

**COLLECTION, RECYCLING AND RECOVERY
OF PAPER AND CARDBOARD**

9th Comieco Report
2003

introduction by Piero Capodieci



July 2004



Comieco

Consorzio Nazionale Recupero e Riciclo
degli Imballaggi a base Cellulosica

INDEX

INDEX

INTRODUCTION	page 2
NOTE ON THE METHOD	page 4
RESULTS AND DEVELOPMENT OF SEPARATE WASTE COLLECTION AND PAPER & BOARD RECYCLING IN 2003	page 6
1. NORTH, CENTRE AND SOUTH: A STEADY GROWTH	page 6
2. SEPARATE PAPER AND BOARD WASTE COLLECTION IN MUNICIPALITIES SUBJECT TO AGREEMENTS	page 8
3. THE DEVELOPMENT OF THE RECOVERED PAPER MARKET	page 12
4. 78% OF PAPER AND BOARDS PRODUCTS COLLECTED AND VALORIZED	page 13
TABLES & FIGURES	page 15

TABLES & FIGURES

Collection, Recycling and Recovery of Paper and Cardboard 2003

TABLE 1: Separate paper and board waste collection in Italy. (Source: Comieco)

Region	2002 tons	2003 tons	Δ 2002 - 2003 %
Emilia Romagna	138.111,350	170.323,533	23,3%
Friuli Venezia Giulia	43.069,727	45.391,916	5,4%
Liguria	41.096,033	43.798,255	6,6%
Lombardia	424.133,222	448.347,051	5,7%
Piemonte	163.933,232	196.203,267	19,7%
Trentino Alto Adige	49.172,223	54.809,030	11,5%
Valle d'Aosta	4.964,254	5.384,250	8,5%
Veneto	177.055,160	210.160,500	18,7%
NORTH	1.041.535,201	1.174.417,802	12,8%
Lazio	75.426,136	80.737,430	7,0%
Marche	25.843,441	38.376,506	48,5%
Toscana	207.903,914	212.306,964	2,1%
Umbria	16.451,137	35.679,000	116,9%
CENTRE	325.624,628	367.099,900	12,7%
Abruzzo	19.604,167	21.088,480	7,6%
Basilicata	4.935,754	7.076,610	43,4%
Calabria	21.352,060	27.215,070	27,5%
Campania	71.138,282	74.418,090	4,6%
Molise	927,102	1.196,710	29,1%
Puglia	67.557,963	74.238,150	9,9%
Sardegna	3.271,914	6.789,038	107,5%
Sicilia	33.603,217	56.706,865	68,8%
SOUTH	222.390,459	268.729,013	20,8%
ITALY	1.589.550,289	1.810.246,715	13,9%

TABLE 2: Comparison of UW production, total SWC, and separate paper and board waste collection in Italy in the 2002-2003 period. (Source: ISSI 2003 Report - Comieco)

	2002	2003	% variation '02 - '03
UW (t)	29.979.100	30.037.803	0,2%
total SWC (t)	5.543.200	6.311.369	13,9%
sep. paper and board waste coll. (t)	1.589.550	1.810.247	13,9%
total % SWC over total UW production	18,5%	21,0%	
% of paper and board waste collection over total SWC	28,7%	28,7%	

FIGURE 1: Share of paper and board waste collection over total estimated 2003 SWC.
(Source: Comieco)

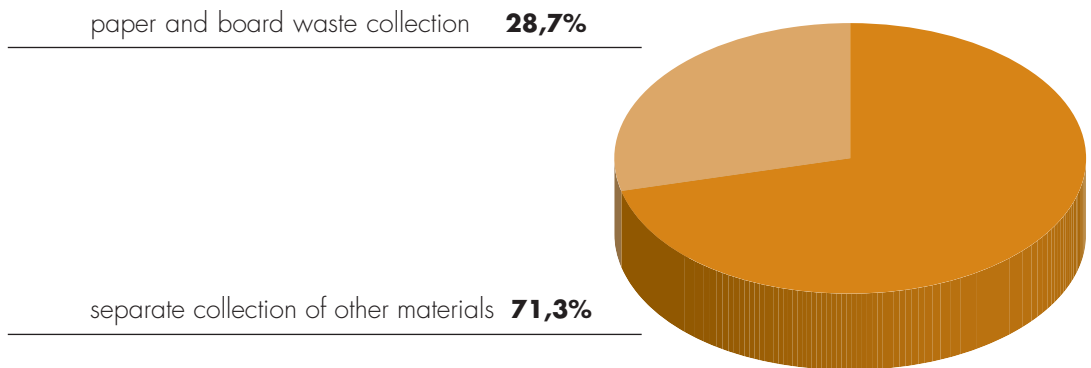


FIGURE 2: Separate paper and board waste collection in 2002 and 2003. (Source: Comieco)

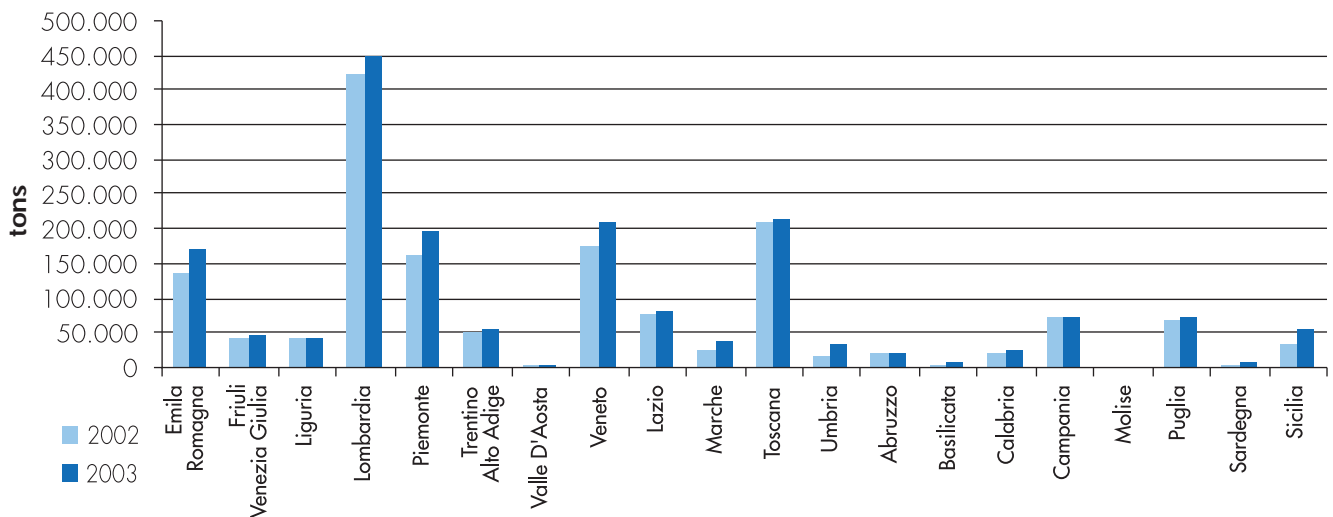


FIGURE 3: Separate paper and board waste collection in 2002 and 2003. Breakdown by geographic regions.
(Source: Comieco)

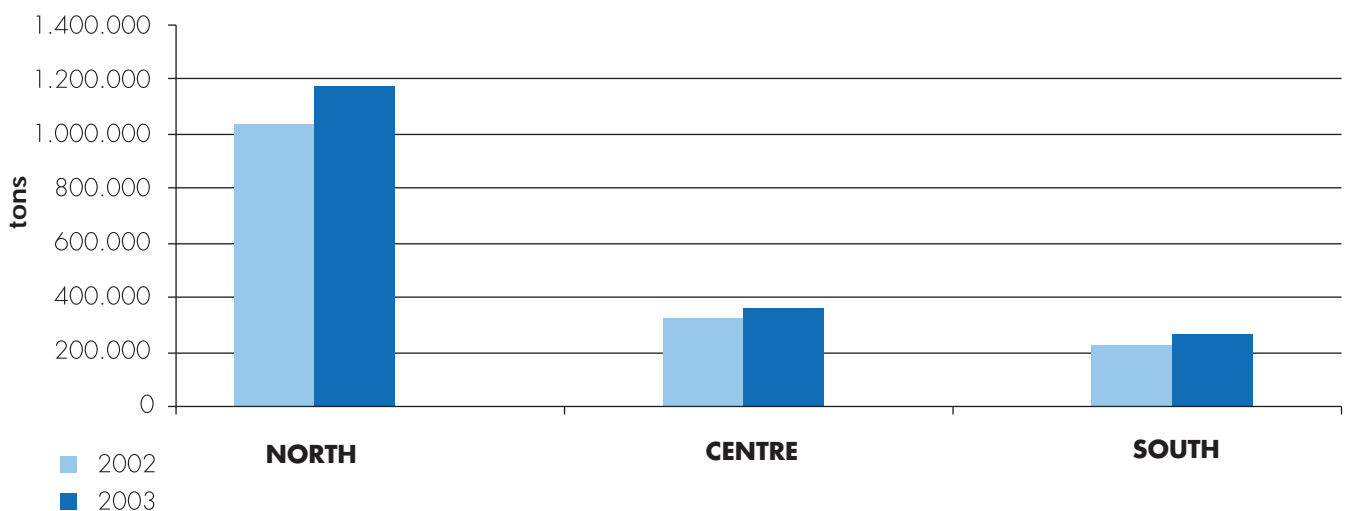


FIGURE 4: Separate paper and board waste collection: 2004 forecasts. (Source: Comieco)

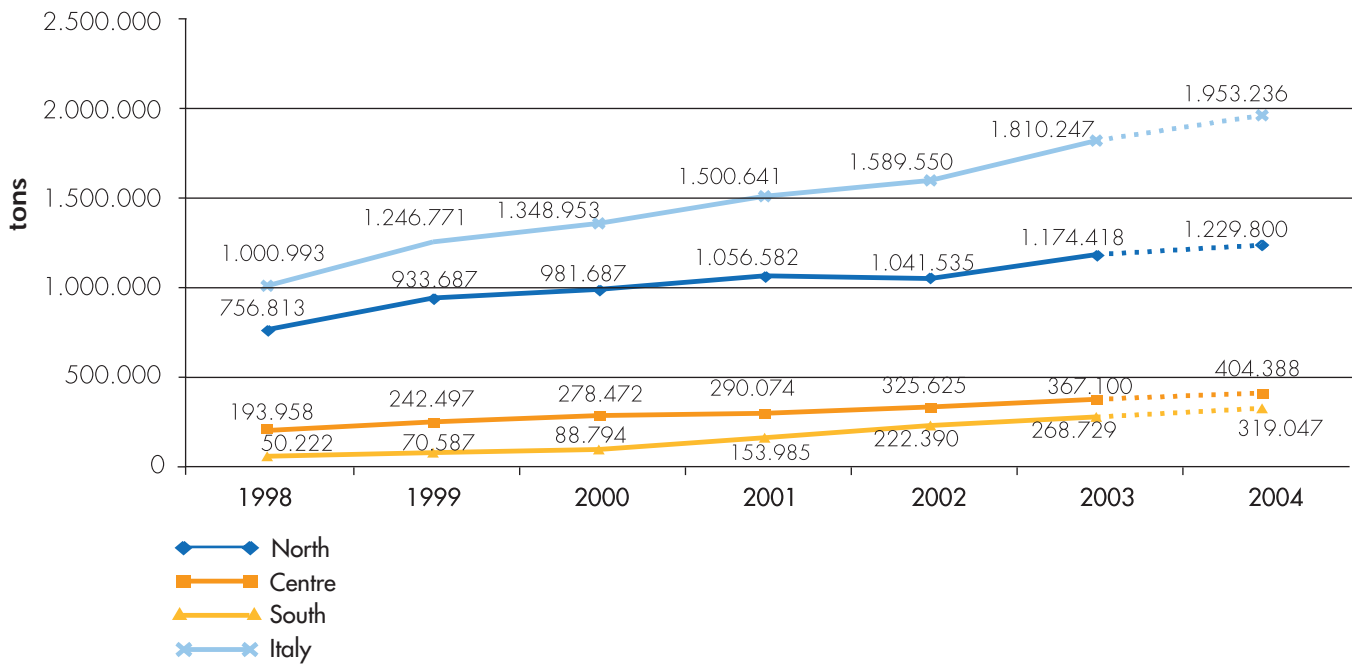


FIGURE 5: Agreements in place at December 31, 2003. (Source: Comieco)

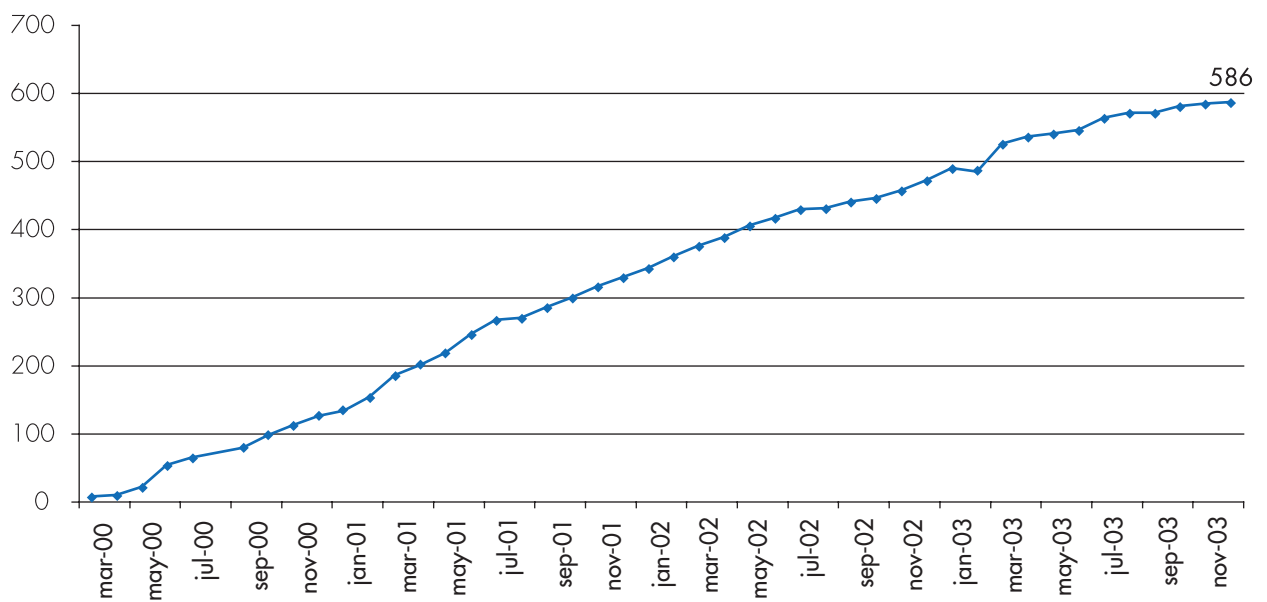


TABLE 3 : Inhabitants with agreements at 31 December 2003. (Source: Comieco)

Region	Inhabitants	Inhabitants with agreements	% of inhabitants with agreements
Emilia Romagna	3.959.770	3.637.432	92%
Friuli Venezia Giulia	1.183.916	1.052.471	89%
Liguria	1.632.536	531.830	33%
Lombardia	9.028.913	6.312.599	70%
Piemonte	4.288.051	3.822.812	89%
Trentino Alto Adige	929.574	810.248	87%
Valle d'Aosta	119.993	119.993	100%
Veneto	4.487.560	3.290.184	73%
NORTH	25.630.313	19.577.569	76%
Lazio	5.255.028	4.678.295	89%
Marche	1.455.449	1.058.453	73%
Toscana	3.528.563	3.150.492	89%
Umbria	832.675	786.435	94%
CENTRE	11.071.715	9.673.675	87%
Abruzzo	1.277.330	956.567	75%
Basilicata	607.853	145.091	24%
Calabria	2.064.718	1.997.227	97%
Campania	5.792.580	5.405.708	93%
Molise	328.980	97.114	30%
Puglia	4.086.422	3.551.845	87%
Sardegna	1.654.470	271.038	16%
Sicilia	5.098.234	4.062.815	80%
SOUTH	20.910.587	16.487.405	79%
ITALY	57.612.615	45.738.649	79%

TABLE 4: Municipalities subject to agreements with Comieco at December 31, 2003. (Source: Comieco)

Region	Municipalities	Municipalities with agreements	% of municipalities with agreements
Emilia Romagna	341	295	87%
Friuli Venezia Giulia	219	178	81%
Liguria	235	69	29%
Lombardia	1.546	883	57%
Piemonte	1.206	988	82%
Trentino Alto Adige	339	296	87%
Valle d'Aosta	74	74	100%
Veneto	580	390	67%
NORTH	4.540	3.173	70%
Lazio	377	280	74%
Marche	246	147	60%
Toscana	287	208	72%
Umbria	92	69	75%
CENTRE	1.002	704	70%
Abruzzo	305	121	40%
Basilicata	131	12	9%
Calabria	409	387	95%
Campania	551	492	89%
Molise	136	21	15%
Puglia	258	189	73%
Sardegna	377	38	10%
Sicilia	390	201	52%
SOUTH	2.557	1.461	57%
ITALY	8.099	5.338	66%

FIGURE 6: Agreements in place with Comieco at December 31, 2003. (Source: Comieco)

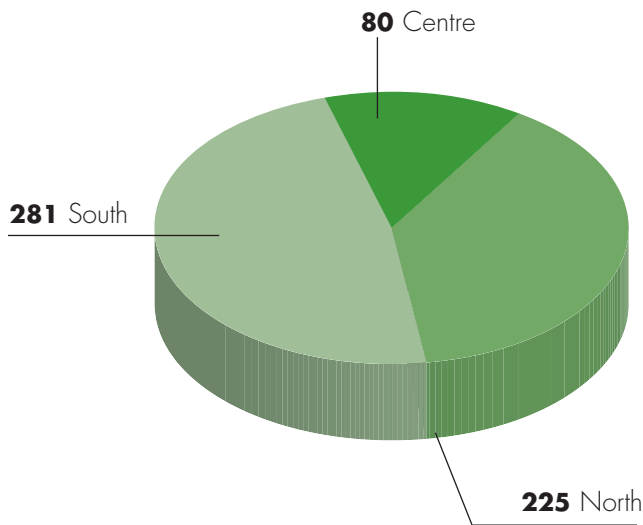


FIGURE 7: Rate of Municipalities subject to agreements with Comieco at December 31, 2003 broken down by macro-areas. (Source: Comieco)

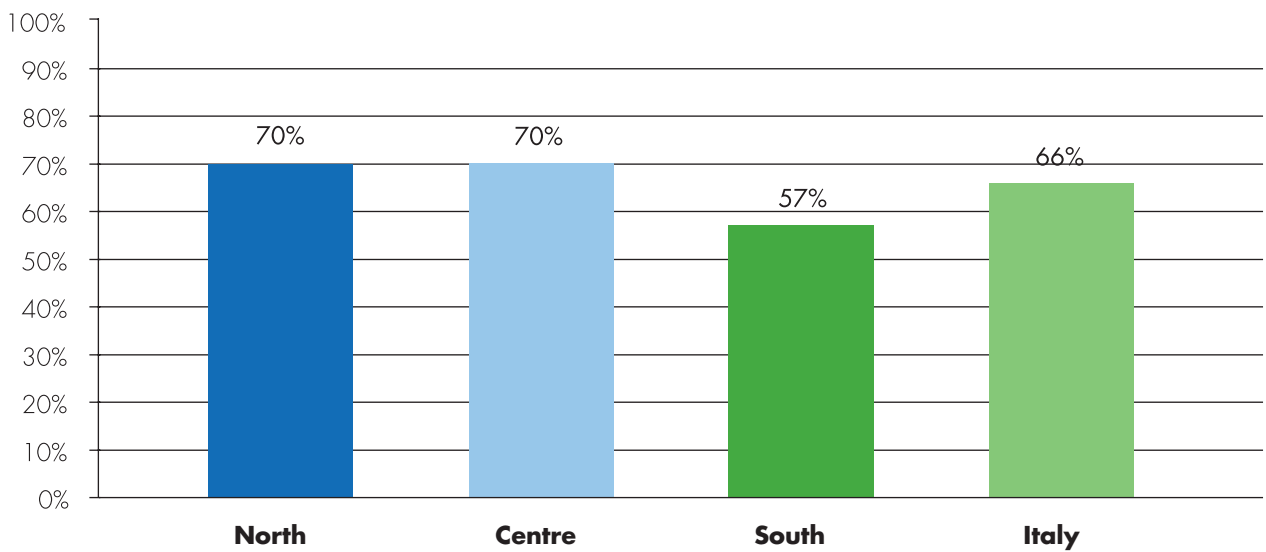


FIGURE 8: Rate of inhabitants subject to agreements with Comieco at December 31, 2003 broken down by macro-areas. (Source: Comieco)

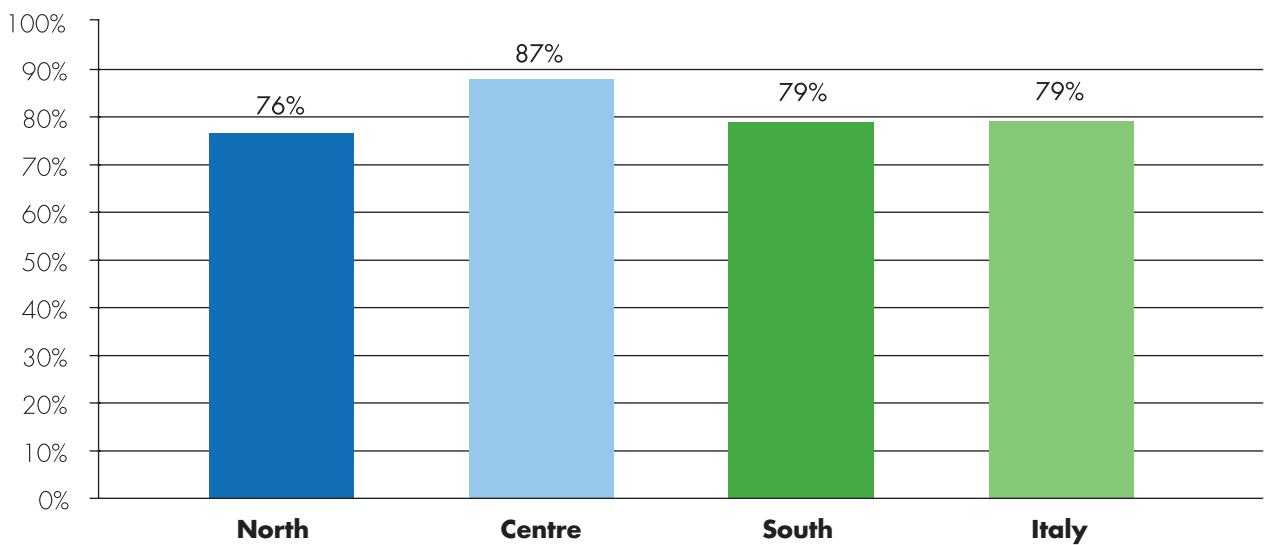


TABLE 5: Economic investment in 2003. (Source: Comieco)

Region	Economic investment at December 31, 2003 (EUR)	Inhabitants with agreements	Economic investment in EUR per inhabitant with agreements
Emilia Romagna	5.493.995,65	3.637.432	1,51
Friuli Venezia Giulia	2.403.125,05	1.052.471	2,28
Liguria	634.713,42	531.830	1,19
Lombardia	9.741.854,94	6.312.599	1,54
Piemonte	5.272.032,02	3.822.812	1,38
Trentino Alto Adige	2.181.799,78	810.248	2,69
Valle d'Aosta	292.766,77	119.993	2,44
Veneto	3.874.980,59	3.290.184	1,18
NORTH	29.895.268,22	19.577.569	1,53
Lazio	2.930.933,50	4.678.295	0,63
Marche	1.561.074,92	1.058.453	1,47
Toscana	8.429.667,27	3.150.492	2,68
Umbria	722.632,56	786.435	0,92
CENTRE	13.644.308,25	9.673.675	1,41
Abruzzo	865.625,88	956.567	0,90
Basilicata	151.513,22	145.091	1,04
Calabria	1.634.032,62	1.997.227	0,82
Campania	3.774.963,63	5.405.708	0,70
Molise	5.997,75	97.114	0,06
Puglia	4.108.667,92	3.551.845	1,16
Sardegna	211.231,65	271.038	0,78
Sicilia	2.825.047,17	4.062.815	0,70
SOUTH	13.577.079,84	16.487.405	0,82
ITALY	57.116.656,31	45.738.649	1,25

TABLE 6: Comparison between separate paper and board waste collection managed under agreements and total of separate paper and board collection. (Source: Comieco)

Region	Agreements in 2002 tons	Total 2002 tons	% of agreements over the 2002 total %	Agreements in 2003 tons	Total 2003 tons	% of agreements over the 2003 total %
Emilia Romagna	123.342	138.111	89,3%	123.953	170.324	72,8%
Friuli Venezia Giulia	37.582	43.070	87,3%	43.009	45.392	94,8%
Liguria	13.284	41.096	32,3%	14.157	43.798	32,3%
Lombardia	278.300	424.133	65,6%	304.630	448.347	67,9%
Piemonte	141.840	163.933	86,5%	154.080	196.203	78,5%
Trentino Alto Adige	42.860	49.172	87,2%	47.944	54.809	87,5%
Valle d'Aosta	4.964	4.964	100,0%	5.384	5.384	100,0%
Veneto	115.641	177.055	65,3%	124.820	210.161	59,4%
NORTH	757.813	1.041.535	72,8%	817.977	1.174.418	69,6%
Lazio	70.939	75.426	94,1%	78.427	80.737	97,1%
Marche	13.508	25.843	52,3%	26.605	38.377	69,3%
Toscana	150.503	207.904	72,4%	180.039	212.307	84,8%
Umbria	14.393	16.451	87,5%	17.985	35.679	50,4%
CENTRE	249.343	325.625	76,6%	303.056	367.100	82,6%
Abruzzo	12.708	19.604	64,8%	18.464	21.088	87,6%
Basilicata	3.067	4.936	62,1%	2.366	7.077	33,4%
Calabria	21.352	21.352	100,0%	26.569	27.215	97,6%
Campania	70.438	71.138	99,0%	70.256	74.418	94,4%
Molise	291	927	31,4%	109	1.197	9,1%
Puglia	58.732	67.558	86,9%	71.090	74.238	95,8%
Sardegna	722	3.272	22,1%	4.579	6.789	67,4%
Sicilia	27.290	33.603	81,2%	47.472	56.707	83,7%
SOUTH	194.601	222.390	87,5%	240.906	268.729	89,6%
ITALY	1.201.757	1.589.550	75,6%	1.361.939	1.810.247	75,2%

TABLE 7: Managed quantities under agreements in 2003: division among joint, separate and integrate collection.

(Source: Comieco)

Region	Total managed tons	Joint		Separate		Integrated	
		tons	%	tons	%	tons	%
Emilia Romagna	123.953,200	60.436,120	48,8%	50.826,960	41,0%	12.690,120	10,2%
Friuli Venezia Giulia	43.009,200	17.609,740	40,9%	25.399,460	59,1%	0,000	0,0%
Liguria	14.157,170	6.927,140	48,9%	7.230,030	51,1%	0,000	0,0%
Lombardia	304.629,990	192.534,800	63,2%	61.257,310	20,1%	50.837,880	16,7%
Piemonte	154.079,785	76.579,065	49,7%	31.871,590	20,7%	45.629,130	29,6%
Trentino Alto Adige	47.943,700	26.824,670	56,0%	21.119,030	44,0%	0,000	0,0%
Valle d'Aosta	5.384,250	2.326,650	43,2%	3.057,600	56,8%	0,000	0,0%
Veneto	124.819,720	92.861,190	74,4%	31.958,530	25,6%	0,000	0,0%
NORTH	817.977,015	476.099,375	58,2%	232.720,510	28,5%	109.157,130	13,3%
Lazio	78.427,020	54.894,270	70,0%	23.532,750	30,0%	0,000	0,0%
Marche	26.605,170	10.791,090	40,6%	15.814,080	59,4%	0,000	0,0%
Toscana	180.039,230	91.452,760	50,8%	88.586,470	49,2%	0,000	0,0%
Umbria	17.984,530	11.968,180	66,5%	6.016,350	33,5%	0,000	0,0%
CENTRE	303.055,950	169.106,300	55,8%	133.949,650	44,2%	0,000	0,0%
Abruzzo	18.464,220	8.520,210	46,1%	9.944,010	53,9%	0,000	0,0%
Basilicata	2.366,450	594,660	25,1%	1.771,790	74,9%	0,000	0,0%
Calabria	26.569,010	8.535,320	32,1%	18.033,690	67,9%	0,000	0,0%
Campania	70.256,330	27.094,990	38,6%	43.161,340	61,4%	0,000	0,0%
Molise	109,320	46,450	42,5%	62,870	57,5%	0,000	0,0%
Puglia	71.089,930	22.799,920	32,1%	48.290,010	67,9%	0,000	0,0%
Sardegna	4.578,940	1.278,500	27,9%	3.300,440	72,1%	0,000	0,0%
Sicilia	47.471,815	11.322,835	23,9%	36.148,980	76,1%	0,000	0,0%
SOUTH	240.906,015	80.192,885	33,3%	160.713,130	66,7%	0,000	0,0%
ITALY	1.361.938,980	725.398,560	53,3%	527.383,290	38,7%	109.157,130	8,0%

FIGURE 9: Incidence of separate paper and board waste collection managed under agreements in 2003 over total separate paper and board waste collection in the same year. Breakdown by macro-areas. (Source: Comieco)

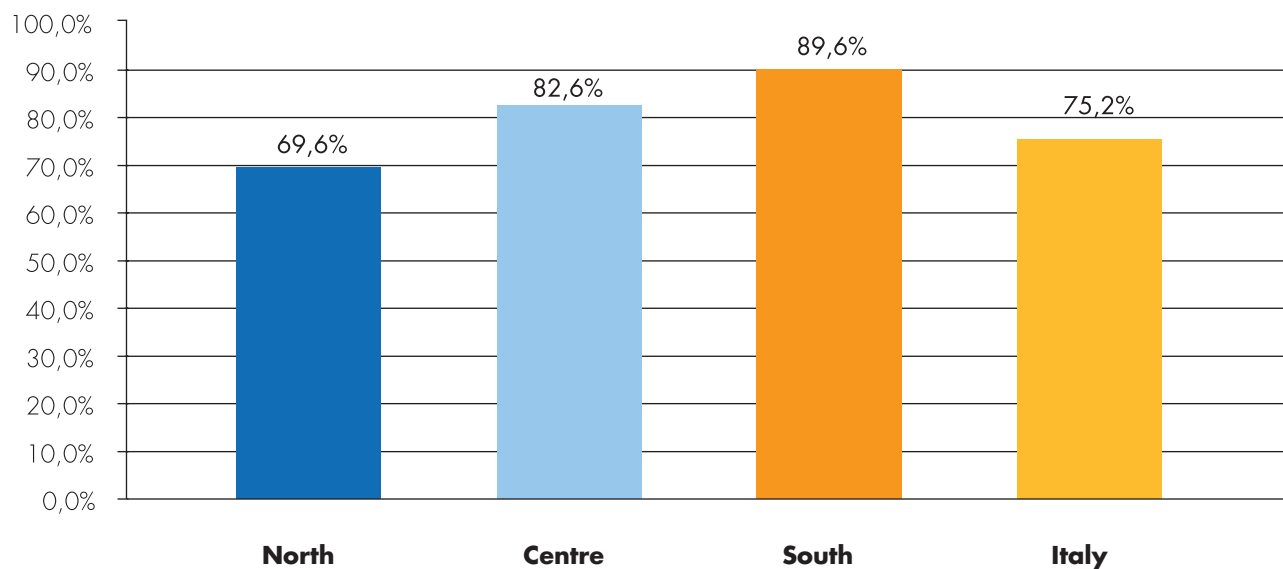


FIGURE 10: Incidence of separate paper and board waste collection managed under agreements in 2003 over total separate paper and board waste collection in the same year. Breakdown by regions. (Source: Comieco)

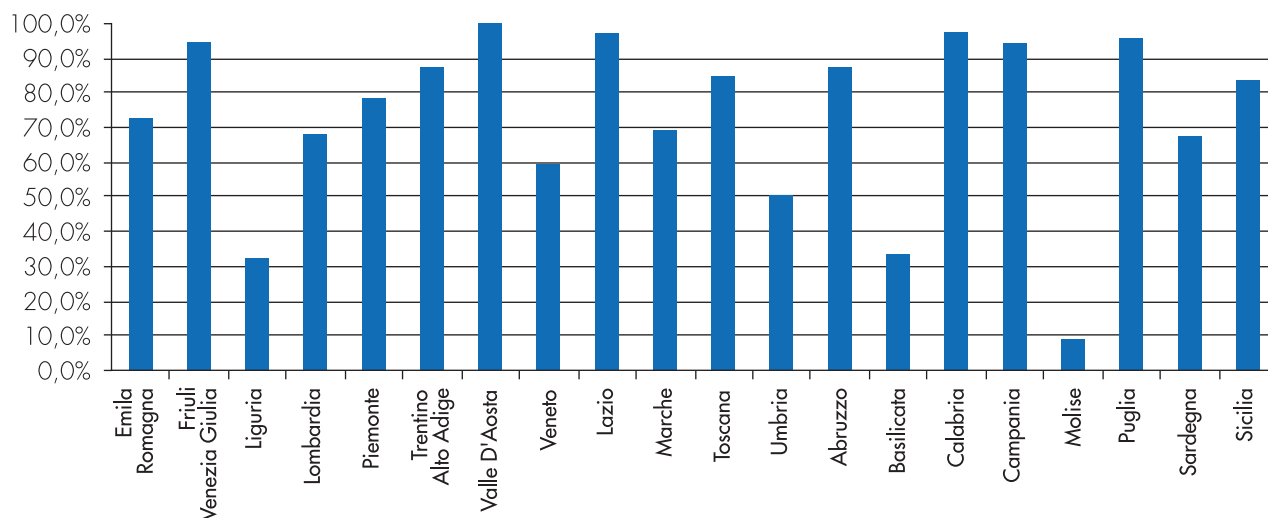


TABLE 8: Per-capita collection in the North, Centre, and South based on inhabitants with agreements. (Source: Comieco)

Per-capita collection (kg/inh. with agreements)						
	1998	1999	2000	2001	2002	2003
NORTH	23,6	33,7	35,8	34,7	40,9	41,8
CENTRE	13,7	21,5	23,1	23,4	27,7	31,3
SOUTH	2,6	5,0	6,5	9,0	13,5	14,6
ITALY	14,3	21,4	23,2	23,3	28,7	29,8

TABLE 9: Trend of separate paper and board waste collection in some cities subject to agreements. (Source: Comieco)

City	2001	2002	2003	Δ '02-'03
	<i>tons</i>	<i>tons</i>	<i>tons</i>	<i>%</i>
Bari	11.667	12.380	13.784	11,3%
Bologna*	7.242	6.021	6.041	0,3%
Bolzano	5.664	5.598	5.598	0,0%
Brescia	11.822	11.824	12.140	2,7%
Firenze	20.968	24.138	26.920	11,5%
Imperia	1.588	1.491	1.633	9,5%
L'Aquila	2.119	2.116	2.713	28,2%
Milano	74.487	74.783	78.021	4,3%
Napoli	12.077	15.428	13.653	-11,5%
Palermo	5.401	4.874	9.051	85,7%
Roma	54.269	57.626	63.885	10,9%
Salerno	3.577	3.553	3.175	-10,6%
Terni	3.029	3.497	3.855	10,2%
Torino	42.396	45.125	45.629	1,1%
Verona	10.225	10.900	11.139	2,2%

* in Bologna Comieco only manages a proportional share of separate paper and board waste collection

FIGURE 11: Sorting plants for selection and baling of paper and board waste collected by Municipalities subject to agreements. Data at December 31, 2003. (Source: Comieco)



FIGURE 12: Paper mills recycling paper and board waste collected by Municipalities subject to agreements. Data at December 31, 2003. (Source: Comieco)



FIGURE 13: Location of sorting plants for secondary and tertiary packaging waste collection. Data at December 31, 2003.
(Source: Comieco)



FIGURE 14: Monthly surveys of the Chamber of Commerce of Milan: mean recovered-paper values in the 2002-2003 period.
(Source: Chamber of Commerce of Milan)

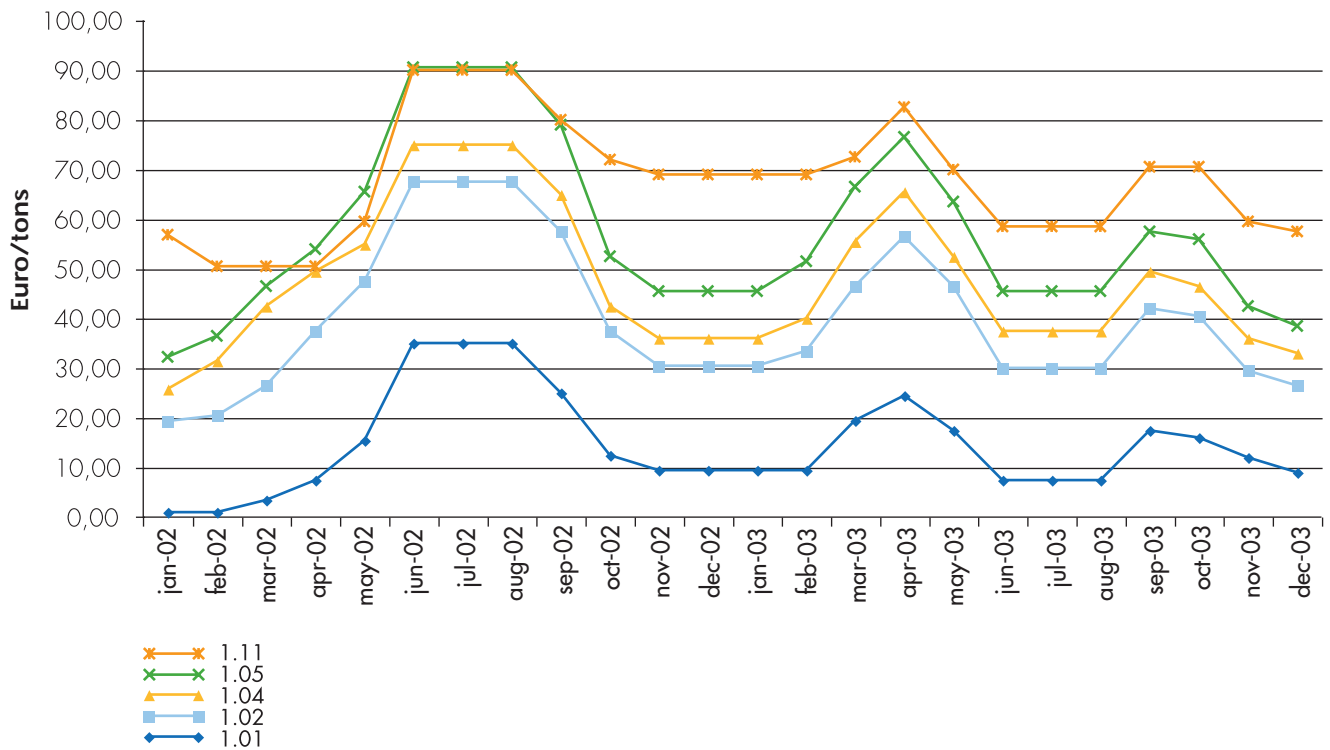


TABLE 10: Results of the quality tests performed in 2002 and 2003. (Source: Comieco)

Collection	Data	NORTH		CENTRE		SOUTH		ITALY	
		2002	2003	2002	2003	2002	2003	2002	2003
Joint	Analyzed quantities (kg)	19.194	76.637	3.929	16.377	19.535	26.801	42.657	119.814
	Unrelated materials (%)	4,1	3,4	3,1	5,2	3,5	5,7	3,9	4,5
	Analyses performed (no.)	44	328	19	94	112	111	275	533
Integrated	Analyzed quantities (kg)	1.635	17.504	no agreements were executed in the Centre and South providing for integrated collection services				1.635	17.504
	Unrelated materials (%)	1,9	1,4					1,9	1,4
	Analyses performed (no.)	77	44					77	44
Separate	Analyzed quantities (kg)	9.498	17.153	3.828	7.545	19.856	37.406	33.181	62.104
	Unrelated materials (%)	2,5	3,5	3,3	1,5	4,0	2,4	3,2	2,6
	Analyses performed (no.)	53	75	20	45	92	161	165	281
TOTAL	Analyzed quantities (kg)	30.327	111.294	7.757	23.922	39.390	64.207	77.474	199.422
	Unrelated materials (%)	3,5	2,5	3,2	4,7	3,6	3,4	3,5	3,4
	Analyses performed (no.)	274	447	39	139	204	272	517	858

TABLE 11: Apparent paper and board import, export and consumption in 2003.

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

values in tons/month	Paper and board packaging						
	Paper and board for corrugated board	Cardboard for boxes	Other wrapping and packaging paper and board	Graphic paper	Sanitary paper	Other types of paper	Total paper production
Production	2.680.461	702.186	1.024.266	3.103.299	1.337.889	525.185	9.373.286
Import	1.246.309	407.356	481.357	2.253.409	89.243	80.027	4.557.701
Export	188.566	372.032	356.876	1.191.440	696.464	79.830	2.885.208
Apparent consumption	3.738.204	737.510	1.148.747	4.165.268	730.668	525.382	11.045.779

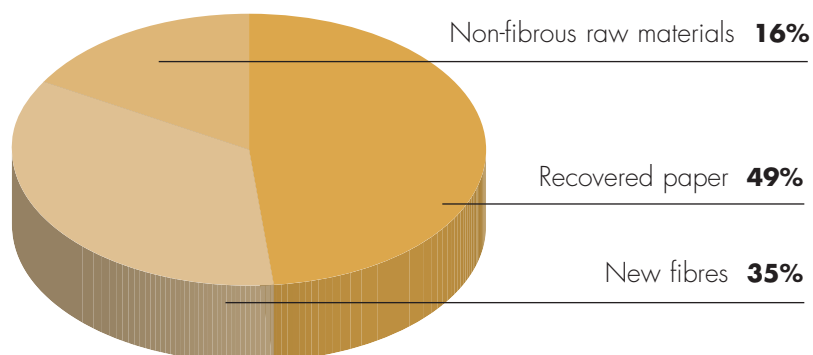
FIGURE 15: Raw materials for the paper industry in 2003. (Source: Assocarta and Comieco)

FIGURE 16: Separate waste collection, recovered paper consumption and recovered paper available at a national level (.000 tons). (Source: Data processed by Comieco)

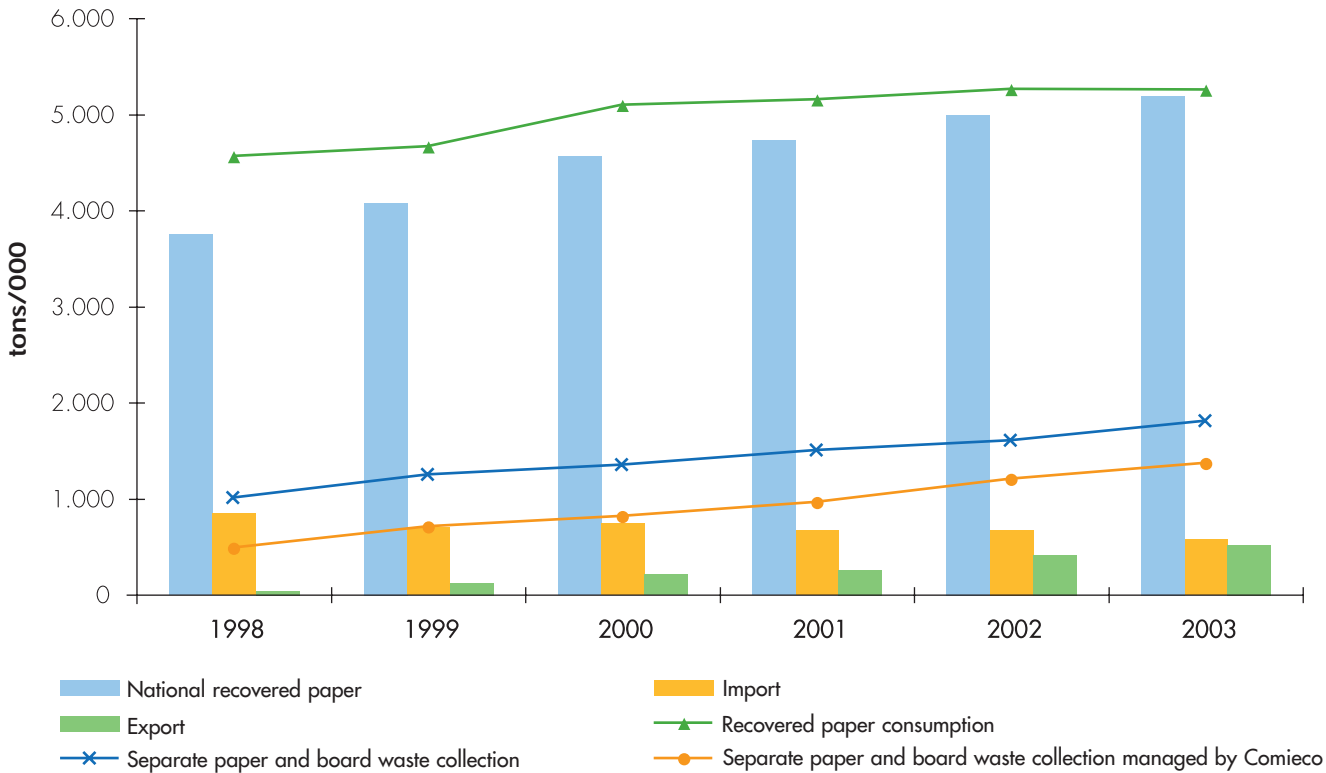


FIGURE 17: Origin of the recovered paper used in 2003. (Source: Assocarta and Comieco)

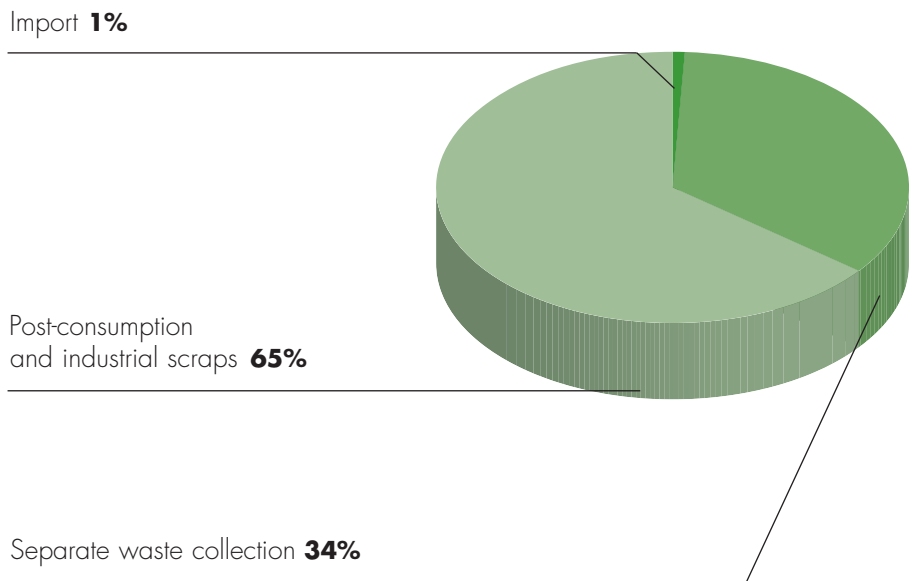


FIGURE 18: Paper and board destination in Italy in 2003. (Source: Assocarta data processed by Comieco)

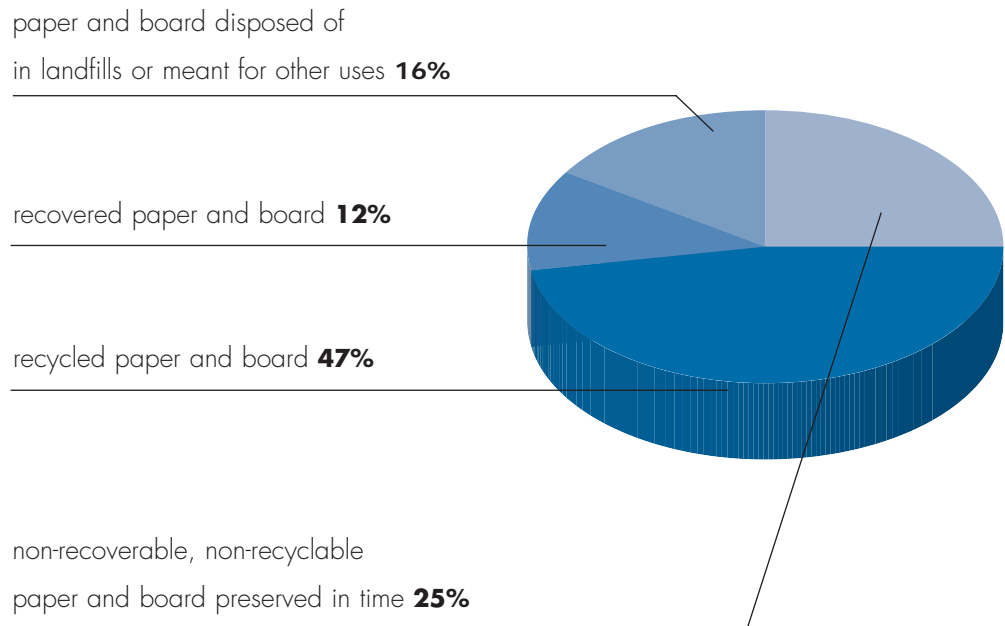


FIGURE 19: Destination of recyclable and recoverable paper and board waste in 2003.

(Source: Assocarta data processed by Comieco)

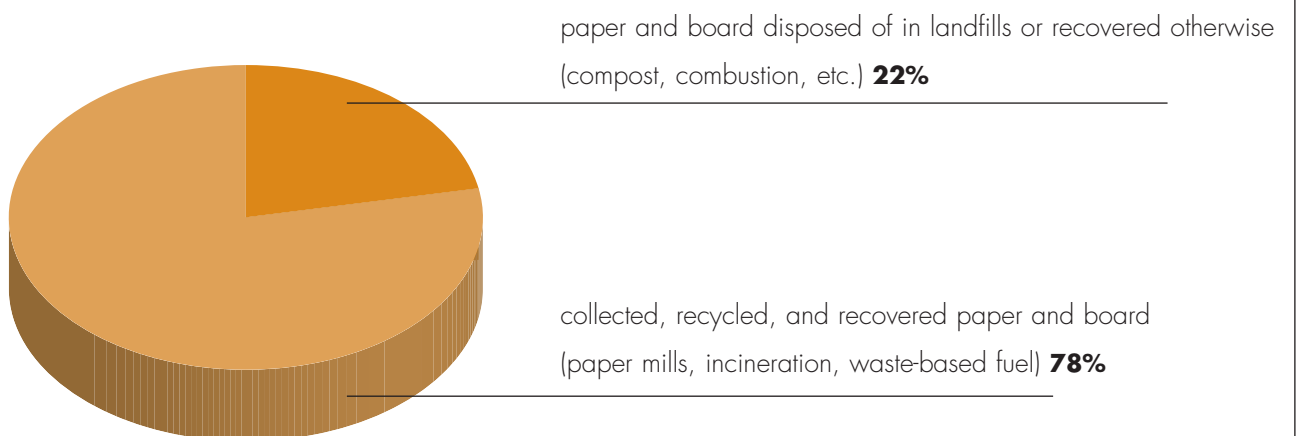


TABLE 12: Recovery and recycling results achieved in 2003. (Source: Comieco)

Recycling and recovery rate calculation (values in tons.)	Total	Packaging from public surface subject to Comieco agreements
Apparent paper and board packaging consumption	4.208.147,00	
Paper and board packaging waste from joint waste collection	270.502,53	157.871,43
Paper and board packaging waste from joint waste collection	2.054.264,75	542.133,10
Packaging waste sent abroad for recycling (ISTAT data)	107.585,00	
Total Paper and board packaging waste for recycling	2.432.352,04	700.004,53
Paper and board packaging recovered as energy and waste based fuel	341.104,00	
Recovered paper and board packaging	2.773.456,04	
% Recycling	57,80%	
% Recovery	65,91%	

TABLE 13: Recycling and recovery targets achieved in the years 1998/2003. (.000 tons.) (Source: Comieco)

	1998	1999	2000	2001	2002	2003
Apparent paper and board packaging consumption	4.023	4.051	4.089	4.160	4.218	4.208
Total Paper and board packaging waste for recycling	1.489	1.652	1.877	2.109	2.369	2.432
Paper and board packaging recovered as energy and waste based fuel	118	130	150	190	120	341
Recovered paper and board packaging	1.607	1.782	2.027	2.299	2.489	2.773
% Recycling	37,01%	40,78%	45,90%	50,70%	56,16%	57,80%
% Recovery	39,95%	43,99%	49,57%	55,26%	59,01%	65,91%

* plafond for the years 1998-2002, real value in 2003.

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