records negative results vs. 2022 is Abruzzo (-900 tons, +1.3%), whereas all the others improved their performance, in particular Sicily (+22thousand tons, +9.9%), which accounts, alone, for more than half of the new volumes of the South, or 1/5 of the domestic ones.

Campania (+10.1thousand tons, +4.5%) Molise (+800thousand tons, +7.6%), Puglia (+4.6thousand tons, +2.3%), and Sardinia (+3thousand tons, +3.2%) also record a positive performance, the latter being confirmed as the best per-capita performer in the area.

**+9.9%**

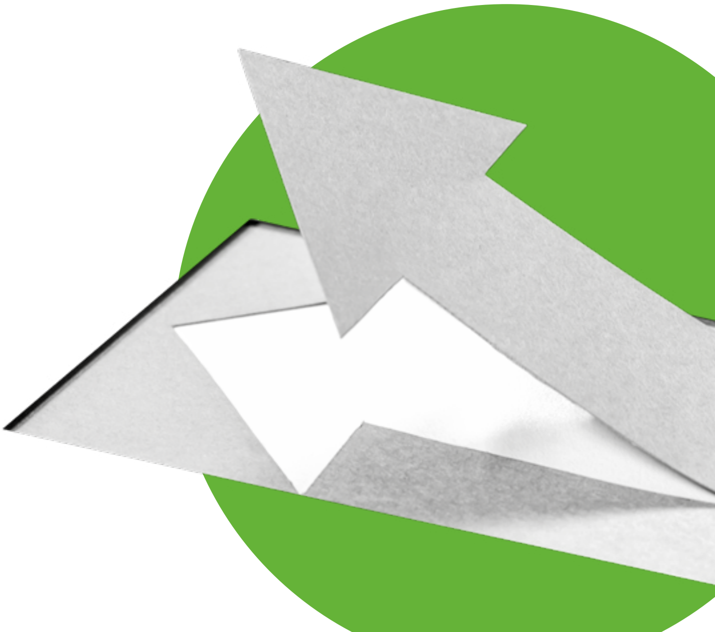
**REGIONS WITH THE HIGHEST PER-CAPITA INCREASE: VENETO AND SICILY**

**+4.5%**

**CONTINUOUS GROWTH IN THE SOUTH**

***The positive figure for the South should be considered as part of the development of the services that Comieco implemented with the Plan for the South to support the Cities in leveraging their available potentials with structural and communication activities.***

Projections on 2023, compared to last year's estimates – which pointed out to a widespread decline of urban waste production – highlight a substantial stability of the amounts of waste produced in Italy, estimated at just above 29 million tons.



## TABLE 1 MUNICIPAL SEPARATE PAPER AND BOARD COLLECTION BY REGIONS. YEARS 2021-2023 AND 2022-2023 VARIATIONS.

SOURCE: COMIECO

**The increase that slowed down in 2022 continues in the South, driven by the achievement of Sicily. Just more than 12% of new volumes come from the Centre. The North is split in two with four regions just above or below 0% and four accounting, alone, for almost 50% of the new volumes vs. 2022.**

A disaggregation of the figure between separate collection flows and the remaining share highlights, on one hand, a steady growth by over 250thousand tons (+1.3%) of the materials sorted at the origin and, on the other, a reduction of the mixed waste share that decreases by almost two percent points (-186thousand tons).

The overall effect is a further improvement of general separate collection, which almost reaches 66% at national level.

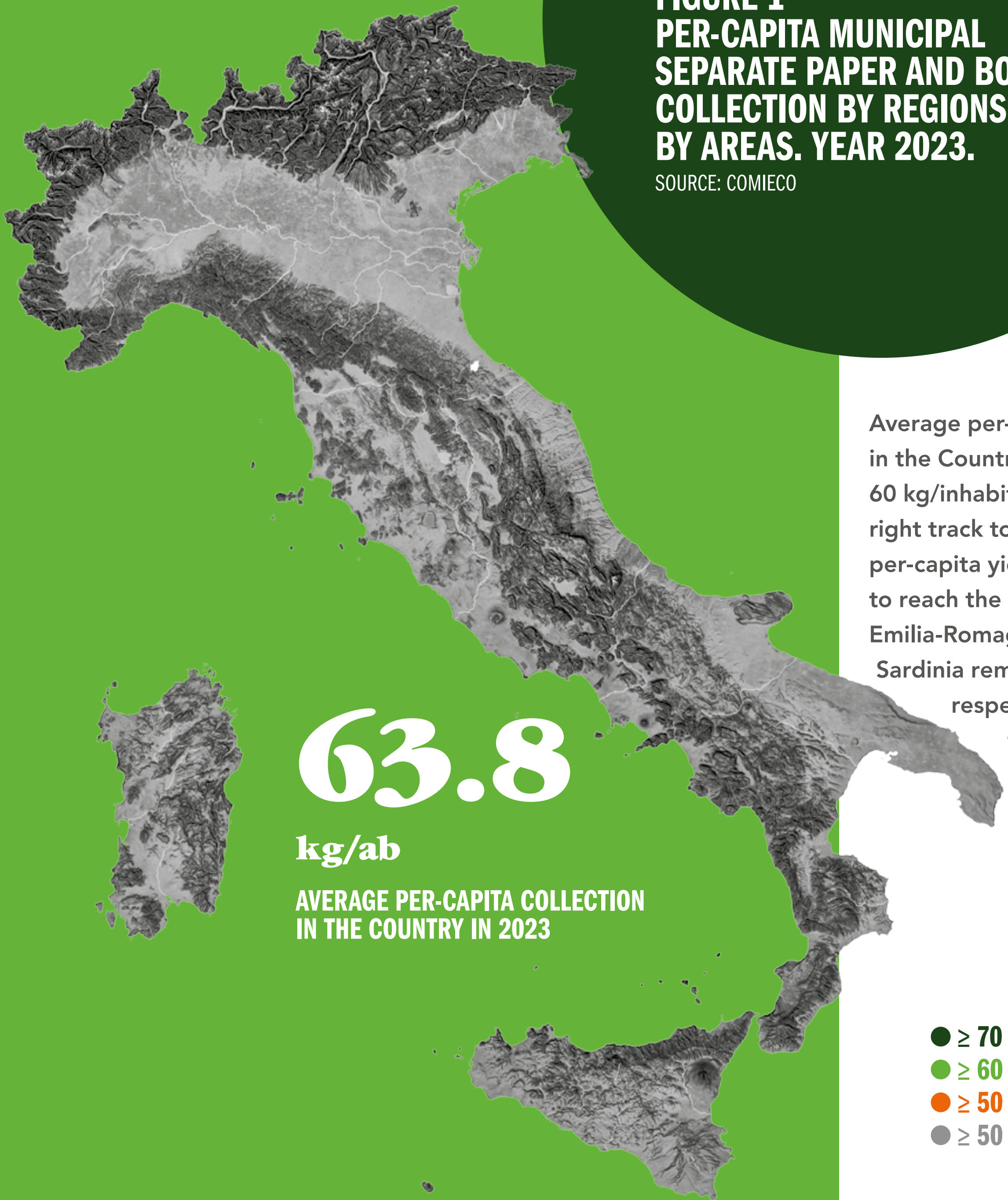
The average paper and board capture rate at national level vs. total urban waste is now 12.9%, mostly due to an improvement in the main southern regions (Sicily, Campania, Puglia), which continue with their development, however with a still uncertain progression.

| Region | 2021 | 2022 | 2023 | Δ 2022/2023 | |
|---|---|---|---|---|---|
| | t | t | t | t | % |
| Piedmont | 299,267 | 313,423 | 313,592 | 169 | 0.1 |
| Vallée d'Aoste | 9,293 | 9,981 | 9,914 | -66 | -0.7 |
| Lombardy | 578,253 | 584,846 | 586,652 | 1,806 | 0.3 |
| Trentino-Alto Adige | 78,643 | 76,870 | 76,716 | -155 | -0.2 |
| Veneto | 292,647 | 287,908 | 316,447 | 28,538 | 9.9 |
| Friuli-Venezia Giulia | 70,656 | 70,333 | 72,064 | 1,731 | 2.5 |
| Liguria | 102,609 | 102,407 | 110,740 | 8,333 | 8.1 |
| Emilia-Romagna | 393,063 | 401,699 | 412,695 | 10,996 | 2.7 |
| **Nord** | **1,824,430** | **1,847,467** | **1,898,820** | **51,352** | **2.8** |
| Tuscany | 315,201 | 323,092 | 327,846 | 4,754 | 1.5 |
| Umbria | 58,097 | 62,826 | 63,400 | 574 | 0.9 |
| Marche | 108,970 | 104,051 | 101,779 | -2,271 | -2.2 |
| Latium | 371,292 | 368,046 | 378,025 | 9,979 | 2.7 |
| **Centre** | **853,560** | **858,014** | **871,050** | **13,036** | **1.5** |
| Abruzzo | 72,734 | 70,706 | 69,769 | -938 | -1.3 |
| Molise | 10,833 | 10,973 | 11,807 | 834 | 7.6 |
| Campania | 222,426 | 223,647 | 233,795 | 10,147 | 4.5 |
| Puglia | 200,485 | 198,915 | 203,584 | 4,670 | 2.3 |
| Basilicata | 29,746 | 26,659 | 27,719 | 1,060 | 4.0 |
| Calabria | 92,813 | 94,299 | 95,945 | 1,646 | 1.7 |
| Sicily | 204,717 | 222,456 | 244,418 | 21,962 | 9.9 |
| Sardegna | 96,830 | 93,215 | 96,164 | 2,949 | 3.2 |
| **South** | **930,584** | **940,870** | **983,200** | **42,330** | **4.5** |
| **Italy** | **3,608,574** | **3,646,352** | **3,753,070** | **106,718** | **2.9** |

*Note: data 2022 adjusted by approximately 17,900 tons. Updates concern various regions and the relevant macro-areas.*

# FIGURE 1
# PER-CAPITA MUNICIPAL SEPARATE PAPER AND BOARD COLLECTION BY REGIONS AND BY AREAS. YEAR 2023.

SOURCE: COMIECO



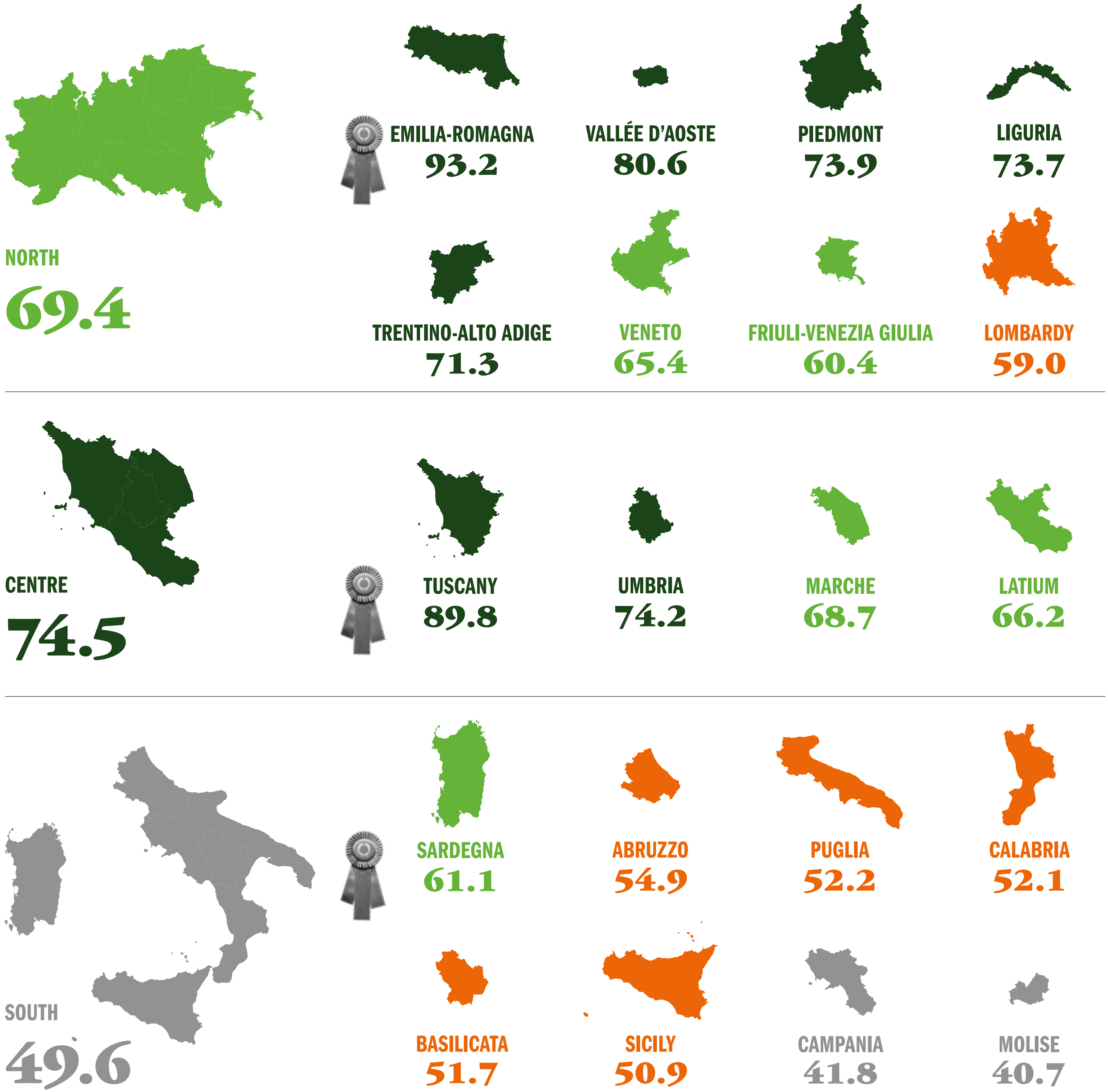
**63.8**

**kg/ab**

**AVERAGE PER-CAPITA COLLECTION IN THE COUNTRY IN 2023**

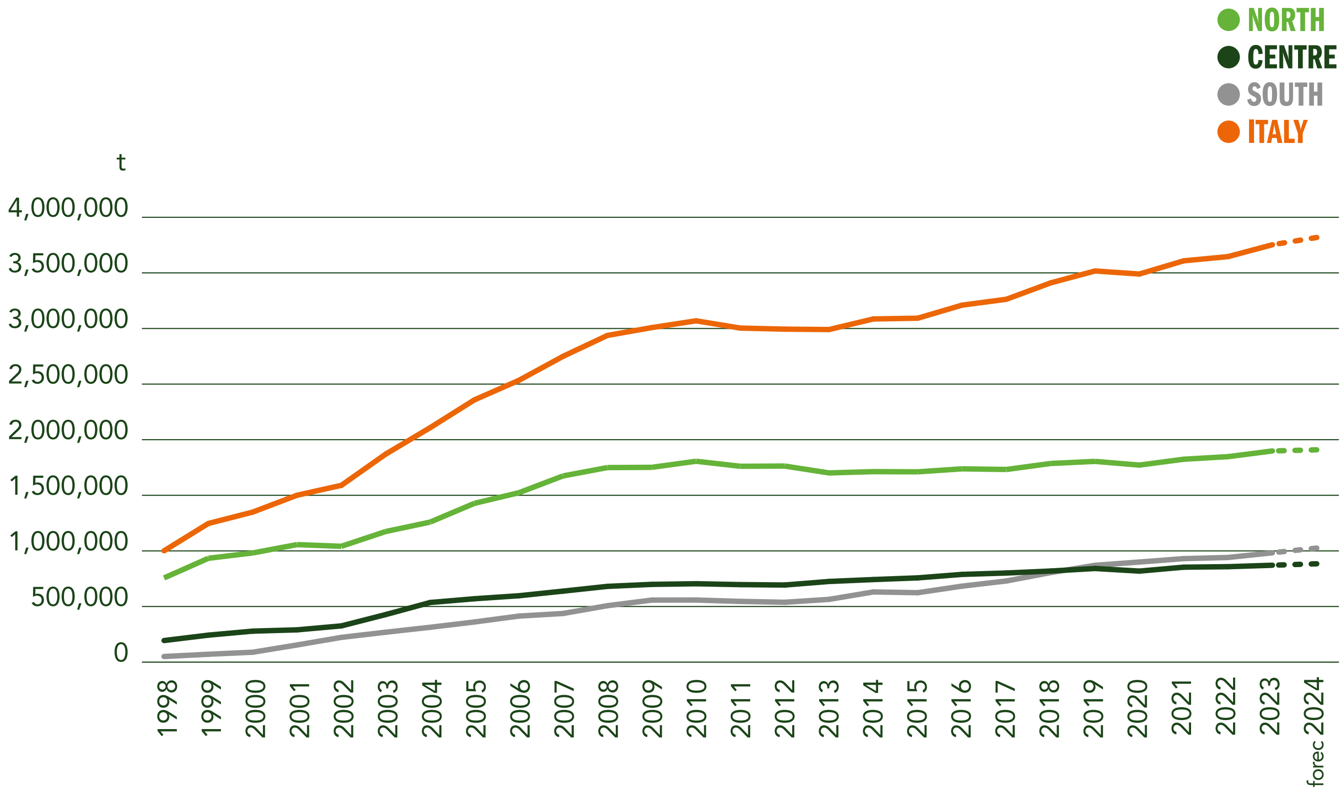
Average per-capita collection in the Country is stable above 60 kg/inhabitant in 2023, on the right track towards 2025, when per-capita yields are expected to reach the 65 kg threshold. Emilia-Romagna, Tuscany, and Sardinia remain the drivers of the respective macro-areas, as they were in the past three years.

- ≥ 70 KG/AB YEAR
- ≥ 60 -< 70 KG/AB YEAR
- ≥ 50 -< 60 KG/AB YEAR
- ≥ 50 KG/AB YEAR

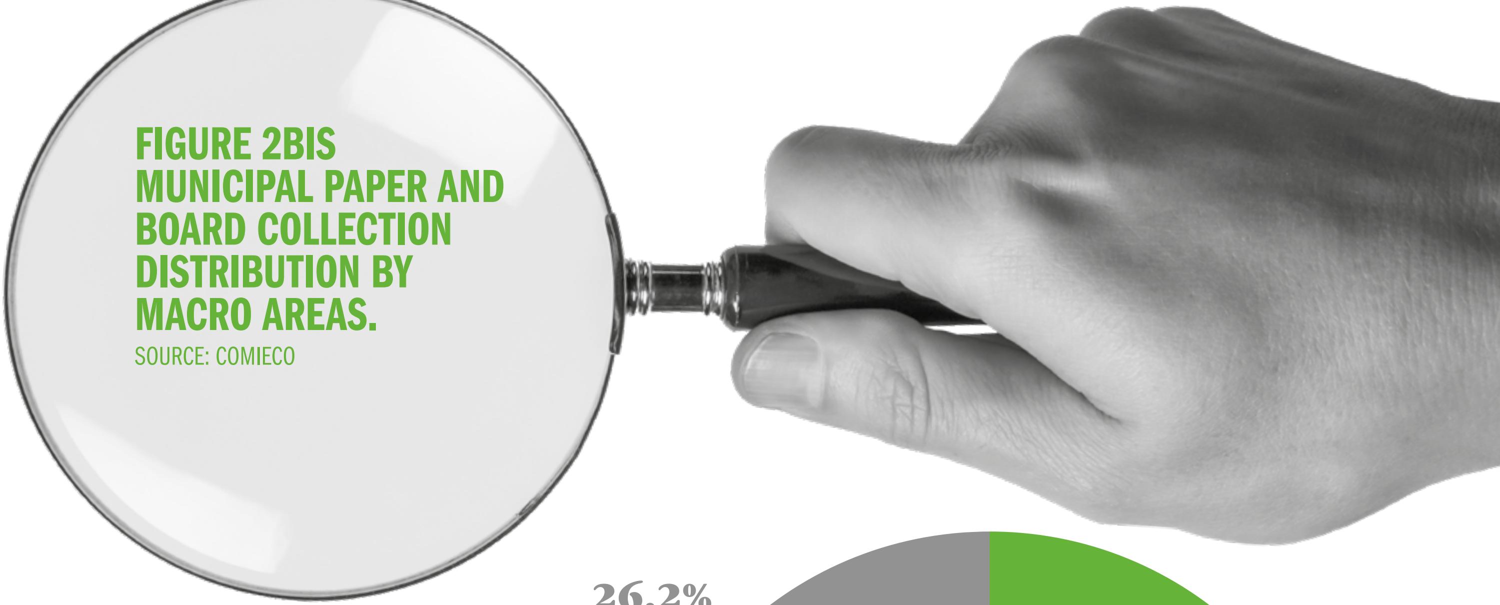

NORTH
69.4
EMILIA-ROMAGNA
93.2
VALLÉE D'AOSTE
80.6
PIEDMONT
73.9
LIGURIA
73.7
TRENTINO-ALTO ADIGE
71.3
VENETO
65.4
FRIULI-VENEZIA GIULIA
60.4
LOMBARDY
59.0
CENTRE
74.5
TUSCANY
89.8
UMBRIA
74.2
MARCHE
68.7
LATIUM
66.2
SOUTH
49.6
SARDEGNA
61.1
ABRUZZO
54.9
PUGLIA
52.2
CALABRIA
52.1
BASILICATA
51.7
SICILY
50.9
CAMPANIA
41.8
MOLISE
40.7

## FIGURE 2
## MUNICIPAL SEPARATE PAPER AND BOARD COLLECTION. 1998-2023 HISTORICAL DATA SET AND 2024 FORECASTS.

SOURCE: COMIECO

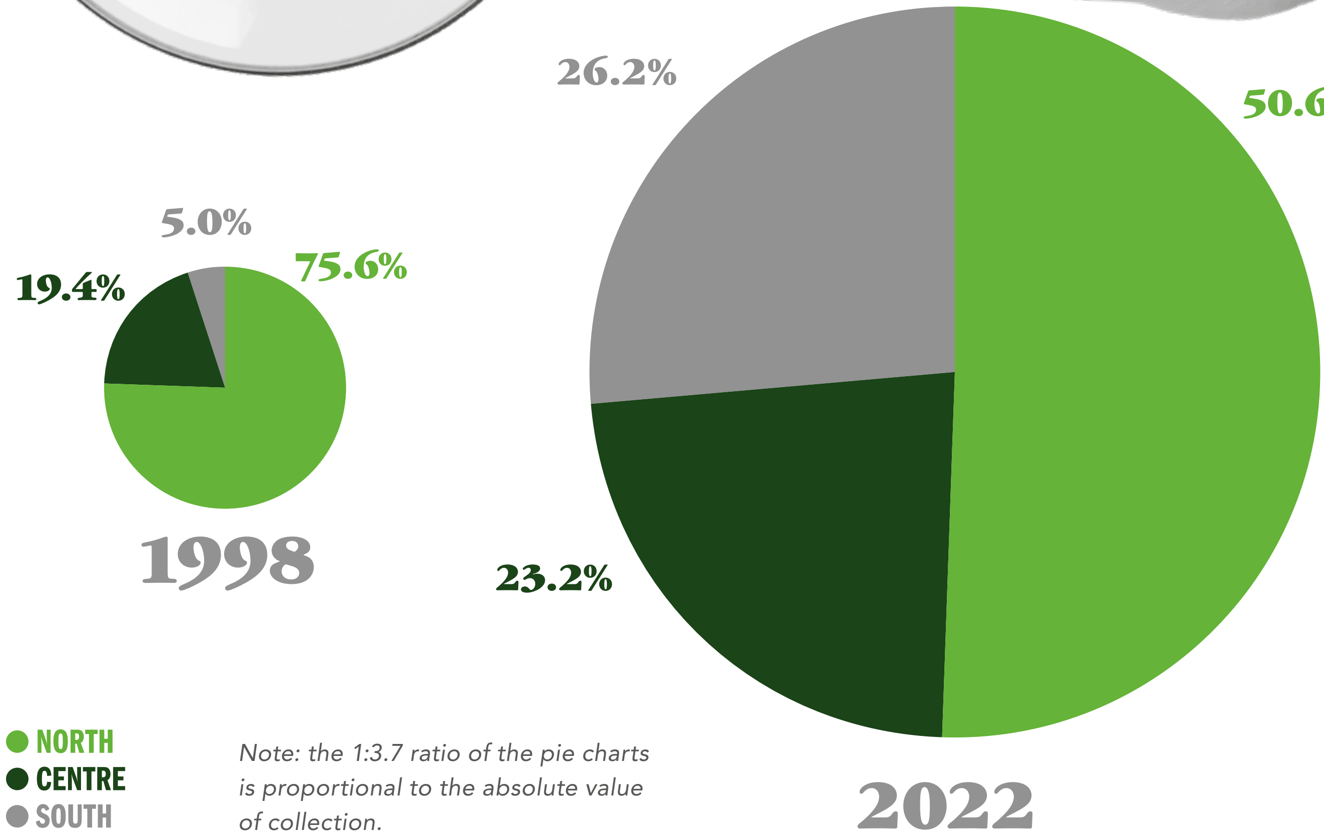



| | 1998 | 2023 | 2024 forecast | Δ 2023-2024 forecast |
|---|---|---|---|---|
| | t | t | t | t |
| North | 756,813 | 1,898,820 | 1,908,899 | 10,079 |
| Centre | 193,958 | 871,050 | 884,086 | 13,036 |
| South | 50,222 | 983,200 | 1,025,531 | 42,330 |
| **Italy** | **1,000,993** | **3,753,070** | **3,818,515** | **65,445** |



## FIGURE 2BIS MUNICIPAL PAPER AND BOARD COLLECTION DISTRIBUTION BY MACRO AREAS.

SOURCE: COMIECO




*Note: the 1:3.7 ratio of the pie charts is proportional to the absolute value of collection.*

## TABLE 2
## THE RATIO OF MUNICIPAL SEPARATE PAPER AND BOARD COLLECTION TO TOTAL URBAN WASTE. 2023 DATA.

SOURCE: ISPRA 2022 DATA

The level of paper capture vs. urban waste and the amount of waste residues - 2022 data - together with per-capita data, allow better understanding of the actual development of separate collection services. In this table, the regions and the macro areas are shown in decreasing order by ratio of separate paper collection vs. total urban waste.
The preliminary 2023 data, albeit partial, seems to point out to further growth in the South, by up to 11%, whereas the value in the Centre and North is substantially stable.

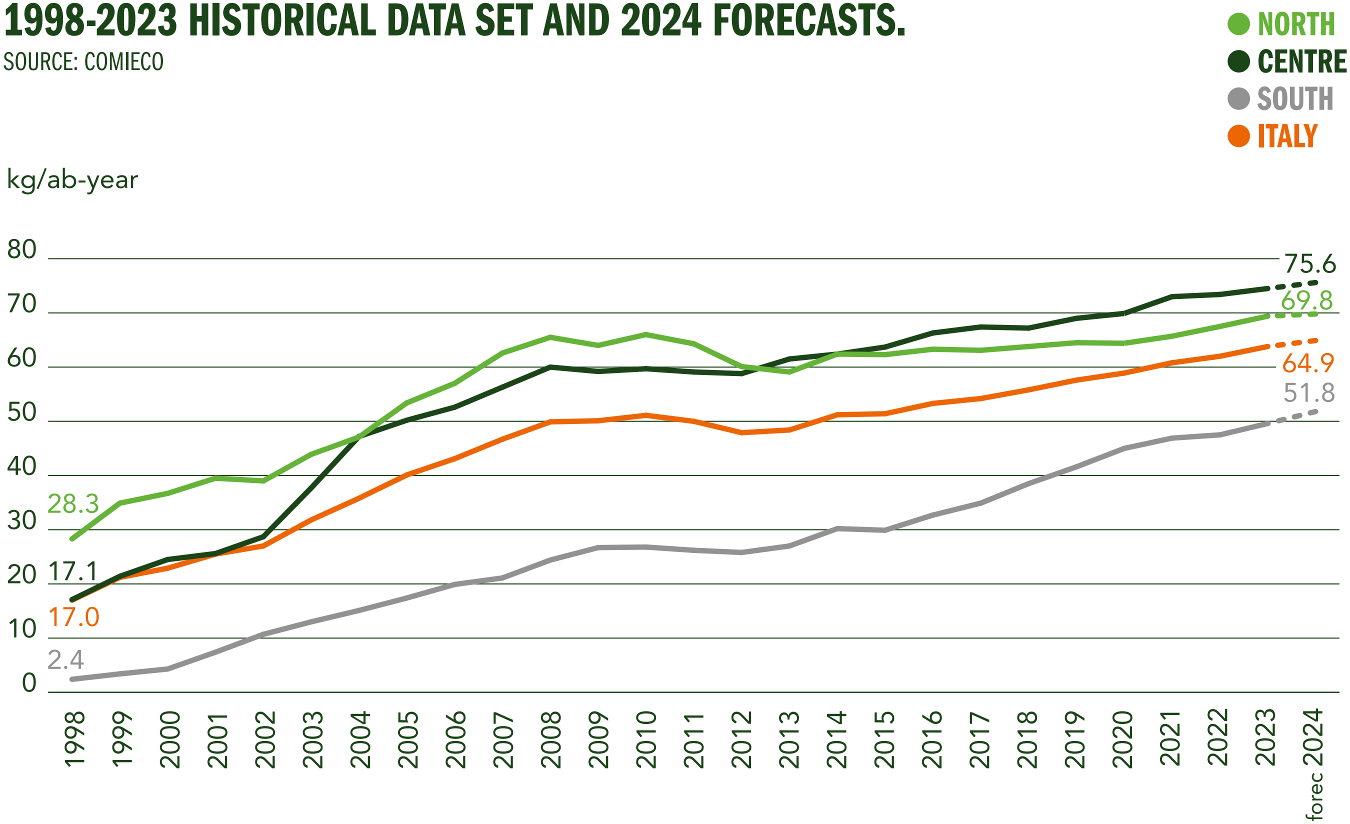
| Area | Inhabitants | Total UW | Mixed UW | Total SC | | SC of paper | SC of paper to total UW |
|---|---|---|---|---|---|---|---|
| | n | kg/ab | kg/ab | kg/ab | % | kg/ab | % |
| North | 27,409,776 | 505.0 | 142.5 | 362.5 | 71.8 | 67.5 | 13.4 |
| Centre | 11,740,836 | 529.8 | 204.2 | 325.6 | 61.5 | 73.1 | 13.8 |
| South | 19,832,510 | 453.3 | 192.5 | 260.8 | 57.5 | 47.5 | 10.5 |
| **Italy** | **58,983,122** | **492.6** | **171.6** | **321.0** | **65.2** | **61.9** | **12.6** |

● MORE THEN 14%
● ≥13–14%
● ≥12–13%
● UN TO 12%

| Region | Inhabitants | Total UW | Mixed UW | Total SC | | SC of paper | SC of paper to total UW |
|---|---|---|---|---|---|---|---|
| | n | kg/ab | kg/ab | kg/ab | % | kg/ab | % |
| Tuscany | 3,651,152 | 589.7 | 202.7 | 387.0 | 65.6 | 88.2 | 15.0 |
| Trentino-Alto Adige | 1,075,317 | 486.3 | 122.9 | 363.4 | 74.7 | 72.5 | 14.9 |
| Piedmont | 4,240,736 | 497.0 | 163.8 | 333.2 | 67.0 | 74.1 | 14.9 |
| Emilia-Romagna | 4,426,929 | 633.4 | 164.6 | 468.8 | 74.0 | 91.2 | 14.4 |
| Umbria | 854,137 | 517.5 | 165.9 | 351.6 | 67.9 | 73.6 | 14.2 |
| Basilicata | 536,659 | 357.4 | 129.6 | 227.8 | 63.7 | 49.1 | 13.7 |
| Marche | 1,480,839 | 516.1 | 144.6 | 371.5 | 72.0 | 70.3 | 13.6 |
| Vallée d’Aoste | 122,955 | 616.0 | 209.1 | 406.9 | 66.1 | 83.8 | 13.6 |
| Latium | 5,707,112 | 501.4 | 228.1 | 273.3 | 54.5 | 64.8 | 12.9 |
| Sardegna | 1,575,028 | 462.5 | 111.6 | 350.8 | 75.9 | 59.6 | 12.9 |
| Lombardy | 9,950,742 | 464.2 | 124.4 | 339.8 | 73.2 | 58.7 | 12.7 |
| Liguria | 1,502,624 | 541.6 | 230.4 | 311.2 | 57.5 | 68.2 | 12.6 |
| Calabria | 1,841,300 | 401.6 | 182.3 | 219.3 | 54.6 | 50.2 | 12.5 |
| Veneto | 4,838,253 | 477.4 | 113.5 | 363.9 | 76.2 | 59.5 | 12.5 |
| Abruzzo | 1,269,860 | 454.7 | 161.2 | 293.5 | 64.5 | 55.8 | 12.3 |
| Friuli-Venezia Giulia | 1,192,191 | 494.4 | 160.5 | 333.9 | 67.5 | 59.3 | 12.0 |
| Puglia | 3,900,852 | 469.0 | 194.4 | 274.7 | 58.6 | 51.1 | 10.9 |
| Sicily | 4,802,016 | 458.3 | 222.5 | 235.8 | 51.5 | 46.7 | 10.2 |
| Molise | 289,840 | 374.6 | 155.9 | 218.7 | 58.4 | 37.6 | 10.0 |
| Campania | 5,592,175 | 467.4 | 207.4 | 260.0 | 55.6 | 40.2 | 8.6 |

## FIGURE 3
## PER-CAPITA MUNICIPAL SEPARATE PAPER AND BOARD COLLECTION. 1998-2023 HISTORICAL DATA SET AND 2024 FORECASTS.

SOURCE: COMIECO

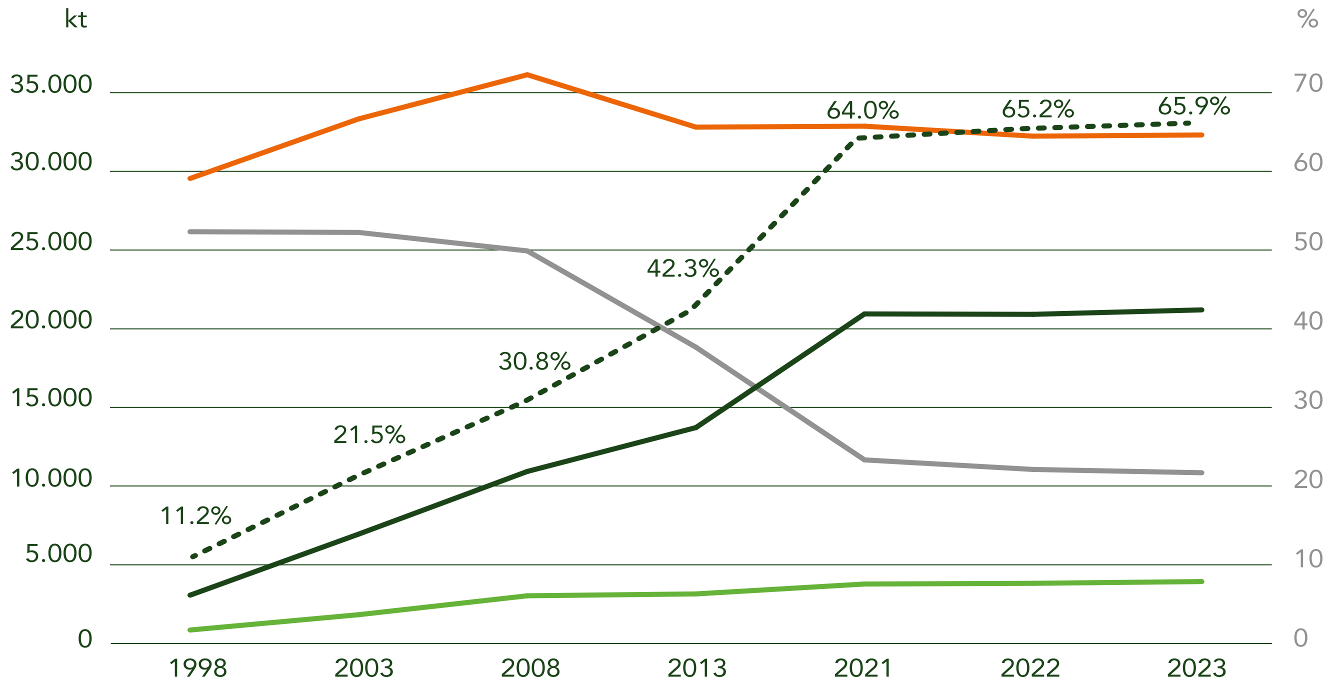



### Municipal separate paper and board collection in Italy

| | 1998 | 2022 | 2023 | Δ 2022/2023 | Δ 1998/2023 | |
|---|---|---|---|---|---|---|
| | kg/ab-Year | kg/ab-Year | kg/ab-Year | kg/ab-Year | kg/ab-Year | % |
| North | 28.3 | 67.5 | 69.4 | 1.9 | 41.1 | 145.3 |
| Centre | 17.1 | 73.4 | 74.5 | 1.1 | 57.4 | 335.6 |
| South | 2.4 | 47.5 | 49.6 | 2.1 | 47.2 | 1,968.2 |
| **Italy** | **17.0** | **62.0** | **63.8** | **1.8** | **46.8** | **275.1** |

## FIGURE 4
## COMPARISON OF URBAN WASTE PRODUCTION, OVERALL SEPARATE COLLECTION, AND MUNICIPAL SEPARATE PAPER AND BOARD COLLECTION IN ITALY. 1998-2023 DATA SET. SOURCE: COMIECO

- SC OF PAPER AND BOARD (KT)
- TOTAL SC (KT)
- MIXED UW (KT)
- TOTAL UW (KT)
- SC (%)




**Campania, Sicily, and Puglia need to improve their performance and, together with metropolitan areas - Rome, in particular - remain the main target areas for growth. In fact, paper and board collection is deemed to have a growth potential of at least 700thousand tons per year, to be captured from municipal collection. However, all the regions have still untapped potentials.**

# BIG CITIES: CONTRASTING SIGNS IN THE GENERAL SCENARIO

The focus on the main cities of the Country is updated with 2023 data. For several years, in fact, Comieco has been punctually monitoring the data of Turin, Milan, Florence, Rome, Naples, and Palermo, which represent the three macro-areas as true constant observatories that offer a privileged overview of nation-wide dynamics.

These six cities together account for almost 12% in terms of population (net of tourist flows) and 13% of the volumes of waste produced vs. the values of the whole country.

This observation point is, in fact, a small-scale model of the broader national picture, and shows all the urban, productive, and anthropic complexity of the country.

***This macro-city has a population of almost 7 million and produces over 3.7 million tons of urban waste, including 47% (1.7 million) collected separately.***

Total per-capita waste production exceeds the nation's production by over 10%.

Overall, separate collection has improved by over 1.3 percent points vs. 2022 against a stable global production of waste. Overall per-capita paper and board collection is close to 64 kg/ab.

***As we look at paper and board collection in the six cities, volumes in 2023 are close to 467thousand tons, equal to approximately 12.4% of the national figure.***

**-0.7%**

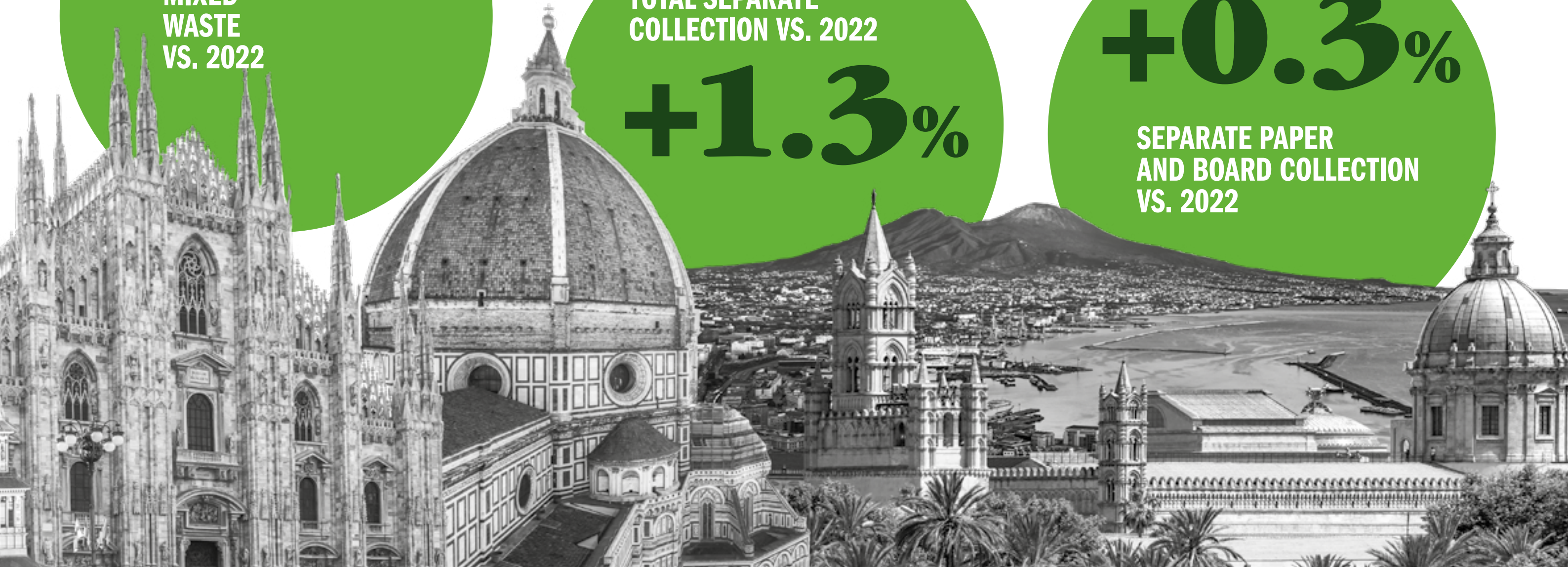
**MIXED WASTE VS. 2022**

**TOTAL SEPARATE COLLECTION VS. 2022**

**+1.3%**

**+0.3%**

**SEPARATE PAPER AND BOARD COLLECTION VS. 2022**



## FIGURE 5
## WASTE COLLECTION IN THE SAMPLE CITIES MILAN, TURIN, FLORENCE, ROME, NAPLES, AND PALERMO. YEAR 2023 AND 2022-2023 VARIATIONS.

SOURCE: COMIECO

Within this aggregation, each “neighbourhood” has a very different behaviour, with disaggregated data that change unevenly.

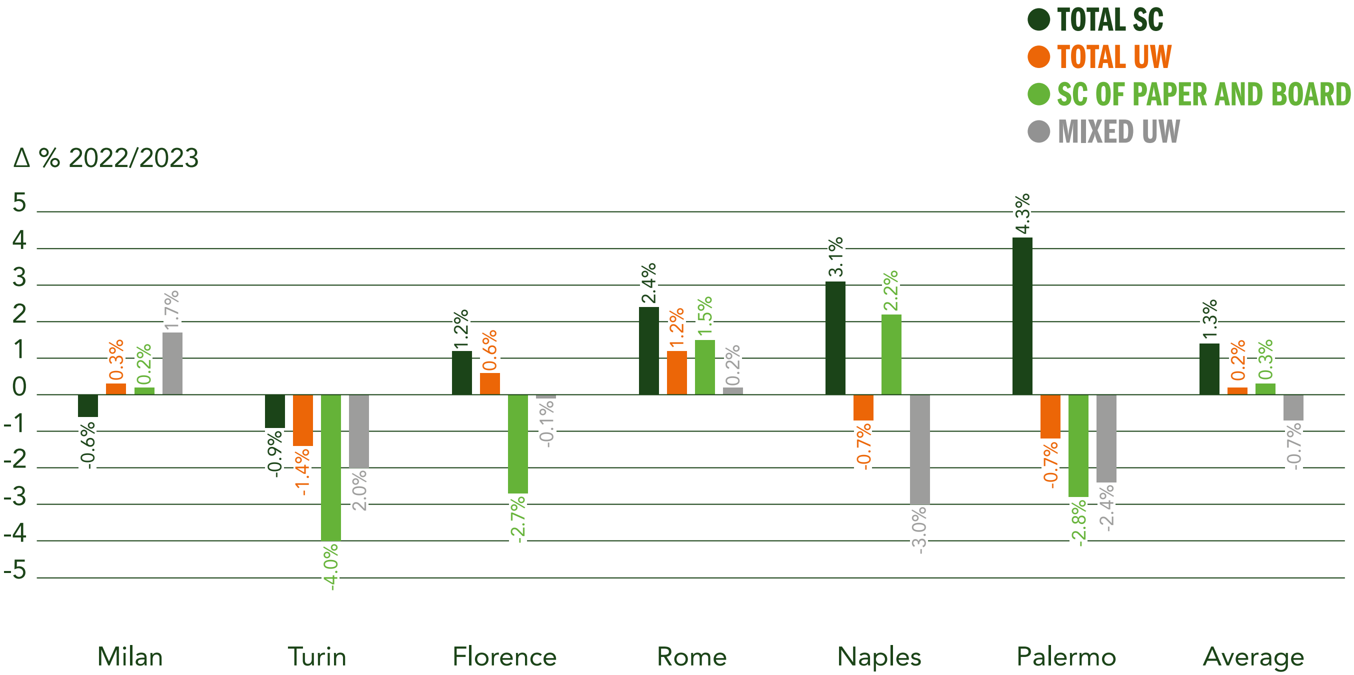
***Rome deserves a specific comment: all indicators are moving upward here, however with a generally positive effect for service development.***

In fact, development is generally such as to improve separate collections, including of paper, after recording substantially stable data for a few years.

Paper collection is increasing by over 4thousand tons, substantially all derived from household or small-scale trade circuits.

All indicators are negative for Turin and there seem to be signs of weakness, particularly in paper and board collection, even if the per-capita value (66.3% kg/ab) is still above the general average.

There is a dual need for the next few years: continue to support the cities whose standards are good and develop the ones – first and foremost Naples and Palermo – that still have room for significant growth, instead.



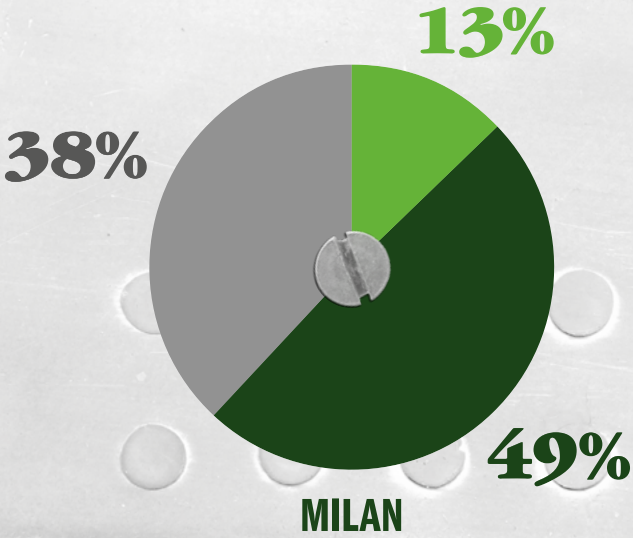

| SC of paper and board | | Milan | Turin | Florence | Rome | Naples | Palermo | Total |
|---|---|---|---|---|---|---|---|---|
| 2022 | t | 79,065 | 58,077 | 28,281 | 243,694 | 40,798 | 15,844 | **465,759** |
| 2023 | t | 79,217 | 55,775 | 27,511 | 247,320 | 41,711 | 15,397 | **466,931** |
| **Δ 2022/2023** | t | 152 | -2,302 | -770 | 3,626 | 913 | -447 | **1,172** |
| | % | 0.2 | -4.0 | -2.7 | 1.5 | 2.2 | -2.8 | **0.3** |

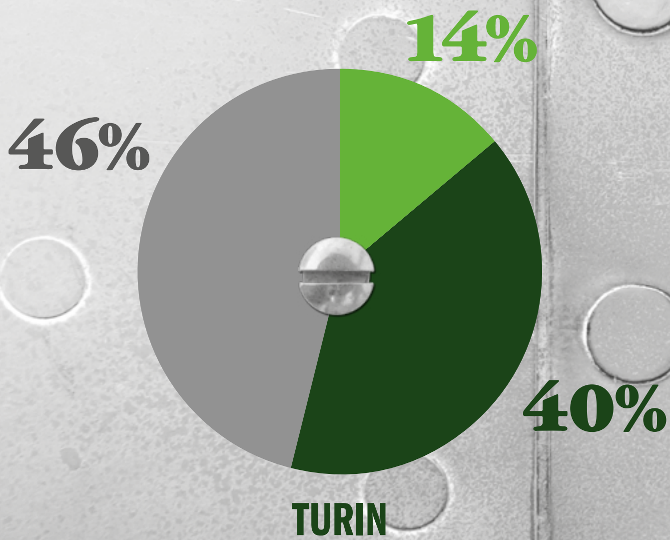
**Big cities have changed significantly compared to 2022. Overall waste production increased in Milan, Florence, and Rome, and decreased in Turin, Naples, and Palermo. At the same time, separate collection improved everywhere except in the North (Turin and Milan) and paper collection, in particular, remained stable in Milan, increased in Rome and Naples, but decreased in Turin, Florence, and Palermo.**

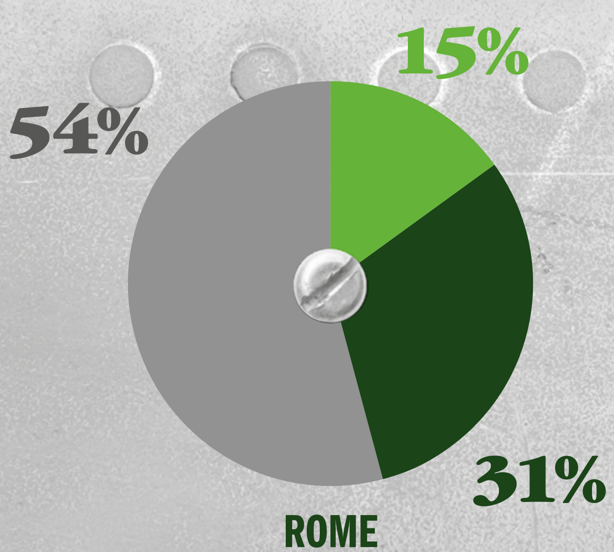
## FIGURE 5BIS
## WASTE COLLECTION IN THE SAMPLE CITIES MILAN, TURIN, FLORENCE, ROME, NAPLES, AND PALERMO. YEAR 2023.

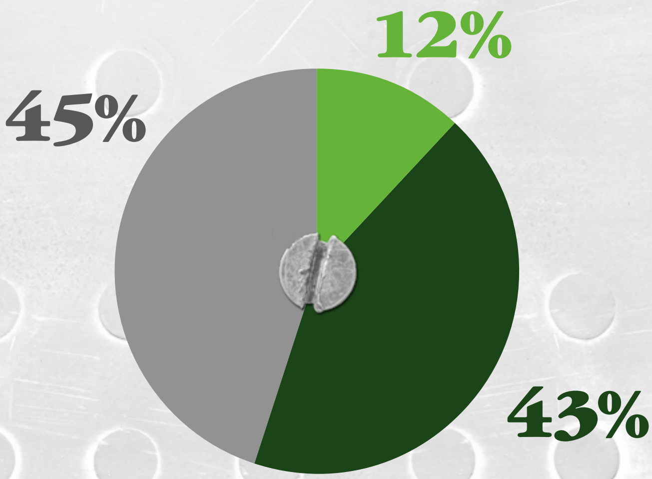
SOURCE: COMIECO

- SC OF PAPER
- SC OF OTHER FRACTIONS
- MIXED UW

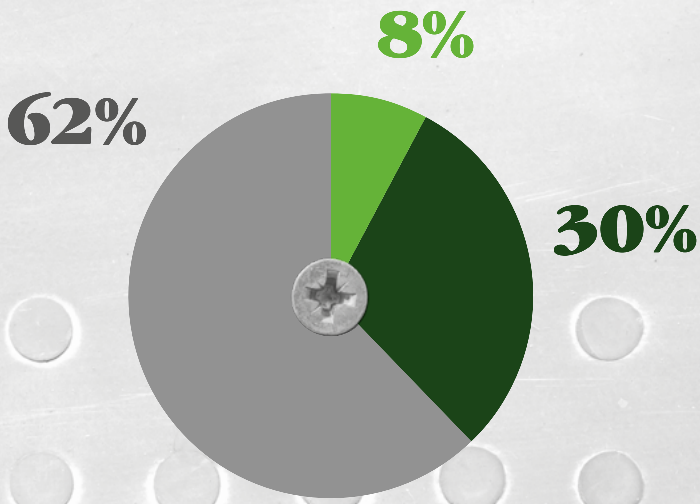


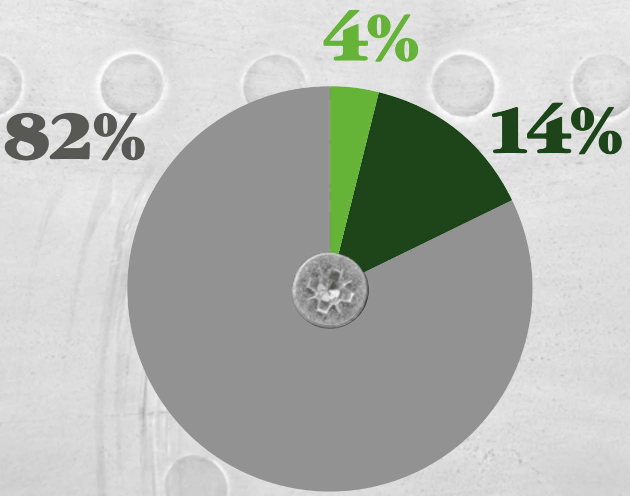





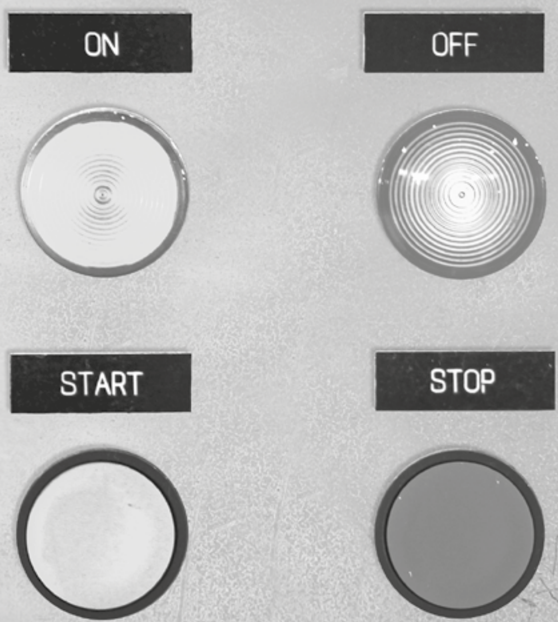

FLORENCE




NAPLES



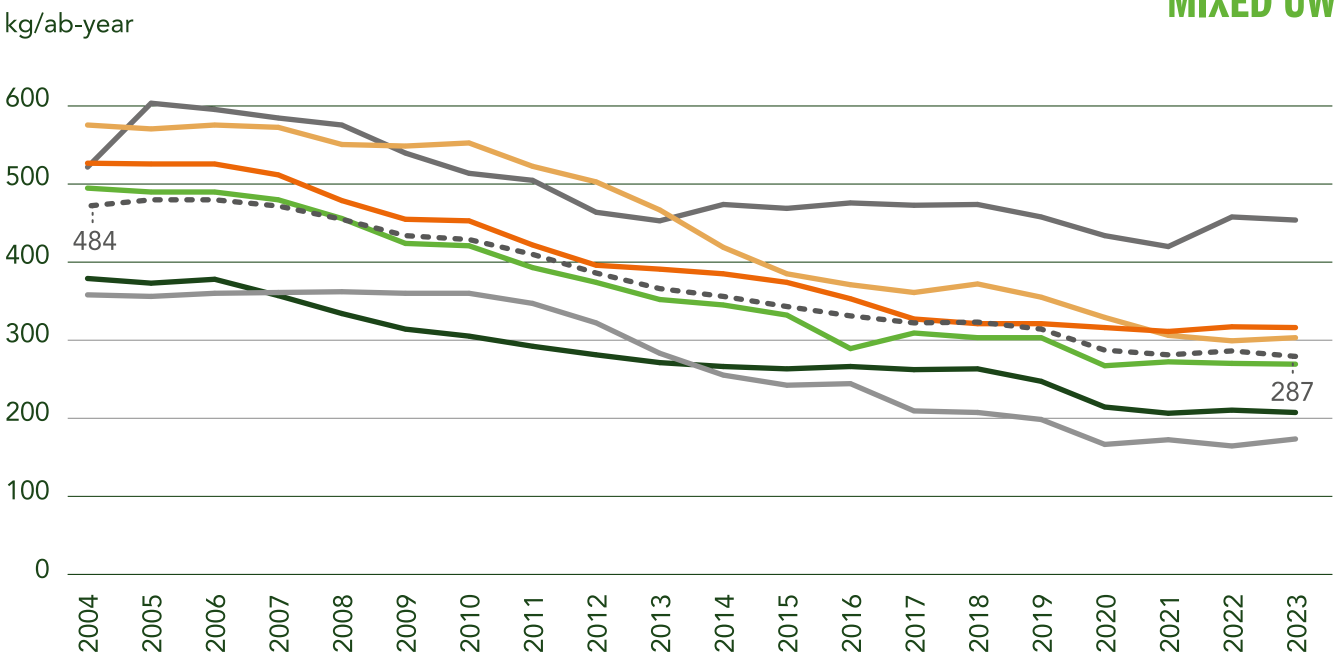

PALERMO



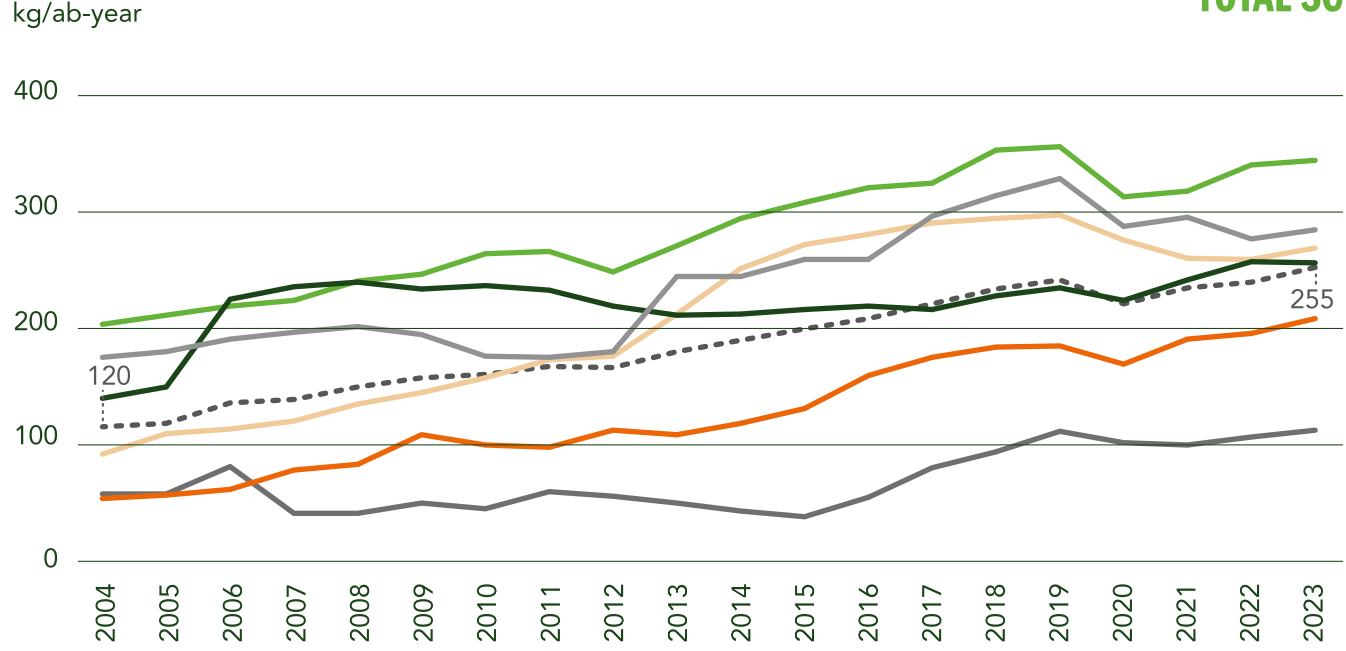
## FIGURE 6
## WASTE COLLECTION IN THE SAMPLE CITIES MILAN, TURIN, FLORENCE, ROME, NAPLES, AND PALERMO. 2004-2023 PER-CAPITA DATA.

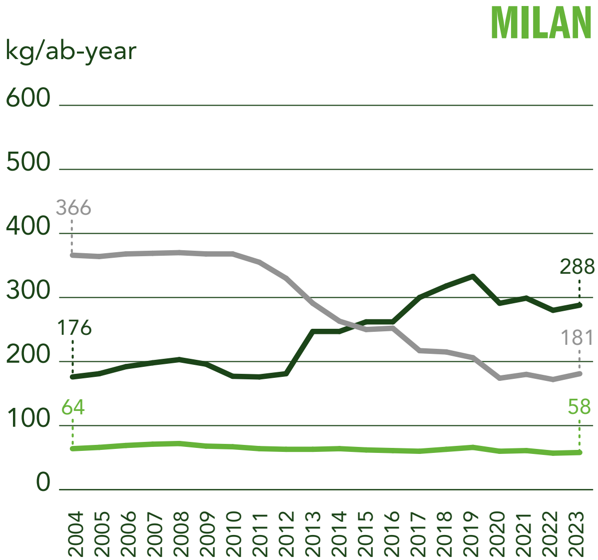
SOURCE: COMIECO

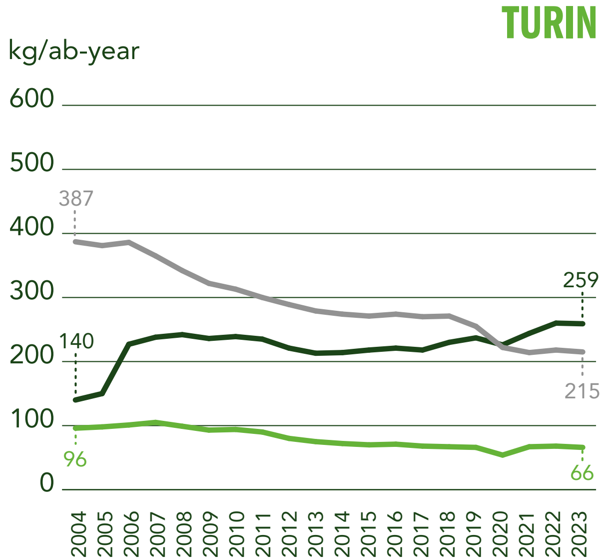
### MIXED UW

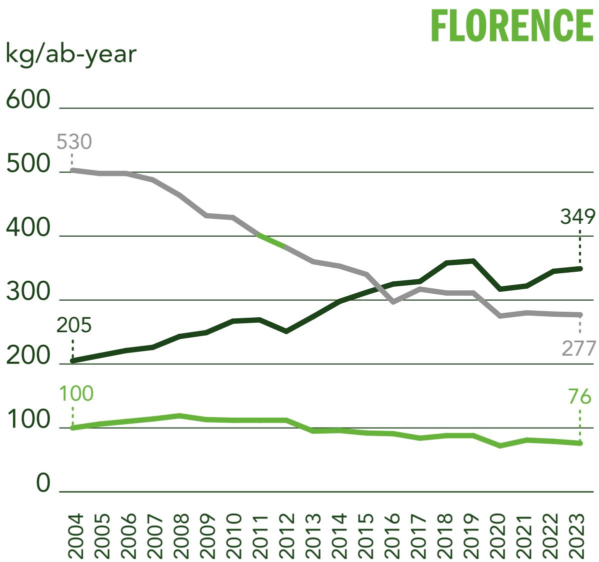


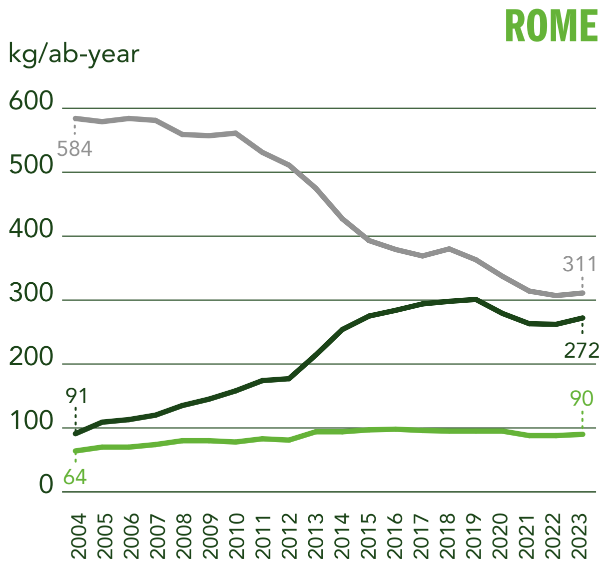
## TOTAL SC


kg/ab-year
400
300
200
100
0
120
255
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
MILAN
TURIN
FLORENCE
ROME
NAPLES
PALERMO
AVERAGE


MILAN
kg/ab-year
600
500
400
300
200
100
0
366
288
176
181
64
58
2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023

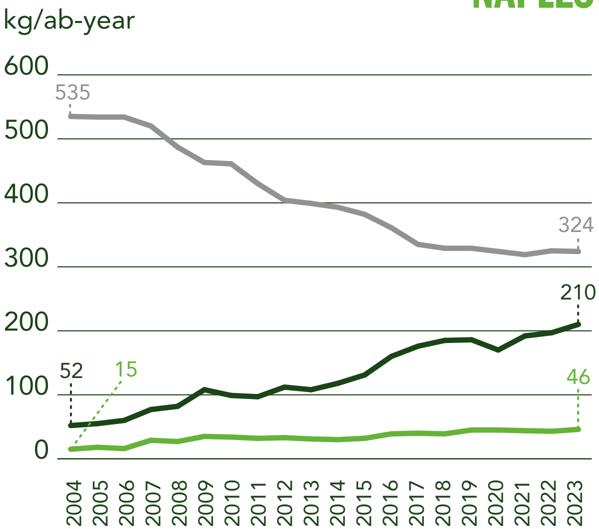

TURIN
kg/ab-year
600
500
400
300
200
100
0
387
259
140
215
96
66
2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023


FLORENCE
kg/ab-year
600
500
400
300
200
100
0
530
349
205
277
100
76
2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023

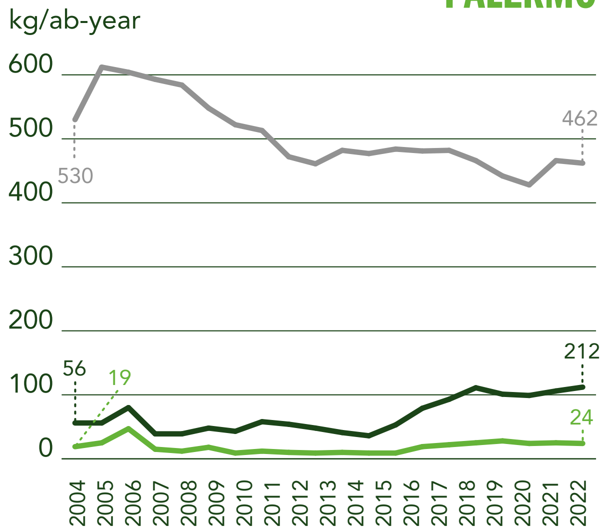

ROME
kg/ab-year
600
500
400
300
200
100
0
584
311
272
91
90
64
2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023

MIXED UW
TOTAL SC
SC OF PAPER AND BOARD

## NAPLES




## PALERMO



**89.8%**

CITIES UNDER THE AGREEMENTS

**95.3%**

ITALIAN POPULATION UNDER THE AGREEMENTS

# THE CITIES UNDER THE AGREEMENTS: FIGURES AND RESULTS IN 2023

# COLLECTION

A total of 976 agreements were in force as at 31/12/2023, entered into with Comieco either directly or via delegated subjects and involving 7,095 Cities and a population of over 56 million.

The Centre and the North have 89 and 171 agreements in force respectively, whereas 716 are in force in the South. It is therefore clear that the South still suffers from chronic fragmentation of agreement management.

The effects of this fragmentation are significant: a more "coordinated" management approach could improve administrative organization for supra-municipal areas, ensuring more efficiency and cost reduction both upon collection and in subsequent recycling-related activities.

In numbers, the average is one agreement every 3 Cities in the South, one every 10 in the Centre, and one every 23 in the North. In 2023 the Consortium ensured the recycling of over 2.3 million tons of paper and board, i.e. 62.6% of national municipal collection.

As expected, the managed amounts increased by over 350thousand tons (+17.7%) vs. 2022. This trend is a result of the sharp and sudden decline of international paper for recycling quotations recorded from July 2022: these fell by almost 90% in less than two months vs. the data (the maximum historical values) of the spring of the same year.

**PAPER AND BOARD MANAGED UNDER THE AGREEMENTS, EQUAL TO 62.6% OF TOTAL COLLECTION IN THE ITALIAN CITIES**

**over 2.3 million t**

This situation forced the Municipal authorities and the operators to review their industrial plans. The Consortium was identified as a reliable party to ensure paper and board recycling in a challenging environment.
This option was implemented from January 2023 via the “windows”-based mechanism provided for by the ANCI-CONAI agreement and by the paper Technical Annex.

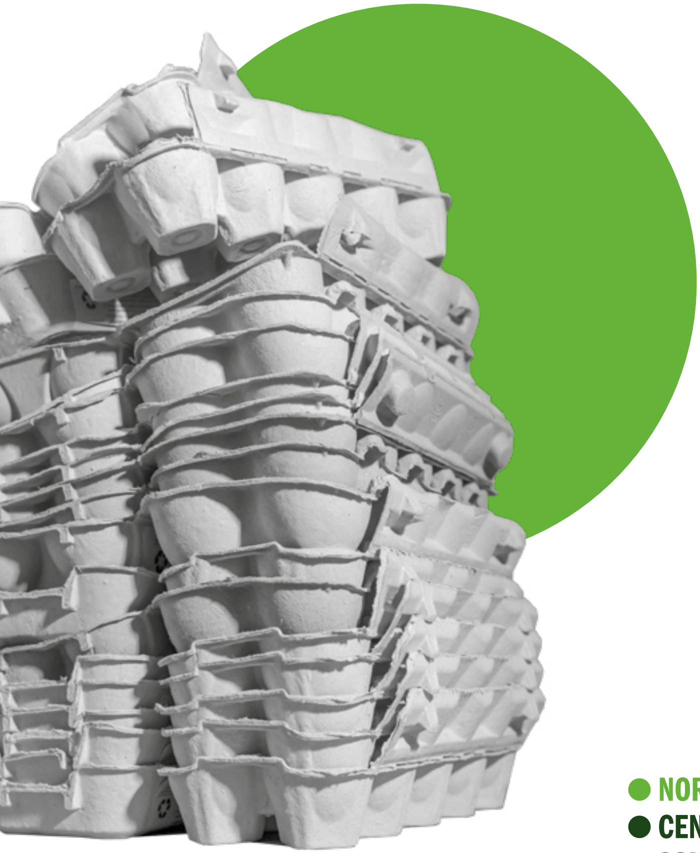
More specifically, this increase of the volumes managed under the agreements in 2023 refers to 1.52 million tons of paper and board packaging (+16% vs. 2022, as opposed to last year’s -16%) and more than 830thousand tons of similar product fractions (+21% vs. 2022, vs. -27.4% in the previous year) in the managed collection mix.

## TABLE 3
## LOCAL COVERAGE BY REGIONS AS AT DECEMBER 31, 2023.

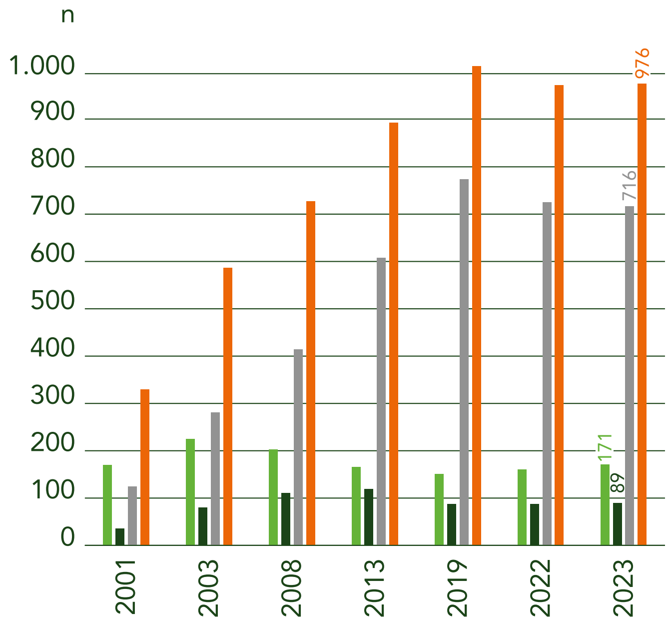
SOURCE: COMIECO

| Area | Cities under the agreements | Average No. of inhabitants per agreement | Average amount managed under |
|---|---|---|---|
| | n | n | t |
| North | 171 | 150,944 | 6,405 |
| Centre | 89 | 126,745 | 5,753 |
| South | 716 | 26,553 | 1,037 |
| **Italy** | **976** | **57,483** | **2,408** |

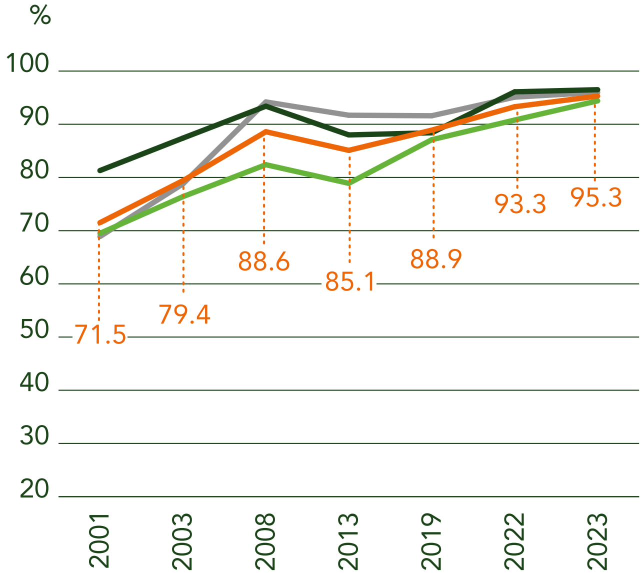
| Region | Cities under the agreements | | Inhabitants under the agreements | | Managed under the agreements | |
|---|---|---|---|---|---|---|
| | n | % | n | % | t | % vs. total SC of paper |
| Piedmont | 1,124 | 95.3 | 4,063,162 | 95.8 | 190,641 | 60.8 |
| Vallée d'Aoste | 74 | 100.0 | 122,955 | 100.0 | 9,601 | 96.8 |
| Lombardy | 1,165 | 77.5 | 8,672,947 | 87.2 | 293,021 | 49.9 |
| Trentino-Alto Adige | 275 | 97.5 | 1,056,097 | 98.2 | 67,843 | 88.4 |
| Veneto | 556 | 98.8 | 4,798,731 | 99.2 | 237,816 | 75.2 |
| Friuli-Venezia Giulia | 214 | 99.5 | 1,185,349 | 99.4 | 37,759 | 52.4 |
| Liguria | 230 | 98.3 | 1,493,150 | 99.4 | 61,646 | 55.7 |
| Emilia-Romagna | 326 | 98.8 | 4,419,062 | 99.8 | 196,849 | 47.7 |
| **North** | **3,964** | **90.5** | **25,811,453** | **94.4** | **1,095,176** | **57.7** |
| Tuscany | 267 | 97.8 | 3,631,774 | 99.5 | 199,771 | 60.9 |
| Umbria | 90 | 97.8 | 841,992 | 98.6 | 34,316 | 54.1 |
| Marche | 206 | 91.6 | 1,401,730 | 94.7 | 70,528 | 69.3 |
| Latium | 313 | 82.8 | 5,404,783 | 94.7 | 207,443 | 54.9 |
| **Centre** | **876** | **90.5** | **11,280,279** | **96.5** | **512,058** | **58.8** |
| Abruzzo | 295 | 96.7 | 1,260,347 | 99.3 | 65,148 | 93.4 |
| Molise | 135 | 99.3 | 289,398 | 99.8 | 8,298 | 70.3 |
| Campania | 461 | 83.8 | 5,352,262 | 95.7 | 184,525 | 78.9 |
| Puglia | 243 | 94.6 | 3,865,603 | 99.1 | 161,418 | 79.3 |
| Basilicata | 108 | 82.4 | 494,581 | 92.2 | 18,367 | 66.3 |
| Calabria | 367 | 90.8 | 1,782,626 | 96.8 | 58,929 | 61.4 |
| Sicily | 359 | 91.8 | 4,709,615 | 98.1 | 175,989 | 72.0 |
| Sardegna | 287 | 76.1 | 1,257,678 | 79.9 | 69,889 | 72.7 |
| **South** | **2,255** | **88.4** | **19,012,110** | **96.0** | **742,562** | **75.5** |
| **Italy** | **7,095** | **89.8** | **56,103,842** | **95.3** | **2,349,796** | **62.6** |



## SIGNED AGREEMENTS



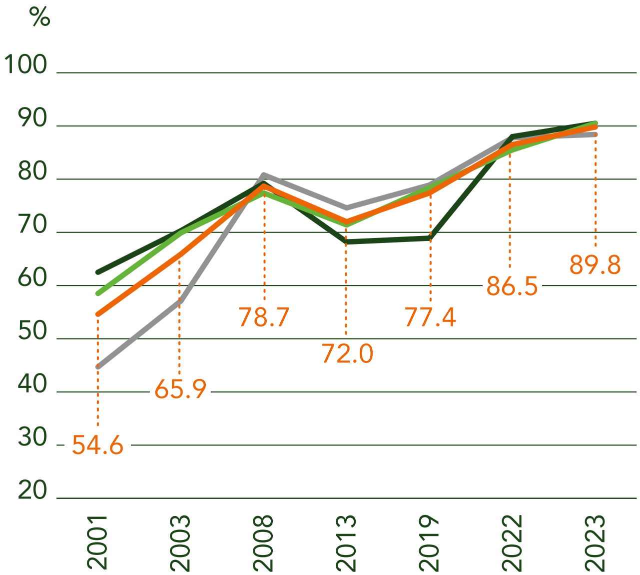

## COVERED POPULATION



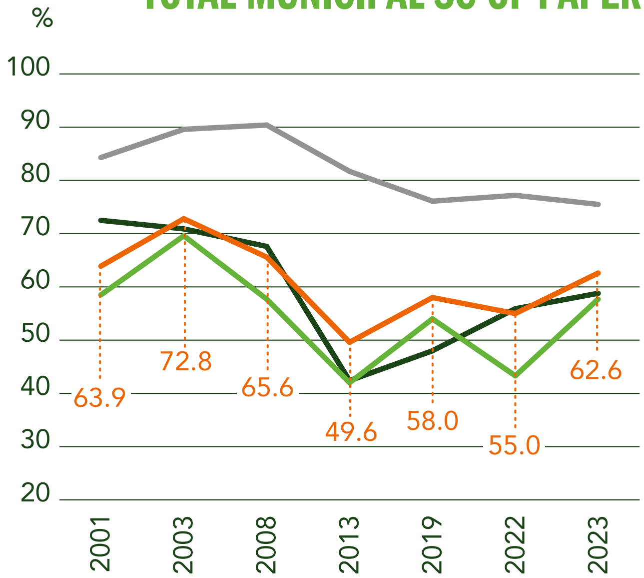

NORTH
CENTRE
SOUTH
ITALY

**FIGURE 7**
**STATUS OF THE AGREEMENTS UPON THE EXPIRATION OF EACH FRAMEWORK AGREEMENT AND COVERAGE RATE OF THE AGREEMENTS. 2001-2023 HISTORICAL DATA.**
SOURCE: COMIECO

## COVERED CITIES



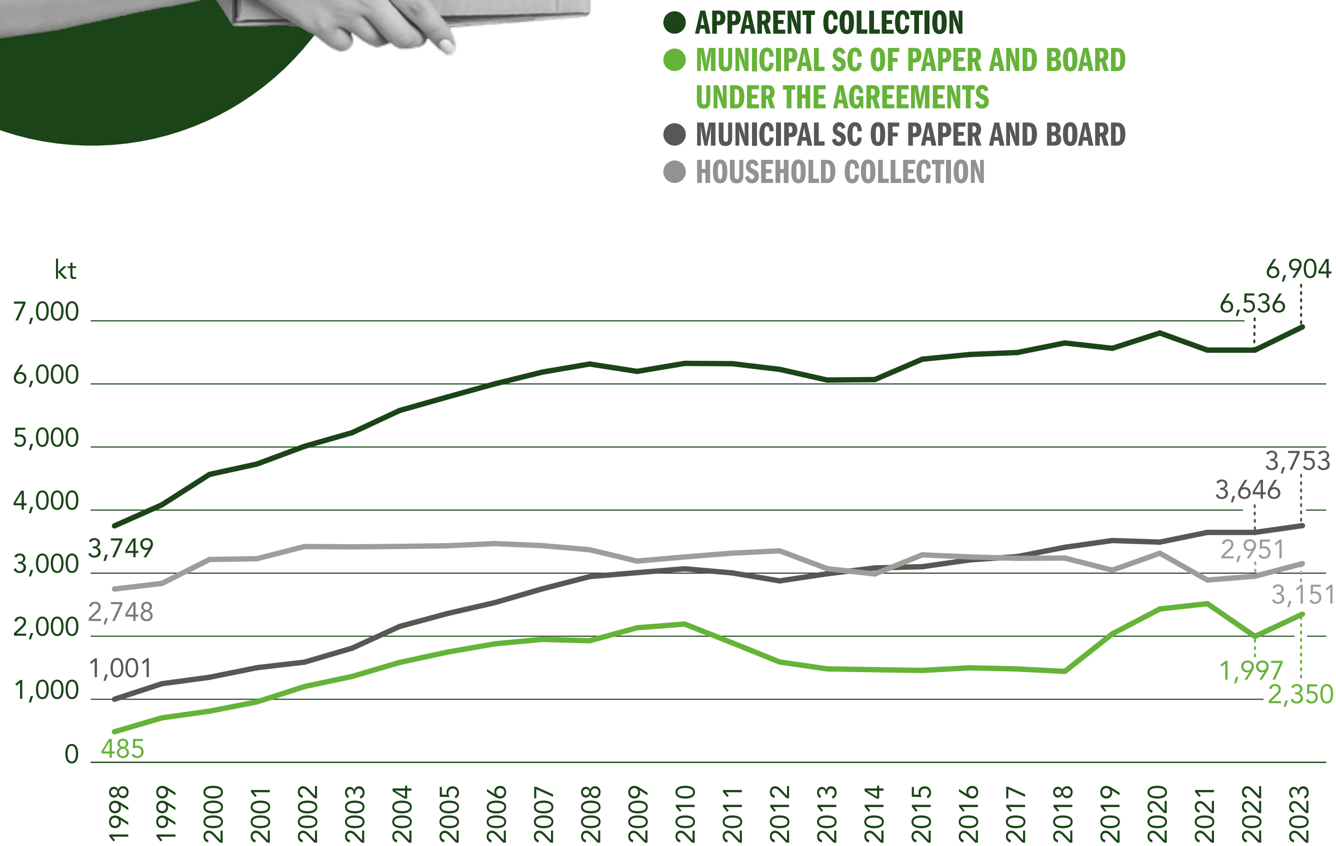

## AMOUNT MANAGED BY COMIECO VS. TOTAL MUNICIPAL SC OF PAPER




Agreement fragmentation in the South still hampers synergic development. In a busy market environment, Comieco is reducing its share of managed material (62.6% of municipal collection) consistently with the principle of subsidiarity.

## FIGURE 8
## RATIO OF OVERALL PAPER AND BOARD COLLECTION MANAGED UNDER THE AGREEMENTS TO APPARENT COLLECTION. 1998-2023 HISTORICAL DATA SET AND 2022-2023 COMPARISON.

SOURCE: COMIECO



| | 1998 | 2003 | 2008 | 2013 | 2020 | 2022 | 2023 | Δ 1998/2023 | | Δ 2022/2023 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | kt | kt | kt | kt | kt | kt | kt | kt | % | kt | % |
| Apparent collection* | 3,749 | 5,227 | 6,316 | 6,062 | 6,808 | 6,536 | 6,904 | 3,155 | 84.1 | 367 | 5.6 |
| Municipal SC of paper and board | 1,001 | 1,810 | 2,945 | 2,991 | 3,492 | 3,646 | 3,753 | 2,752 | 274.9 | 107 | 2.9 |
| Municipal SC of paper and board under the agreements | 485 | 1,362 | 1,928 | 1,482 | 2,432 | 1,997 | 2,350 | 1,865 | 384.5 | 353 | 17.7 |
| Household collection | 2,748 | 3,417 | 3,371 | 3,071 | 3,316 | 2,890 | 3,151 | 403 | 14.7 | 261 | 9.0 |

| | 1998 | 2003 | 2008 | 2013 | 2020 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|
| | % | % | % | % | % | % | % |
| Municipal SC of paper and board under the agreements vs. apparent collection | 12.9 | 26.1 | 30.5 | 24.4 | 35.7 | 30.6 | 34.0 |
| Municipal SC of paper and board under the agreements vs. municipal collection | 48.5 | 75.2 | 65.5 | 49.6 | 69.6 | 54.8 | 62.6 |

**Apparent collection: consumption of paper for recycling - import + export*

# ALLOCATIONS TO THE PARTIES UNDER THE AGREEMENTS

Over 190 million EUR is the global amount of the allocations made by Comieco in 2023 against the management of over 2.3 million tons of paper and board from municipal collection under the agreements.

Such amounts refer to the packaging share entrusted to the Consortium, whereas, as an effect of the assessment system provided for the similar fractions (graphic paper) and of very low market quotations, the allocations for similar product fractions were nil.

The investment for 2023 refers only to the amount of managed packaging, which recorded a 41 million EUR increase vs. 2022, basically due to the return of over 350thousand tons of paper and board (+18%) under the agreements, as expected in the previous edition of this report.

***The calculated average value per inhabitant under the agreements slightly increases too (+2%) from 3.3 EUR in 2022 to 3.4 EUR in 2023 (2.6 EUR/ab in 2020).***

**191.2**

**million EUR**

**PAID TO THE CITIES IN 2023**

In addition to considerations for collection – in so-called OUT agreements – Comieco grants resources for the processing and improvement of paper for recycling.

Such resources are intended for the plants that operate on behalf of the parties to the agreements. These sums amounted to almost 54 million EUR in 2023.

**2.51**

**billion EUR**

**ALLOCATED TO THE ITALIAN CITIES FROM 1998 TO 2023 FOR COLLECTIONN**

***The combined volumes of municipal paper and board collection from 1998 to 2023 yield a total of 70.4 million tons, up from 1 to over 3.7 million tons per year, including just less than 60.5% (42.5 million) managed by Comieco.***

**3.41**

**EUR/ab-year**

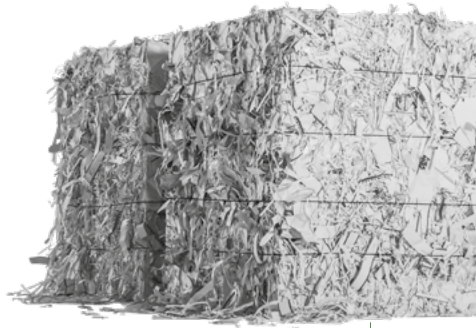
**AVERAGE CONSIDERATION PER INHABITANT**

In over 26 years of operation (1998-2023) of the ANCI-CONAI agreement, the Consortium allocated over 2.3 million EUR to the Italian cities for paper and board packaging collection, plus 234 million EUR for the similar product fractions (FMS) it took charge of and almost 314 million EUR for plant-based processing.

The allocations made to the Cities under the agreements exceed 190 million EUR.
A weak paper for recycling market throughout the year reduced the value of FMS to zero for the first time.

## TABLE 4
## MANAGED AMOUNTS AND ALLOCATIONS TO THE PARTIES UNDER THE AGREEMENTS IN 2023. DETAILED BY AREAS.

SOURCE: COMIECO

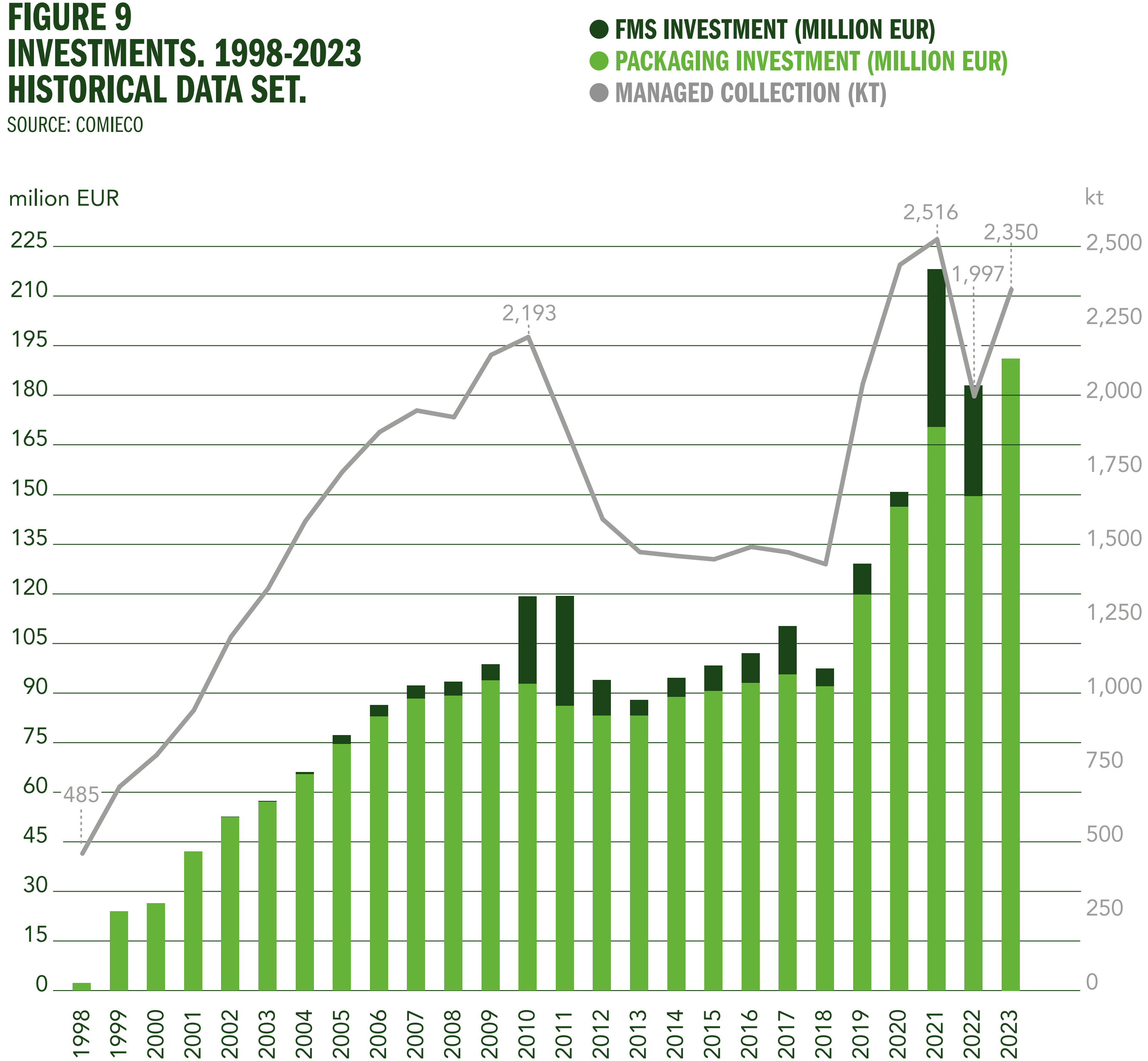


| Area | Inhabitants under the agreements | Amount | | | | | |
|---|---|---|---|---|---|---|---|
| | | Managed packaging | FMS | Total | Managed packaging | FMS | Total |
| | n | t | t | t | kg/ab | kg/ab | kg/ab |
| North | 25,811,453 | 721,665 | 373,511 | 1,095,176 | 28.0 | 14.5 | 42.5 |
| Centre | 11,280,279 | 314,437 | 197,621 | 512,058 | 27.9 | 17.5 | 45.4 |
| South | 19,012,110 | 480,901 | 261,661 | 742,562 | 25.3 | 13.8 | 39.1 |
| **Italy** | **56,103,842** | **1,517,003** | **832,793** | **2,349,796** | **27.0** | **14.8** | **41.9** |

| Area | Inhabitants under the agreements | Considerations for collection | | | | | |
|---|---|---|---|---|---|---|---|
| | | Managed packaging | FMS | Total | Managed packaging | FMS | Total |
| | n | EUR | EUR | EUR | EUR/ab | EUR/ab | EUR/ab |
| North | 25,811,453 | 93,319,776 | 0 | 93,319,776 | 3.62 | 0.00 | 3.62 |
| Centre | 11,280,279 | 39,698,439 | 0 | 39,698,439 | 3.52 | 0.00 | 3.52 |
| South | 19,012,110 | 58,169,561 | 0 | 58,169,561 | 3.06 | 0.00 | 3.06 |
| **Italy** | **56,103,842** | **191,187,776** | **0** | **191,187,776** | **3.41** | **0.00** | **3.41** |

# FIGURE 9
# INVESTMENTS. 1998-2023
# HISTORICAL DATA SET.

SOURCE: COMIECO

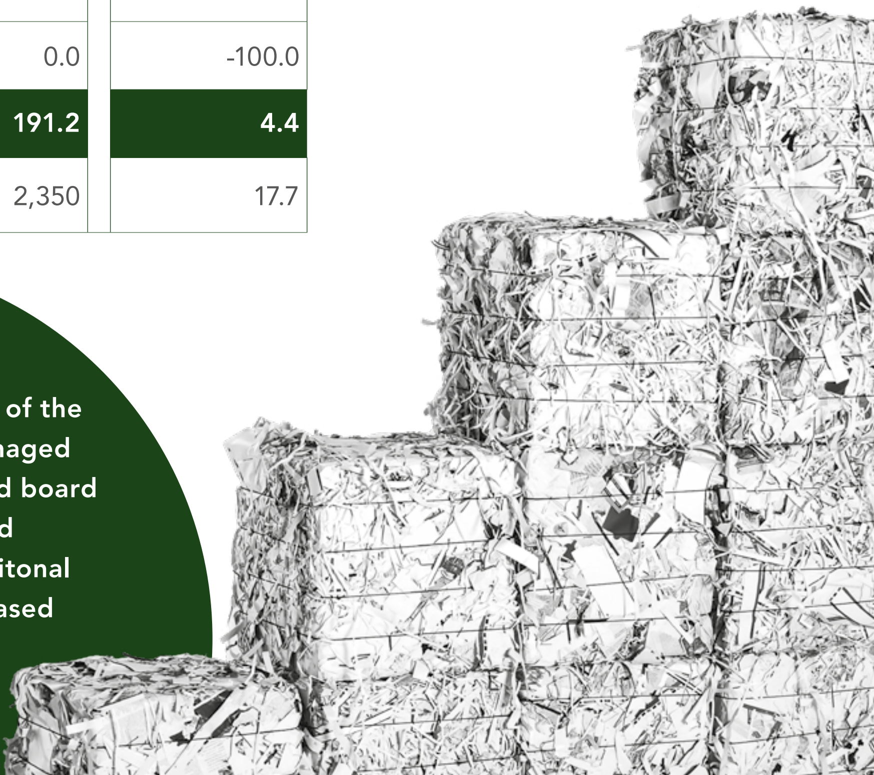


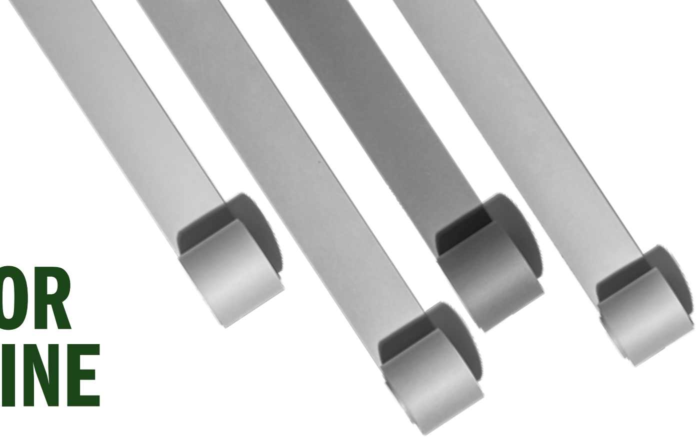
| | | 1st ANCI-CONAI agreement 1998-2003 | 2nd ANCI-CONAI agreement 2004-2008 | 3rd ANCI-CONAI agreement 2009-2013 | 4th ANCI-CONAI agree-ment2014-2019 | 5th ANCI-CONAI agreement 2020-2024 | Total |
|---|---|---|---|---|---|---|---|
| Packaging | million EUR | 204.2 | 400.3 | 439.0 | 579.6 | 657.4 | **2.280.5** |
| FMS | million EUR | 0.4 | 15.3 | 80.2 | 52.6 | 85.9 | **234.4** |
| **Total** | **million EUR** | **204.6** | **415.6** | **519.2** | **632.2** | **743.3** | **2.514.9** |
| Managed collection | kt | 5,524 | 9,088 | 9,296 | 9,387 | 9,295 | **42,590** |

| | | 2022 | 2023 | Δ 2022-2023 % |
|---|---|---|---|---|
| Packaging | million EUR | 149.5 | 191.2 | 27.8 |
| FMS | million EUR | 33.6 | 0.0 | -100.0 |
| **Total** | **million EUR** | **183.1** | **191.2** | **4.4** |
| Managed collection | kt | 1,997 | 2,350 | 17.7 |

*I dati relativi al V accordo coprono gli anni dal 2020 al 2023.*

**In over 25 years of operation of the CONAI System, Comieco managed 42.6 million tons of paper and board from municipal collection, and allocated 2.5 billion EUR additonal resources to support plant-based processing.**





# QUALITY: MORE TESTS FOR A MORE RELIABLE PIPELINE

Quantitative tests highlight different behaviours in the country’s macro areas also in 2023, according to both collection flows: 1.01+1.02 (from households) and 1.04+1.05 (from other sources).

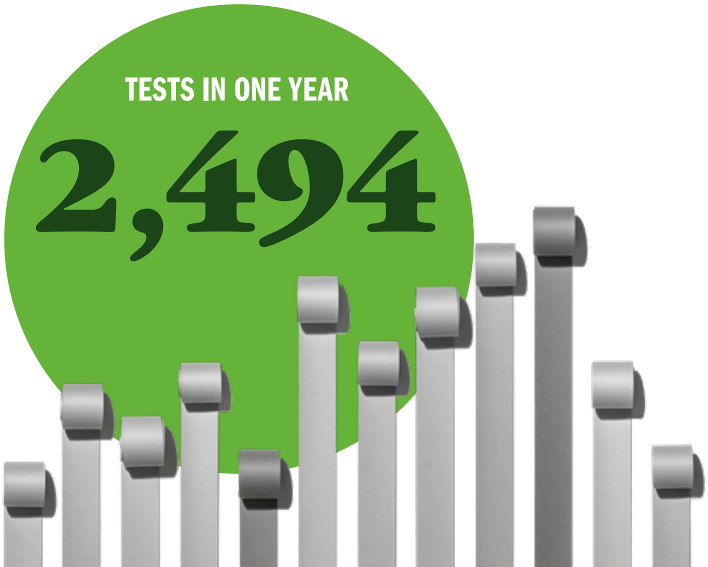
The total number of samples collected is substantially similar to 2022 (+30), also if related to the increase of the managed volumes and to the sampling criteria (provided for by the quality and audit document of the Technical Annex).

The ratio of tests performed to managed volumes is almost 1 sample per 1,000 tons; after all, baseline collection quality is crucial in the organizational and industrial paper and board recycling system of the Country.

Fewer impurities at baseline mean fewer interventions on waste upon processing, fewer process scraps (sorting residues) and, thus, lower costs.

On the other hand, better baseline quality allows maximized recycling. In this respect it is crucial for services to use effective collection equipment and ensure regular emptying and removal.

For more objective understanding, it is important to extract the national data for the 2023 performance too, which improves from an average amount of contaminants of 2.00% to 1.55% in 1.01+1.02, and observe how the different macro areas perform.



***The Centre (1.22% of contaminants) outperforms the North (1.49% of contaminants) for the first time, and the South improves (from 3.60% in 2022 to 2.14% in 2023), driving the area's average below the first quality bracket specified in the Technical Annex for the first year.***

However, a more thorough understanding of the issue requires an analysis of the method, which partly makes the above scenario less comforting.

Most of the amounts managed under the agreements (60,7%) are by now incinerated as so-called "OUT" post-processing flows: in this case the parties to the agreements identify the service provider for sorting and incineration of the collected material in view of entrusting End-of-Waste material to Comieco.

**1.55%** AVERAGE CONTAMINANTS IN 1.01+1.02

**0.70%** AVERAGE CONTAMINANTS IN 1.04+1.05

This allows to maximize revenues while securing first-bracket positioning. The remaining share – approximately 39% of volumes – is managed, instead, on the basis of the amounts transferred to the plant immediately after collection, i.e. via "IN" contracts.

This is something that most often concerns high-quality sources, ensuring maximized considerations a priori. In most cases, the "OUT" contract is entered into to work on the material by sorting out its components (packaging and similar fractions), but in other cases it is required by reason of low-quality collection. In this case measures are taken to remove impurities.

Considering the importance of quality at the origin, according to the provisions of the Quality Annex, the Consortium uses "informative" tests to monitor the incoming materials based on "OUT" agreements, also important to identify the areas that need operational and information support to improve collection at the origin, particularly in household circuits.

The tests performed according to this punctual criterion provide different types of information. In almost 1 case out of 4, household collection at national level does not comply with first-bracket specifications.

This rate is close to one-third of collection in the South. A more positive result is recorded for 1.04+1.05 – business circuits – but in these samples too more than 15% (almost the same rate across Italy) does not reach first-bracket standards.

***Non-optimal quality at the origin implies costs for the operator, which translate either into a reduction of the allocated amount or - alternatively - into charges due to the plants for processing of materials.***

The data thus processed, available locally, is crucial to direct the actions of the Consortium in support to development, designing projects focused on local conditions and collection types.

## TABLE 5
## COLLECTION QUALITY (AVERAGE AMOUNT OF CONTAMINANTS). 2022-2023 COMPARISON BY MACRO AREAS.

SOURCE: COMIECO

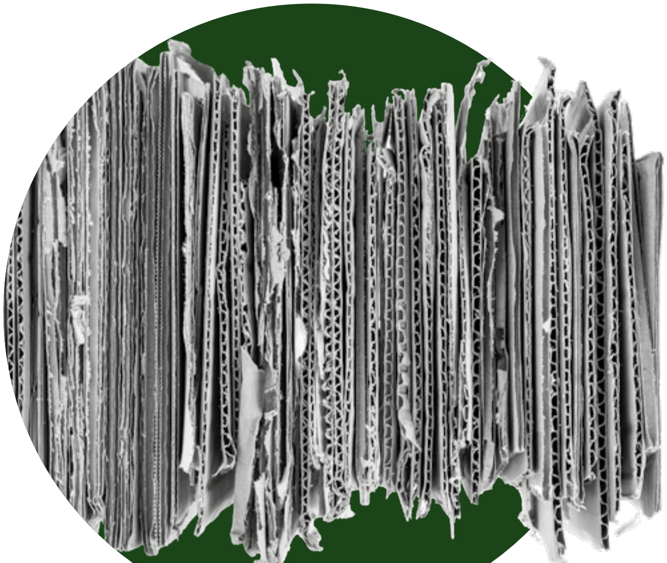
| | Year 2022 | | Year 2023 | | Δ 2022/2023 |
|---|---|---|---|---|---|
| | Tests | Contaminants | Tests | Contaminants | Contaminants |
| | n | % | n | % | % |
| **1.01+1.02** | First quality bracket threshold: 3.0% | | | | |
| North | 1,025 | 1.59 | 1,051 | 1.49 | -0.10 |
| Centre | 504 | 1.50 | 478 | 1.22 | -0.28 |
| South | 379 | 3.60 | 409 | 2.14 | -1.46 |
| **Italy** | **1,908** | **2.00** | **1,938** | **1.55** | **-0.45** |
| **1.04+1.05** | First quality bracket threshold: 1.5% | | | | |
| North | 120 | 0.64 | 122 | 0.59 | -0.05 |
| Centre | 172 | 0.53 | 169 | 0.46 | -0.07 |
| South | 264 | 0.85 | 265 | 0.90 | 0.05 |
| **Italy** | **556** | **0.70** | **556** | **0.70** | **0.00** |

**1.01+1.02: the average value of 2023 (1.55%) improved vs. the previous year. Since 2019 the flows monitored for the purpose of consideration payment fall within the parameters set for the first quality bracket (3%). 1.04+1.05: slight improvement in business collection, whose average value confirms excellent quality. Tests valid only for the purpose of the agreements.**

## TABLE 5BIS
## DISTRIBUTION OF TESTS PERFORMED ON COLLECTION AT THE SOURCE IN 2023 BY QUALITY BRACKETS.

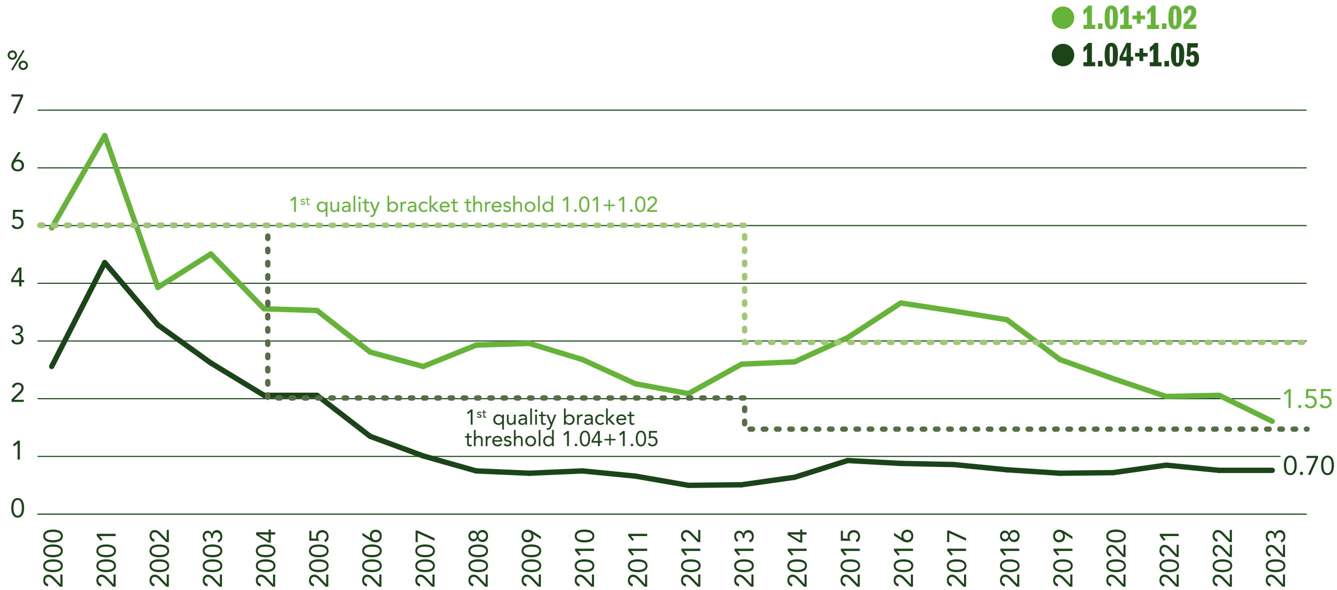
SOURCE: COMIECO

| | | 1.01+1.02 CER200101 | | | | 1.04+1.05 CER150101 | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Bracket t1 | Bracket t2 | Bracket t3 | Bracket t4 | Bracket t1 | Bracket t2 | Bracket t3 | Bracket t4 |
| North | % | 80.1 | 12.3 | 4.1 | 3.5 | 80.3 | 12.3 | 0.8 | 6.6 |
| Centre | % | 85.2 | 8.5 | 4.1 | 2.2 | 89.9 | 4.1 | 1.2 | 4.7 |
| South | % | 64.6 | 17.7 | 8.5 | 9.2 | 83.7 | 11.0 | 1.8 | 3.5 |
| **Italy** | **%** | **77.7** | **12.7** | **5.1** | **4.5** | **84.8** | **9.2** | **1.4** | **4.5** |



## FIGURE 10
## QUALITY OF THE COLLECTED MATERIALS (MEAN TREND OF CONTAMINANTS). 2003-2023 PERIOD.

SOURCE: COMIECO




| Tests performed | | 1st ANCI-CONAI Agreement 1998-2003 | 2nd ANCI-CONAI Agreement 2004-2008 | 3rd ANCI-CONAI Agreement 2009-2013 | 4th ANCI-CONAI Agreement 2014-2019 | 5th ANCI-CONAI Agreement 2020-2024 | TOTAL 1998-2023 |
|---|---|---|---|---|---|---|---|
| 1.01+1.02 | n | 1,006 | 3,456 | 4,040 | 4,286 | 7,422 | 20,210 |
| 1.04+1.05 | n | 594 | 3,591 | 4,204 | 2,931 | 2,230 | 13,550 |

*Note: Until June 2014 the above results refer to the total tests performed at the sorting plants both on incoming and on outgoing materials in order to determine the considerations due to the parties to the agreements. From July 2014 these results only refer to tests on incoming materials under the so-called "IN" contracts valid for being entitled to the consideration for collection. The data of the 5th agreement cover the years from 2020 to 2023.*

# RECYCLING PLANTS, A WIDESPREAD NETWORK

The conferment of the paper and board collected under the management of Comieco was ensured across the national territory through 345 waste management plants that collected the material and performed preliminary sorting and pressing for recycling at the mills.

This widespread network of plants promotes cost containment by ensuring that vehicles are unloaded at a short distance away from the collection points (16.7 km on average).

**345**
**WASTE MANAGEMENT PLANTS**

**PAPER MILLS IN ITALY THAT RECYCLE SC OF PAPER MANAGED BY COMIECO**
**56**

Logistic optimization is a key principle for the best performance of recycling, which needs to reconcile the possibility to confer the materials at a short distance from the collection point, but is limited by the need to create a critical mass to achieve scale economies and perform investments to improve processing.

The recovered paper is transferred to the industrial paper-making process in two different ways:
- 60% (almost 1.5 million tons) of the amounts managed by Comieco is entrusted to 56 paper mills on a pro-quota basis;
- the other 40% (over 850thousand tons) is awarded to parties via regular auction sales. In 2023, 48 different parties were awarded at least one lot.

| Area | Average conferment distance | Waste management plants | Waste management plants under the agreements with >20thousand t/year of incoming materials | Paper mills |
|---|---|---|---|---|
| | km | n | n | n |
| North* | 16.5 | 141 | 11 | 31 |
| Centre | 16.8 | 66 | 7 | 18 |
| South | 16.8 | 138 | 5 | 7 |
| **Total** | **16.7** | **345** | **23** | **56** |

**one paper mill is located in the Republic of San Marino*


**FIGURE 11**
**THE RECYCLING PLANT NETWORK. YEAR 2023.**
SOURCE: COMIECO

- PAPER MILL
- WASTE MANAGEMENT PLANTS

# PAPER AND BOARD BEYOND THE EU 2030 RECYCLING TARGETS

**5** million t

APPARENT CONSUMPTION
OF PAPER AND BOARD PACKAGING

**4.7** million t

RECYCLED PAPER
AND BOARD PACKAGING WASTE

**92.3%**

RECYCLING OF PAPER
AND BOARD PACKAGING

While the year 2022 started in continuity with 2021, with a lively paper for recycling market, a stable domestic demand, and revamped exports, apparent consumption in 2023 suffered from the decrease of consumptions due to persisting inflationary pressure, and declined to 5,055,246 tons, 6.6% down from 2022.

This sharp difference between both years is partly due to the dynamics of the stocks accumulated during 2022, then gradually used in 2023 and therefore considered as officially available for consumption in 2022 (when the relevant CONAI environmental contribution was paid), but actually consumed during 2023.

***With a sharp decline of apparent consumption, the amount of recycled packaging increased by 7.7% to 4.7 million tons.***

The recycling rate is therefore up to 92%, more than ten percent points above the 80% rate of 2022, and returns to a level exceeding the European 85% target set for 2030.

Fluctuations on raw material markets and of consumptions in the past two years raised uncertainties and implied that stocks be handled outside ordinary procurement management.

These dynamics, quite new in the analysis of the past few years, have magnified the effects of the normal delay between the time of the actual consumption of a packaging unit – and its subsequent collection and recycling – and the time of its apparent consumption from the accounting viewpoint.

An analysis of the recycling rate in the 2021/2023 period shows a shift from a sharp decline in 2022 (-5%) to a rebound in 2023 (+7.7%), offsetting one another, and the average recycling rate in the period would therefore be 86%, in line with the figures of the two previous years and, anyway, beyond the EU 2030 target (85%).

The decline of domestic paper for recycling demand was a strong driver for exports (which already increased by 18% in 2022), increasing by over 700thousand tons to more than 2.1 million tons.

In summary:

- total paper production decreased by over 1.2 million tons (-14%);
- with 760thousand tons less (+10.5% in 2023 vs. 2022), a trend reversal is under way for raw material imports, with a matching reduction of exports (-11.8%);
- domestic recovered paper consumption recorded a small decline, from 5.4 million tons in 2022 to 5 million tons in 2023;
- recovered paper is still the main source of cellulose fibre for the paper-making industry; the overall effect is perceived on the paper and board packaging recycling rate that is set at 92.3%, beyond the EU targets set for the pipeline (85% as provided for by Directive 2018/852/EC).

***The paper for recycling market remained substantially stable throughout the year in 2023.***

Following the shock in the summer of 2022 and a limited, partial rebound in the early months of last year, the price curve remained flat until 2024 and set to medium-low values, comparable to those of the first half of 2019.

On the other hand, signs of recovery appeared in the spring of 2024, with upward prices favoured by foreign demand, which resulted into greater user focus on the demand for raw materials.

## TABLE 6
## PAPER AND BOARD PACKAGING RECYCLING RESULTS ACHIEVED IN 2023.

SOURCE: COMIECO

| Calculation of recycling rates | year 2023 | Δ 2022/2023 |
|---|---:|---:|
| | t | % |
| Apparent consumption of paper and board packaging | 5,055,246 | -6.6 |
| Waste paper and board packaging contained in paper and board for recycling in 1.01+1.02, recycled in Italy | 829,447 | -4.4 |
| Waste paper and board packaging contained in paper and board for recycling in 1.04+1.05, recycled in Italy | 2,150,875 | -11.8 |
| Paper and board packaging recycled abroad | 1,686,941 | 64.2 |
| **Total recycled paper and board packaging** | **4,667,263** | **7.7** |
| **Recycling %** | **92.3** | **15.4** |

## TABLE 7
## DIRECT AND INDIRECT BENEFITS OF MANAGED PAPER AND BOARD PACKAGING RECYCLING. 2023 DATA.

SOURCE: CONAI - LCC TOOL (DATA AS AT 30/05/2023 STILL TO BE VALIDATED)

**The benefits generated by managed packaging recycling (1.51 million tons) in 2023 are estimated at 125 million EUR. The 2005-2023 aggregated data points out to benefits for over 1.87 billion EUR, calculated as the value of raw materials and avoided emissions.**

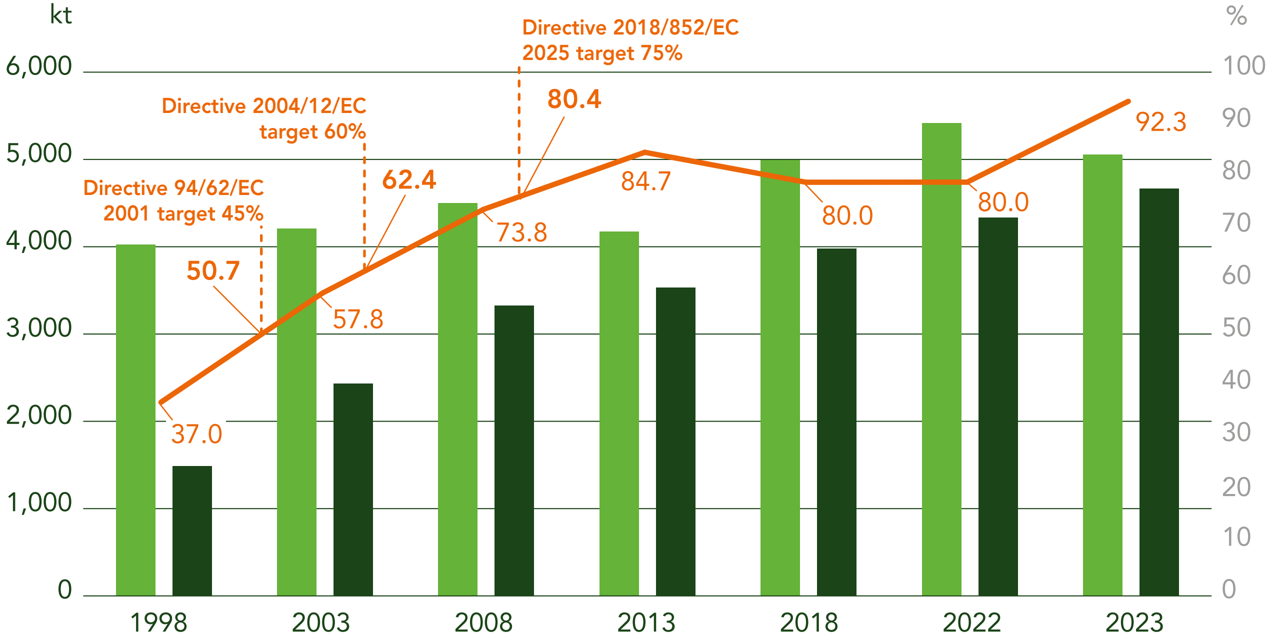
| Indicators within the CONAI boundaries (managed by Comieco) | | | |
|---|---|---|---|
| **Indicator** | | **2023** | **tot. 2005-2023** |
| Amount of conferred packaging | kt | 1,515 | 21,306 |
| Fractions for recycling | kt | 1,515 | 21,306 |
| Fractions for energy recovery | kt | 0 | 0 |
| Fractions for other forms of disposal | kt | 0 | 0 |

| Environmental benefits | | | |
|---|---|---|---|
| **Indicator** | | **2023** | **tot. 2005-2023** |
| Raw material saving, paper | kt | 1,275 | 20,189 |
| Electric energy generated from energy recovery | TJ | 0 | 0 |
| Thermal energy generated from energy recovery | TJ | 0 | 0 |
| Primary energy saving through recycling | TJ | 17,761 | 275,761 |
| $CO^2$ production avoided through recycling | kt $CO_2$ eq | 1,243 | 18,822 |
| $CO^2$ production avoided through energy recovery | kt $CO_2$ eq | 0 | 0 |

| Economic value | | | | |
|---|---|---|---|---|
| **Category** | | | **2023** | **tot. 2005-2023** |
| Direct benefits | Economic value of the secondary raw material obtained from recycling | million EUR | 50 | 1,165 |
| | Economic value of the energy generated from energy recovery | million EUR | 0 | 0 |
| Indirect benefits | Economic value of avoided $CO^2$ emissions | million EUR | 75 | 710 |
| **Overall benefits** | | **million EUR** | **125** | **1,875** |

# FIGURE 12
# PAPER AND BOARD PACKAGING RECYCLING AND RECOVERY TARGETS ACHIEVED. 1998-2023 HISTORICAL DATA SET.

SOURCE: COMIECO




● APPARENT CONSUMPTION OF PAPER AND BOARD PACKAGING (KT)
● TOTAL RECYCLED PAPER AND BOARD PACKAGING WASTE (KT)
● RECYCLING RATE OF CONSUMED PAPER AND BOARD PACKAGING

*Notes:*

- *The 2013 apparent consumption data was adjusted by CONAI, the 2014 apparent consumption data includes tubes and rolls subject to the CAC as of 1/1/2014.*
- *The 2020 and 2021 apparent consumption data and, therefore, recycling and recovery rates were adjusted by CONAI.*

# TABLE 8
# PAPER AND BOARD PRODUCTION IN 2023.

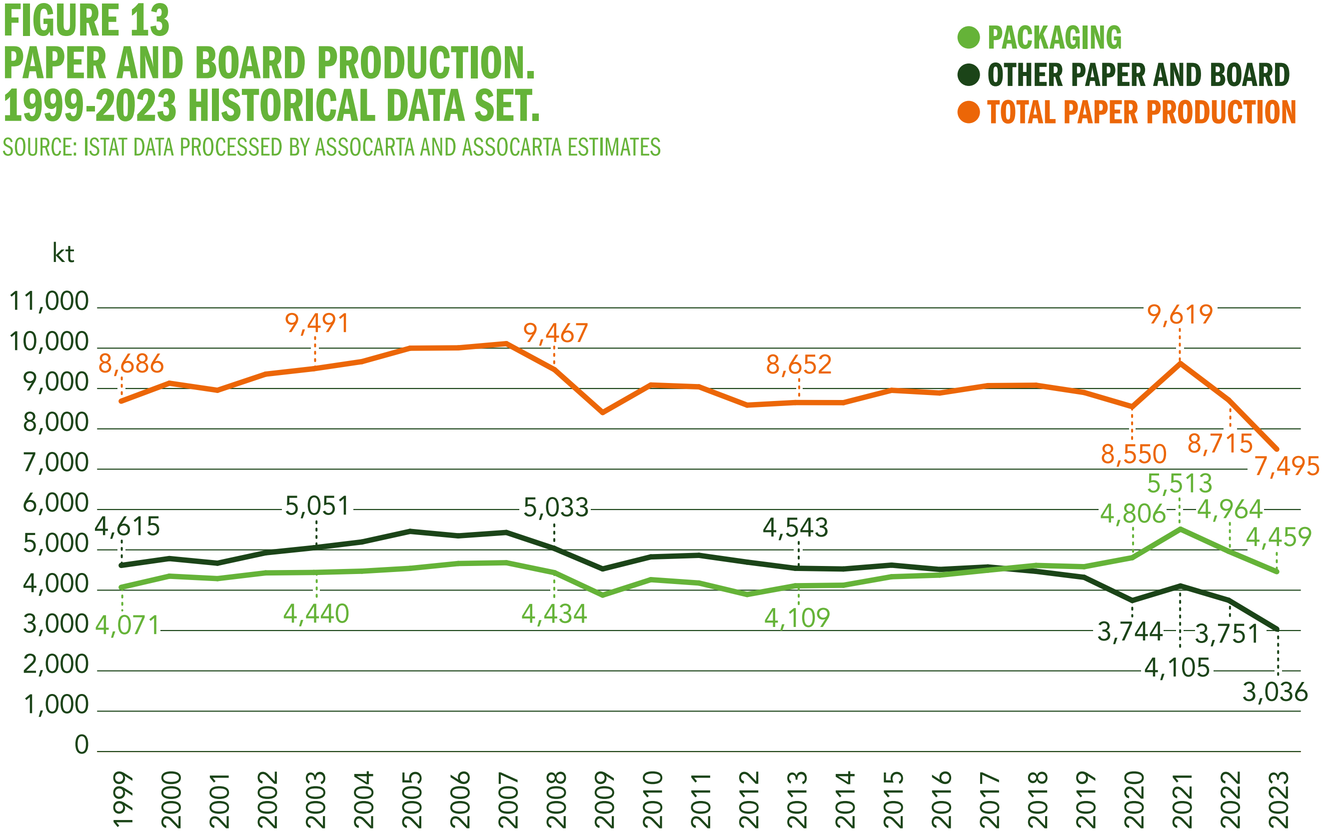
SOURCE: ISTAT DATA PROCESSED BY ASSOCARTA AND ASSOCARTA ESTIMATES

**With an additional 1.4 million tons compared to other paper productions, the packaging production sector is confirmed as the main user of paper and board in the entire national paper industry.**

| | | Production (A) | Import (B) | Export (C) | Apparent consumption (A+B-C) |
|---|---|---|---|---|---|
| Paper and board packaging (paper and board & cardboard) | t | 4,458,706 | 3,434,853 | 1,466,522 | 6,427,038 |
| Δ 2022/2023 | % | -10.2 | -9.0 | -5.7 | -10.5 |
| Other paper and board (paper for graphic and hygienic-sanitary use) | t | 3,036,452 | 1,463,881 | 1,765,710 | 2,734,623 |
| Δ 2022/2023 | % | -19.1 | -13.8 | -16.3 | -18.1 |
| **Total paper production** | **t** | **7,495,158** | **4,898,734** | **3,232,231** | **9,161,660** |
| **Δ 2022/2023** | **%** | **-14.0** | **-10.5** | **-11.8** | **-12.9** |

## FIGURE 13
## PAPER AND BOARD PRODUCTION. 1999-2023 HISTORICAL DATA SET.

SOURCE: ISTAT DATA PROCESSED BY ASSOCARTA AND ASSOCARTA ESTIMATES




| | | 1999 | 2003 | 2008 | 2013 | 2020 | 2022 | 2023 | Δ 1999/2023 | | Δ 2022/2023 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | kt | % | kt | % |
| Paper and board pakaging | kt | 4,071 | 4,440 | 4,434 | 4,109 | 4,806 | 5,528 | 4,459 | 388 | 9.5 | -505 | -10.2 |
| Other paper and board | kt | 4,615 | 5,051 | 5,033 | 4,543 | 3,744 | 4,035 | 3,036 | -1,579 | -34.2 | -715 | -19.1 |
| **Total paper** | **kt** | **8,686** | **9,491** | **9,467** | **8,652** | **8,550** | **9,563** | **7,495** | **-1,191** | **-13.7** | **-1,220** | **-14.0** |

## TABLE 9
## CONSUMPTION, IMPORT, EXPORT OF RECOVERED PAPER AND APPARENT COLLECTION*. 2022-2023 VARIATIONS.

SOURCE: ASSOCARTA DATA PROCESSED BY COMIECO

| | | Import (A) | Export (B) | Consumption (C) | Apparent collection* (C+B-A) |
|---|---|---|---|---|---|
| 2022 | t | 318,676 | 1,452,248 | 5,402,685 | 6,536,257 |
| 2023 | t | 272,199 | 2,154,058 | 5,021,885 | 6,903,744 |
| Δ 2022-2023 | % | -14.6 | 48.3 | -7.0 | 5.6 |

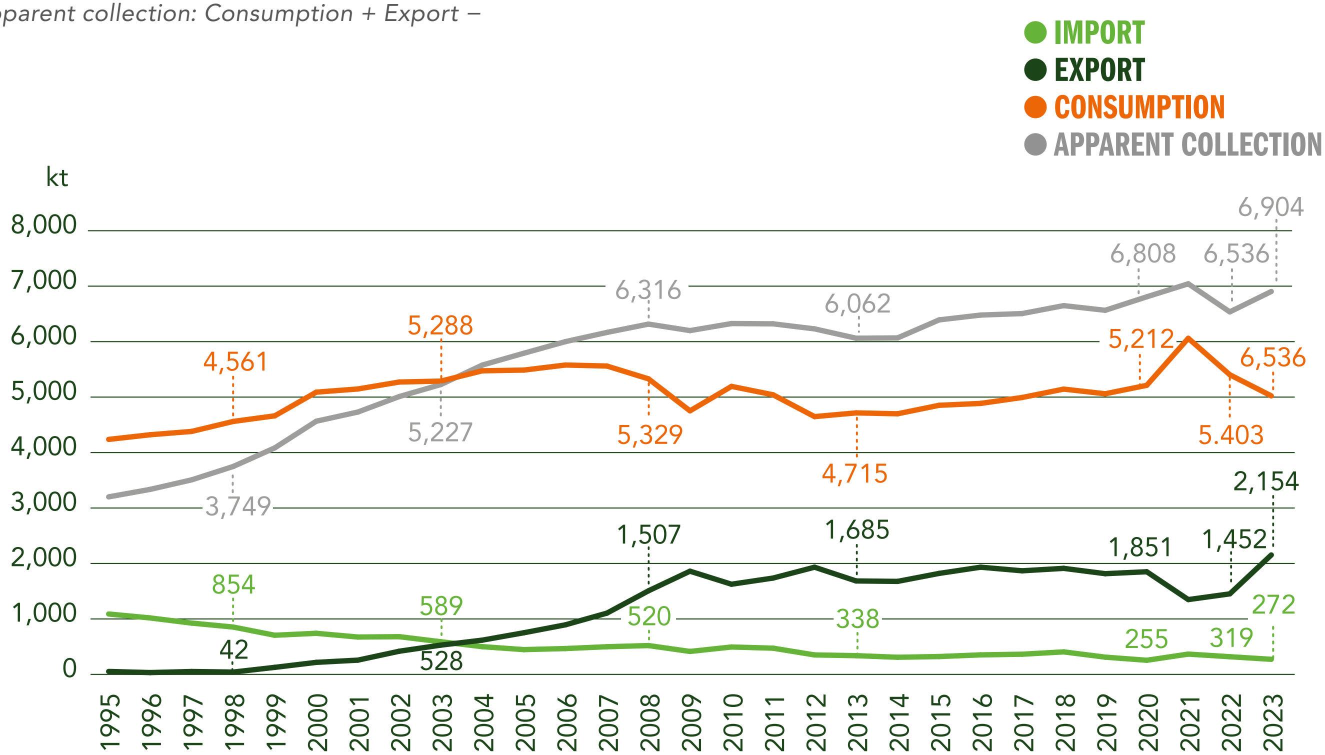
**Domestic paper for recycling consumption (5 million tons) remains below the 6 million ton threshold, the maximum value recorded in 2021. Exports keep growing and are now above 2.1 million tons. The net balance (exports minus imports) is more than 1.8 million tons.**

# FIGURE 14
# CONSUMPTION, IMPORT, EXPORT OF RECOVERED PAPER AND APPARENT COLLECTION*. 1998-2023 PERIOD.

SOURCE: ASSOCARTA DATA PROCESSED BY COMIECO

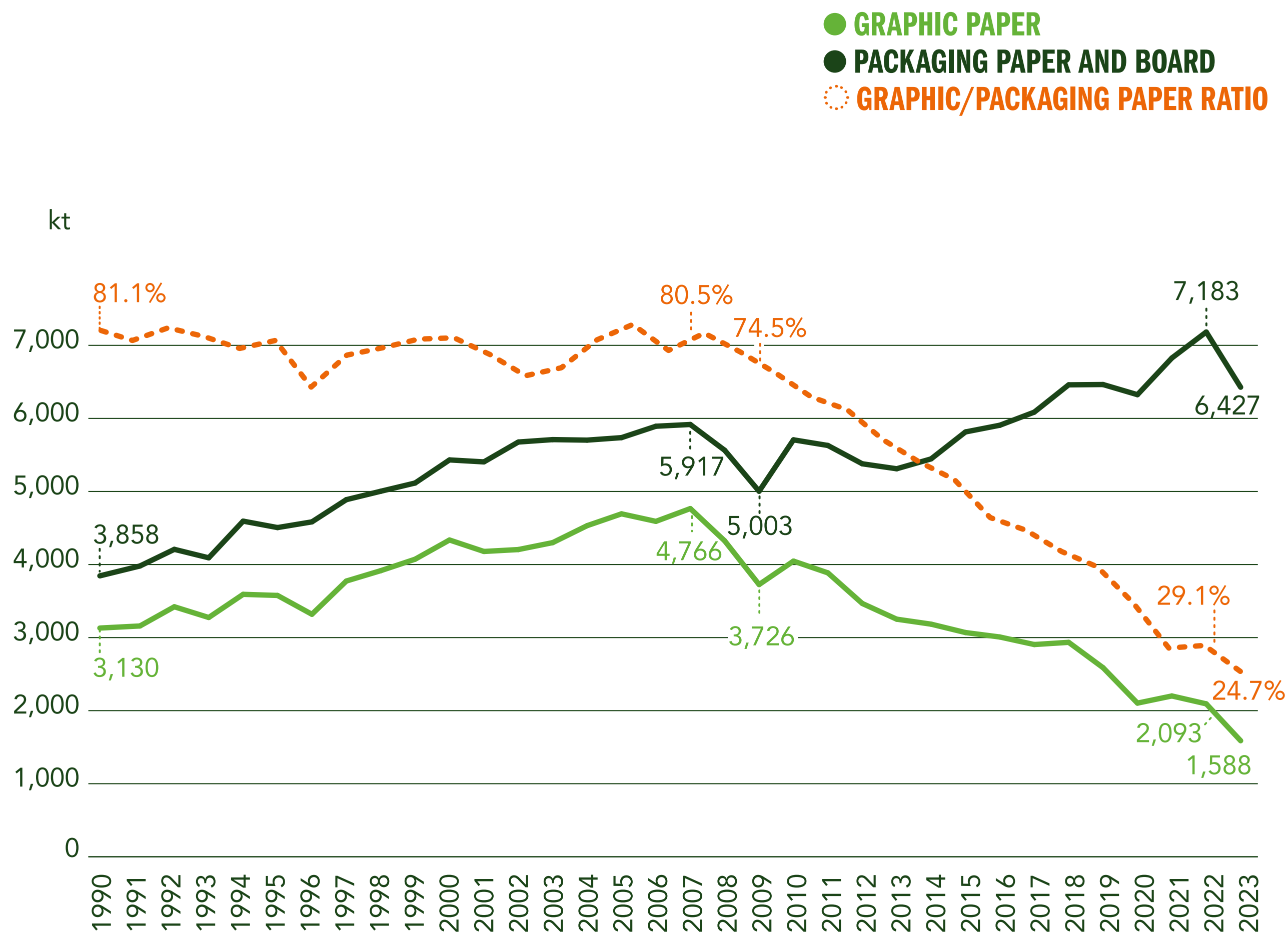
| | 1998 | 2003 | 2008 | 2013 | 2020 | 2022 | 2023 | 1999/2023 | | 2022/2023 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | kt | kt | kt | kt | kt | kt | kt | Δ kt | Δ % | Δ kt | Δ % |
| Import | 854 | 589 | 520 | 338 | 255 | 319 | 272 | - 582 | - 62.7 | - 46 | - 14.6 |
| Export | 42 | 528 | 1,507 | 1,685 | 1,851 | 1,452 | 2,154 | 2,112 | 3,357.7 | 702 | 48.3 |
| Consumption | 4,561 | 5,288 | 5,329 | 4,715 | 5,212 | 5,403 | 5,022 | 461 | 18.5 | - 381 | - 7.0 |
| **Apparent collection** | **3,749** | **5,227** | **6,316** | **6,062** | **6,808** | **6,536** | **6,904** | **3,155** | **74.3** | **367** | **5.6** |
| **Net export** | **-812** | **-61** | **987** | **1,347** | **1,596** | **1,134** | **1,882** | | | | |

**Apparent collection: Consumption + Export –*



# FIGURE 15
# RATIO OF APPARENT GRAPHIC PAPER TO PACKAGING PAPER CONSUMPTION. 1990-2023 HISTORICAL DATA SET.

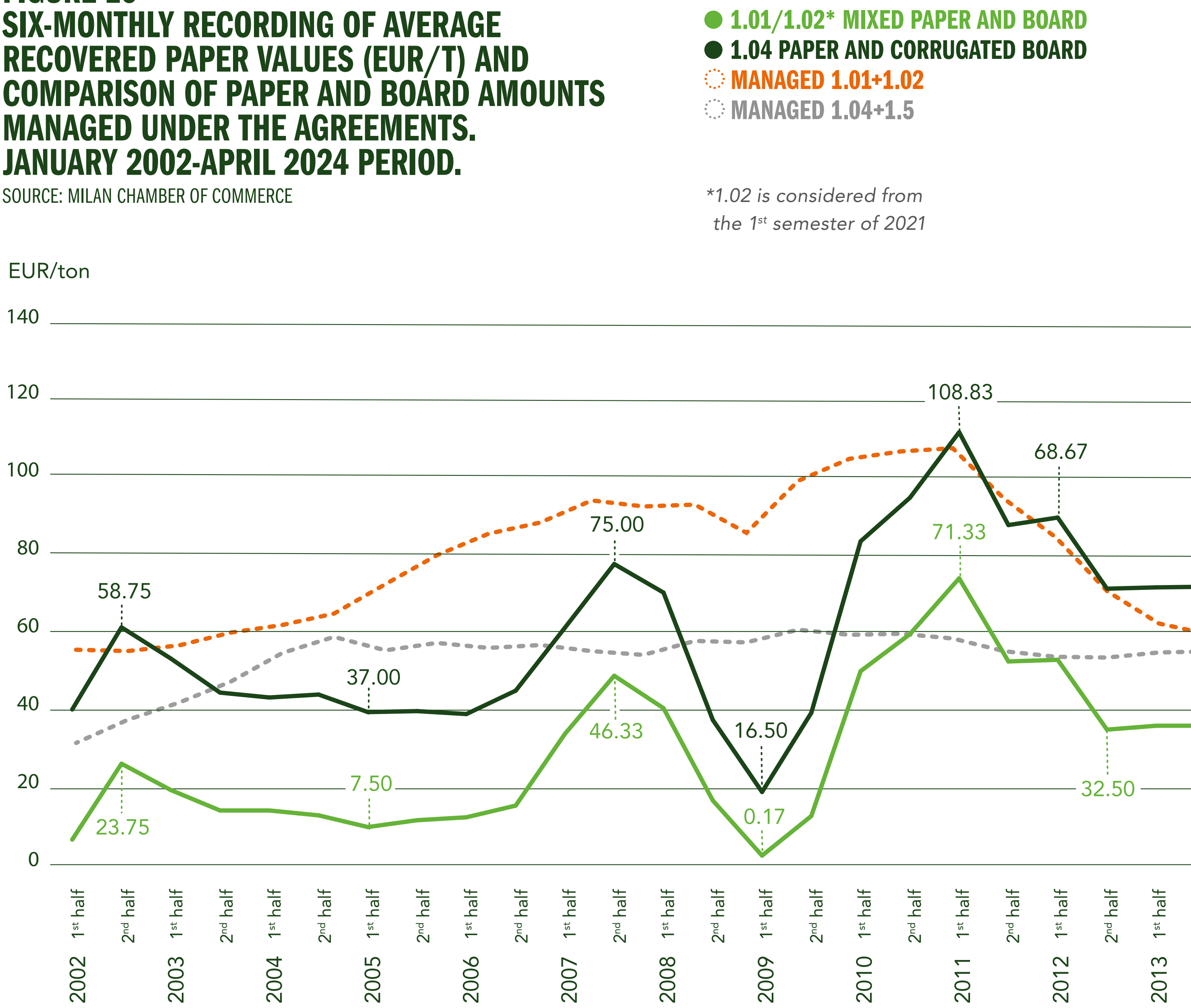
SOURCE: ASSOCARTA DATA PROCESSED BY VALUE QUEST

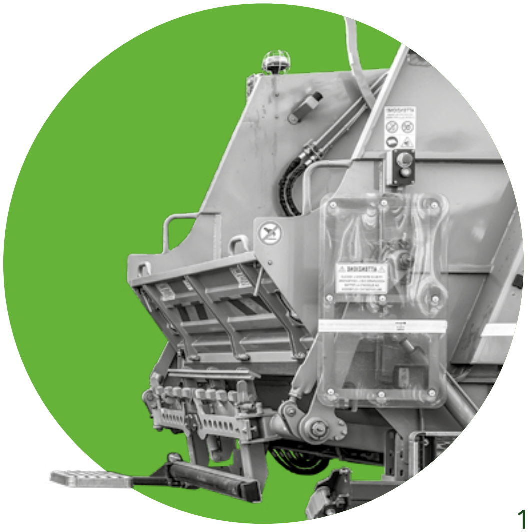


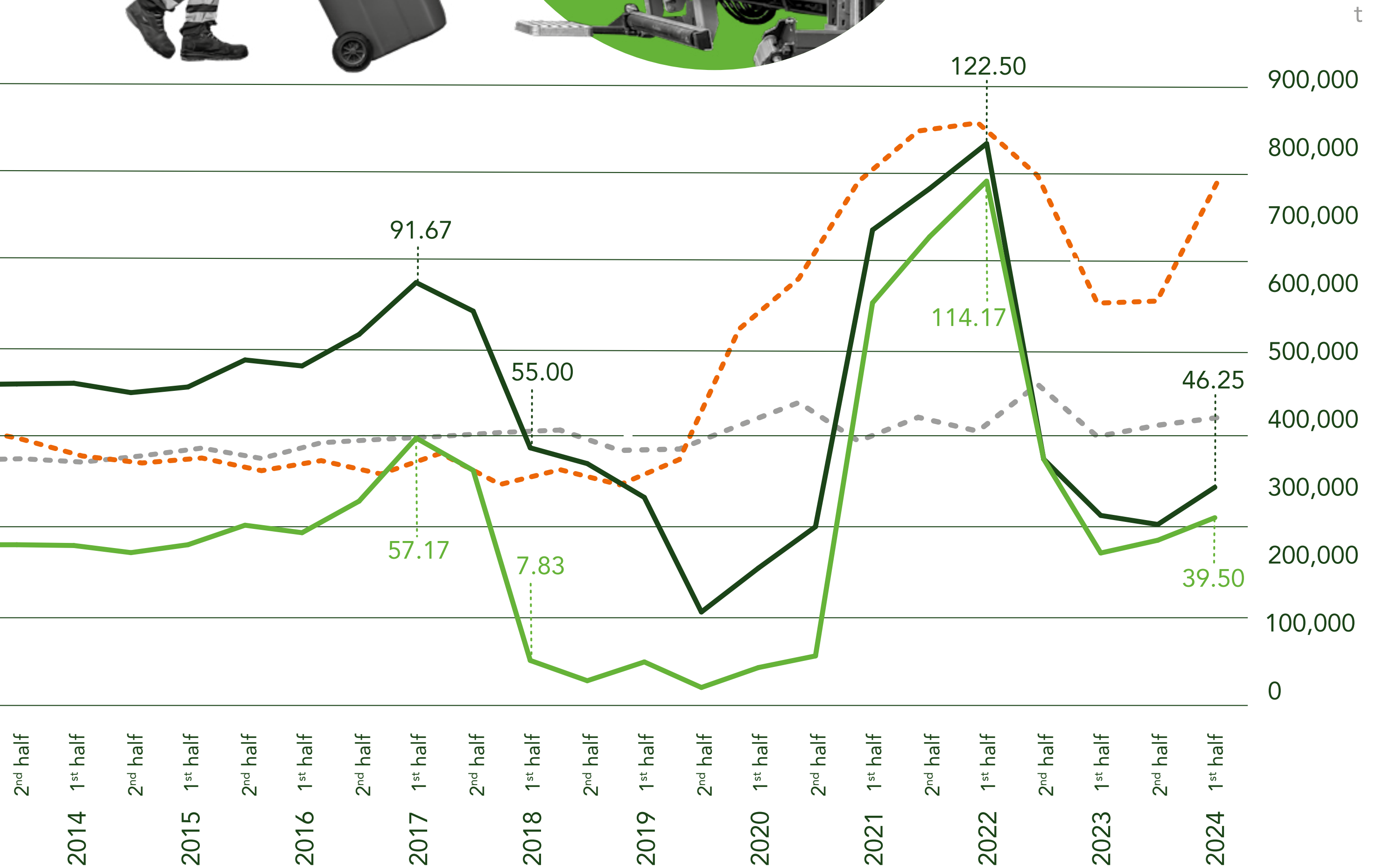
The ratio of graphic paper consumption to packaging paper consumption was gradually reversed over time. This phenomenon emerged in 2009 and developed for graphic paper, until values fell below the 1990 threshold. The different composition of the consumption mix also brings about a significant change in the “quality” of the collected materials and in subsequent issues connected with the re-processing of paper for recycling. In 2023, this by-now consolidated trend confirms a ratio of both pipeline data below 1:4.

## FIGURE 16
## SIX-MONTHLY RECORDING OF AVERAGE RECOVERED PAPER VALUES (EUR/T) AND COMPARISON OF PAPER AND BOARD AMOUNTS MANAGED UNDER THE AGREEMENTS. JANUARY 2002-APRIL 2024 PERIOD.

SOURCE: MILAN CHAMBER OF COMMERCE






t
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
122.50
91.67
55.00
46.25
114.17
57.17
7.83
39.50
2nd half
1st half
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024

# NOTE ON THE METHOD

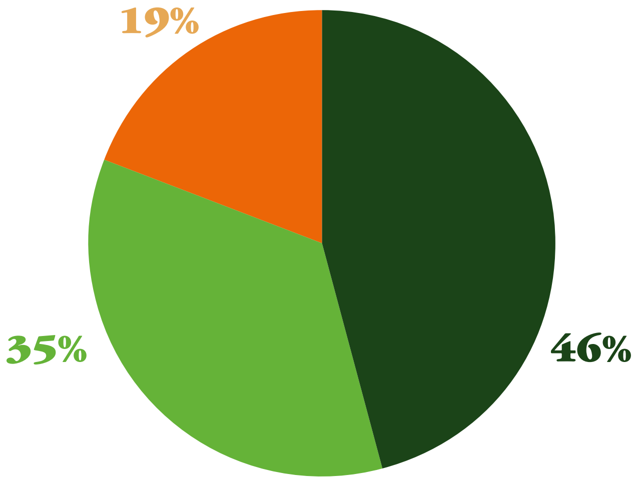
The processing method adopted for data on national paper and board collection is the same as in the previous years.

The data processed by the Entities and/or organizations in charge of data collection, monitoring, and validation, such as ISPRA, Regions, regional Agencies (e.g. Arpa Campania), Provinces, work Groups, ANCI, or those in charge of collection management (Cities, operators, plants, etc.), is mainly used to determine paper and board collection levels.

The consolidated data thus acquired, as available at the end of May and, therefore, in practice, still not final, is combined with the data available to Comieco within the framework of its activity (management of the agreements) an d compared to ensure consistency. Wherever necessary, specific analyses are performed.

Processing is usually carried out at provincial level but, in specific cases and for a more punctual assessment, the analysis is performed at municipal level.

Where "official" sources are not available, Comieco estimates the provincial collection level starting from historical data sets and its own data base (collection by the parties to the agreements).




## SOURCES AND METHOD.

FONTE: COMIECO

- OTHER SOURCES I
- MANGED UNDER THE AGREEMENTS
- ESTIMATED BY COMIECO

Separate paper and board collection is assumed to be actively in place across the national territory.

As to 2023 assessments, constituting the object of this Report, while the share of estimated data is reduced, it is significant in the South, where local work groups are still quite slow at processing data.

More specifically, 46% of collection data comes from third-party sources, 35% refers to the amounts managed directly by the Consortium, i.e. disclosed by the parties to the agreements as provided for by the Technical Annex (without any other sources), and 18.8% is based on estimated amounts.

Province-based data verification is also extended to the year preceding the one that constitutes the object of the current report.

Where necessary, some data is updated (year 2022) by implementing the values published by ISPRA; the related data (area and national totals, per-capita, etc.) is updated accordingly.

Data processed as at June 2024.

# THE BOARD OF DIRECTORS AS AT 01/07/2024

**Comieco**

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

**Chairman**
Amelio Cecchini

**Deputy Chairman**
Carlotta De Iuliis

**Directors**
Stefano Benini
Michele Bianchi
Lorenzo Cini
Caterina Croso
Andrea D'Amato
Fausto Ferretti
Paolo Giacchi
Luca Mannori
Fabio Montinaro
Lorenzo Nannariello
Giovanni Pelis
Enzo Scalia
Andrea Trevisan

**Board of Auditors**
Alessia Bastiani
Carlo Bellavite Pellegrini
Sergio Montedoro

**General Manager**
Carlo Montalbetti

**Deputy Manager**
Roberto Di Molfetta

## FOLLOW US

comieco.org

## ACRONYMS

| | |
|---|---|
| **ATC** | Paper Technical Annex |
| **FMS** | Similar Product Fractions (non-packaging paper and board) |
| **RD** | Separate Collection |
| **RU** | Urban Waste |
| **%** | Percent |
| **n** | Number |
| **t** | Tons |
| **kt** | Thousands of tons |
| **ab** | Inhabitants |
| **kg** | Kilograms |
| **TJ** | Terajoule |

comieco

Consorzio Nazionale Recupero e Riciclo degli Imballaggi a base Cellulosica


## MILAN OFFICE

via Pompeo Litta 5, 20122 Milan

tel +39 02 55024.1

## ROME OFFICE

via Tomacelli 132, 00186 Rome

tel +39 06 681030.1

## SOUTH OFFICE

c/o Ellegi Service S.r.l. via Delle Fratte 5,

84080 Pellezzano (SA)

tel +39 089 566836


Follow us

www.comieco.org

Comieco fa parte del sistema

CONAI