

KEY STATISTICS 2023

European pulp & paper industry



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Welcome to the latest issue of Cepi's Key Statistics. This booklet contains the key statistics necessary to give a clear picture of the performance of the European pulp and paper industry in 2023.

The statistics included in this booklet are a compilation of data received from the National Associations which are Cepi members, under the auspices of Cepi's Statistics Network. Some additional sources, such as Eurostat, have been used where necessary and relevant.

Extra statistical information is accessible online to members on Cepi's Library at <https://library.cepi.org/> and to non-members by subscription¹.

The Confederation of European Paper Industries (Cepi) is a Brussels-based non-profit making organisation founded in 1992, which represents the European pulp and paper industry towards the European Institutions. Through its member associations, Cepi also represents approximately 480 pulp, paper and board producing companies across Europe, ranging from small and medium-sized enterprises to multinationals (counting companies with a presence in more than one Cepi country only once). It represents

90% of the European² pulp and paper industry in terms of production. The pulp and paper industry provides 175 000 jobs in Europe directly. It has a turnover of 100 billion euros and adds 20 billion euros to the EU GDP. It is strong in export markets, with an export rate of 21% of its paper and board production.

Circular Economy in the European Pulp and Paper Industry

The European Pulp and Paper industry plays a big role in the circular economy.

This icon has been introduced in the report to highlight the many areas that are circular in our sector. More information on circular economy can be found on Cepi's website.

<https://www.cepi.org/policy-area/sustainability-circularity/>

Members of Cepi in 2023

The National Associations of the 18 following countries are Cepi members: Austria, Belgium, Czech Republic, Finland, France, Germany, Hungary, Italy, The Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, and United Kingdom.

Data quality and compliance with EU competition rules



Responsibility for the collection and management of statistical data lies with the Cepi statistics department, which is constantly working to improve the quality of the data reported. In order to further increase the reliability and credibility of the data reported, Cepi has commissioned Deloitte to issue a limited assurance statement on the data quality rating that Cepi carried out on its core indicators in the statistics report. The limited assurance statement is available at <http://www.Cepi.org/statistics>

The compliance of the data produced with the EU competition rules is periodically checked by a law firm.

¹ More statistics reports (annual, quarterly and monthly) are available by subscription:

- Please visit our website <https://www.cepi.org/statistics-order-form/>

- Or contact Ariane Crèvecoeur – Statistics Manager – a.crevecoeur@Cepi.org

² Europe minus the Russian Federation








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Cepi Pulp and Paper Industry

	1991	2000	2010	2020	2022	2023	% Change 2023/2022	% Change 2023/2010
Industry Structure								
Number of Companies ¹	1 082	979	728	684	664	662	-0.3	-9.1
Number of Mills	1 570	1 309	994	894	864	856	-0.9	-13.9
Pulp	296	233	172	152	143	140	-2.1	-18.6
Paper and Board	1 274	1 076	822	742	721	716	-0.7	-12.9
Number of Paper Machines	2 182	1 858	1 396	1 243	1 200	1 173	-2.3	-16.0
Employment	411 113	279 987	194 894	182 927	176 810	175 479	-0.8	-10.0
Turnover ² (Million Euros)	n.a.	79 388	75 790	81 357	118 700	100 000	-15.8	31.9
Investments ² (Million Euros)	n.a.	5 637	2 913	4 709	6 000	5 500	-8.3	88.8
Added Value ² (Million Euros)	n.a.	24 494	16 560	17 869	25 000	20 000	-20.0	20.8
Total Pulp³ ('000 Tonnes)								
Production Capacity	39 584	43 842	44 189	43 324	42 395	40 355	-4.8	-8.7
Operating Rate	85.4%	91.2%	87.6%	83.2%	84.8%	80.9%	-3.8	-6.6
Production	33 807	39 962	38 695	36 049	35 933	32 659	-9.1	-15.6
Cepi Internal Deliveries	n.a.	39 224	37 045	33 899	33 284	27 448	-17.5	-25.9
Consumption ⁷ (Apparent)	37 815	46 377	43 849	37 794	38 040	31 383	-17.5	-28.4
Market Pulp ('000 Tonnes)								
Production	9 314	11 423	12 706	15 321	14 692	15 023	2.3	18.2
Exports to Outside Cepi	n.a.	1 332	2 567	6 532	5 317	7 858	47.8	206.1
Imports from Outside Cepi	n.a.	7 924	7 721	8 277	7 424	6 583	-11.3	-14.7
Trade Balance with Outside Cepi	n.a.	-6 592	-5 154	-1 745	-2 107	1 276	160.5	-124.7
Consumption ⁷ (Apparent)	14 332	18 015	17 860	17 065	16 799	13 747	-18.2	-23.0
Exports/Production	n.a.	11.7%	20.2%	42.6%	36.2%	52.3%	16.1	32.1
Imports/Consumption	n.a.	44.0%	43.2%	48.5%	44.2%	47.9%	3.7	4.7
Paper and Board ('000 Tonnes)								
Production Capacity	73 280	97 658	103 714	100 744	98 097	96 400	-1.7	-7.1
Operating Rate	88.8%	93.0%	91.7%	84.7%	86.6%	76.7%	-9.9	-15.0
Production	65 052	90 823	95 065	85 349	84 933	73 933	-13.0	-22.2
Cepi Internal Deliveries	n.a.	78 796	80 263	73 090	73 899	64 840	-12.3	-19.2
Exports to Outside Cepi	n.a.	13 887	19 164	19 366	17 511	15 459	-11.7	-19.3
Imports from Outside Cepi	n.a.	6 383	5 783	5 124	5 105	4 239	-17.0	-26.7
Trade Balance with Outside Cepi	n.a.	7 504	13 381	14 242	12 406	11 220	-9.6	-16.2
Consumption ⁷ (Apparent)	60 102	82 065	81 684	71 108	72 527	62 712	-13.5	-23.2
Exports/Production	n.a.	15.3%	20.2%	22.7%	20.6%	20.9%	0.3	0.8
Imports/Consumption	n.a.	7.8%	7.1%	7.2%	7.0%	6.8%	-0.3	-0.3

Cepi Pulp and Paper Industry

	1991	2000	2010	2020	2022	2023	% Change 2023/2022	% Change 2023/2010
Wood ('000 m³)								
Consumption	120 274	148 093	148 901	146 515	145 393	140 368	-3.5	-5.7
Hardwood	30 410	40 048	38 119	40 192	36 750	34 043	-7.4	-10.7
Softwood	89 863	108 046	110 782	106 323	108 643	106 324	-2.1	-4.0
Imports/Consumption	12.8%	17.1%	17.1%	14.5%	10.4%	9.0%	-1.4	-8.1
Domestic/Consumption	87.2%	82.9%	82.9%	85.5%	89.6%	91.0%	1.4	8.1
Paper for Recycling ('000 Tonnes) 								
Collection	25 452	43 658	55 917	54 462	52 452	51 599	-1.6	-7.7
Utilisation	25 360	40 922	48 122	47 951	47 408	43 989	-7.2	-8.6
Exports to Outside Cepi	n.a.	3 751	9 592	8 364	7 082	9 418	33.0	-1.8
Imports from Outside Cepi	n.a.	1 015	1 796	1 852	2 037	1 807	-11.3	0.6
Trade Balance with Outside Cepi	n.a.	2 736	7 795	6 512	5 045	7 611	50.9	-2.4
Utilisation Rate	39.0%	45.1%	50.6%	56.2%	55.8%	59.5%	3.7	8.9
Exports/Collection	n.a.	8.6%	17.2%	15.4%	13.5%	18.3%	4.7	1.1
Imports/Utilisation	n.a.	2.5%	3.7%	3.9%	4.3%	4.1%	-0.2	0.4
Recycling Rate in Europe⁴   								
Paper for Recycling Collection	26 129	44 954	58 171	55 980	54 737	53 686	-1.9	-7.7
Paper and Board Apparent Consumption	64 801	86 826	84 873	76 361	76 953	67 701	-12.0	-20.2
Recycling Rate	40.3%	51.8%	68.5%	73.3%	71.1%	79.3%	8.2	10.8
Non-Fibrous Materials ('000 Tonnes)								
Consumption	9 504	15 609	16 218	10 684	11 749	9 334	-20.6	-42.4
Energy and Environment⁵								
Fuels Consumption ('000 Tj)	930	1 141	1 282	1 149	1 116	n.a.		
Biomass Use (%) of Total FC 	44.4	49.3	52.9	60.4	62.2	n.a.		
Electricity Consumption (GWh)	86 527	110 424	113 137	91 081	86 571	n.a.		
% of Electricity produced through CHP ⁶	88.0	90.4	95.4	95.7	95.7	n.a.		
CO₂ Emissions (Cepi Countries)								
CO ₂ Direct Emissions (Mega Tonnes)	39.05	41.94	37.83	28.93	27.03	22.73	-15.9	-39.9
Specific CO ₂ Emissions (kt CO ₂ / kt of product)	0.54	0.42	0.35	0.29	0.27	0.26	-5.8	-27.2

¹ 480 groups or corporations in 2023, when considering the entities established in one or several countries that are not bound together by legal and/or financial links

² 2022 and 2023 figures are based on members' data, Eurostat and estimates for some countries

³ Total Pulp = Market Pulp + Integrated Pulp

⁴ Europe means EU-27 countries plus Norway, Switzerland and the United Kingdom - Recycling Rate in 2023: see note page 23

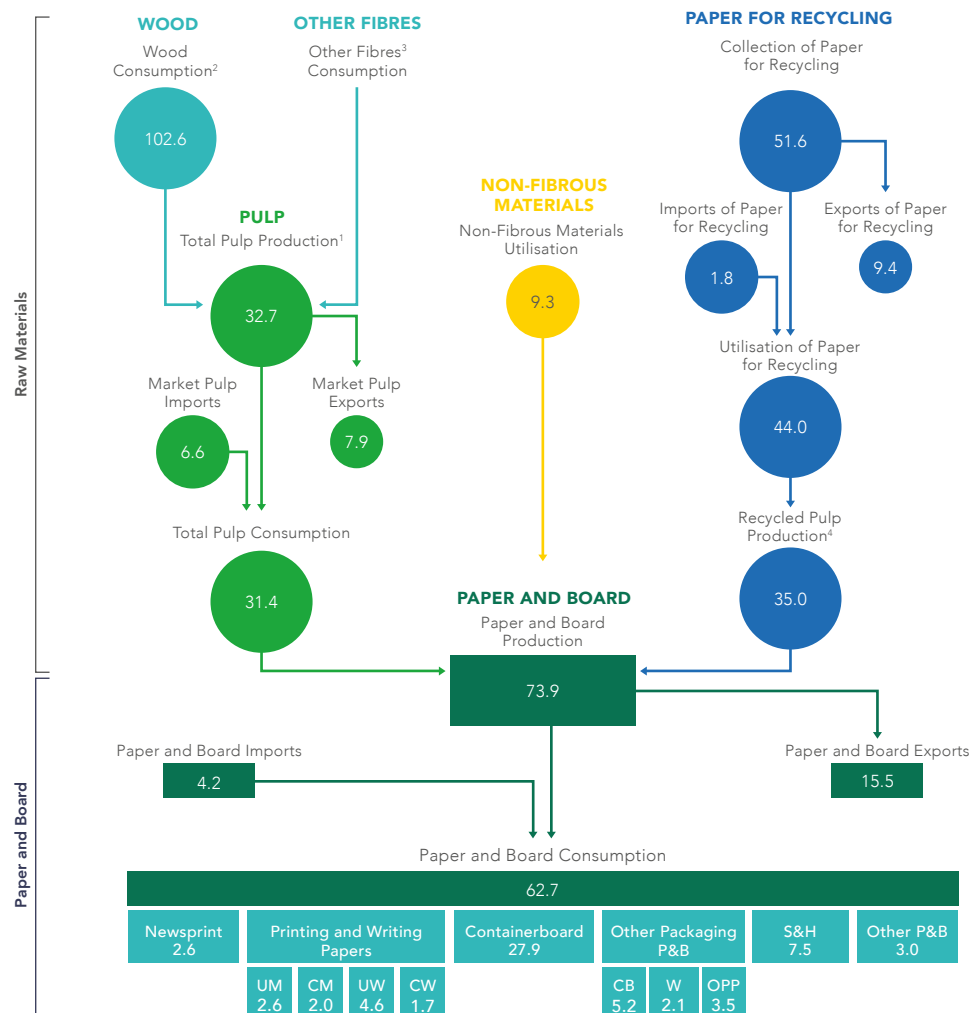
⁵ Hungary, Romania and Slovenia are not included in energy and environment data

⁶ CHP: combined heat and power (compared to total on-site electricity generation).

⁷ Cepi Apparent Consumption = production - exports to outside Cepi + imports from outside Cepi

Pulp and Paper Industry in 2023

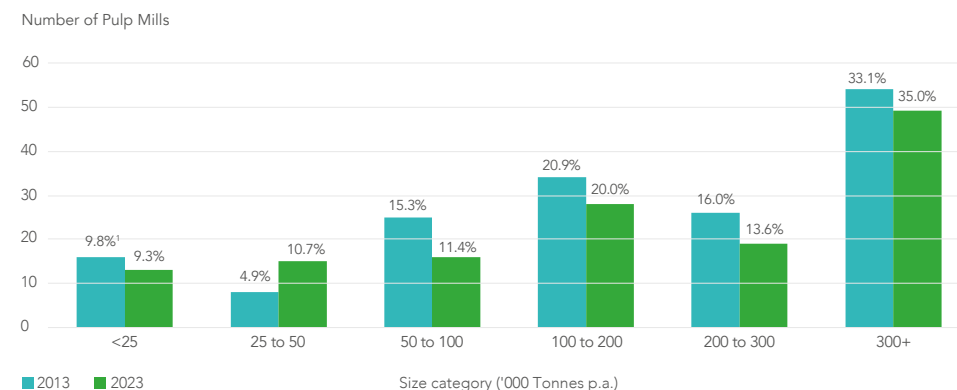
Figures in Million Tonnes



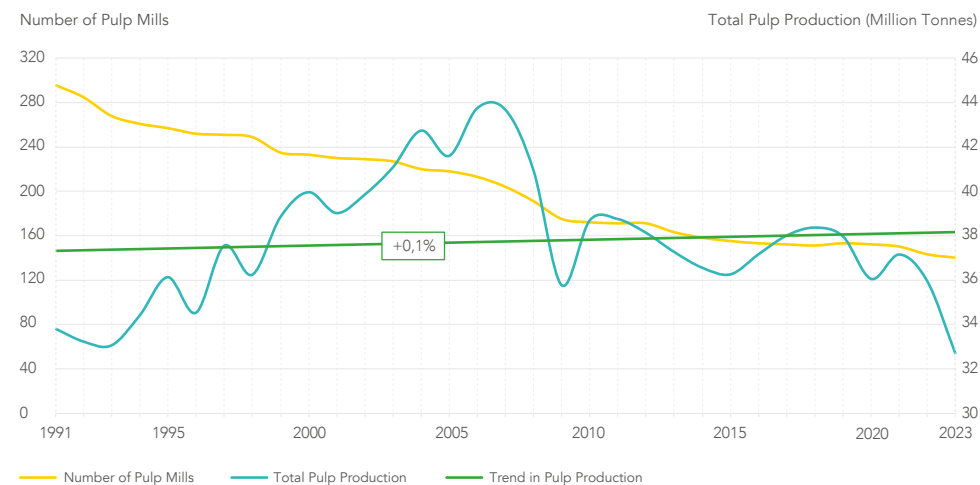
Paper and Board Consumption = Production + Imports from outside Cepi - Exports to outside Cepi
 UM = Uncoated Mechanical - CM = Coated Mechanical - UW = Uncoated Woodfree - CW = Coated Woodfree
 CB = Carton Board - W = Wrappings - OPP = Other Paper and Board for Packaging - S&H = Sanitary and Household

¹ of which Integrated Pulp 17.6 Million Tonnes
² Wood consumption: see definition on page 30
³ Straw, Bamboo, Bagasse, ...
⁴ Estimated by Cepi

Number of Pulp Mills by Volume in 2013 and 2023

¹ Share of Total Number of Mills

Number of Pulp Mills and Total Pulp Production



Total Pulp¹ Production and Consumption

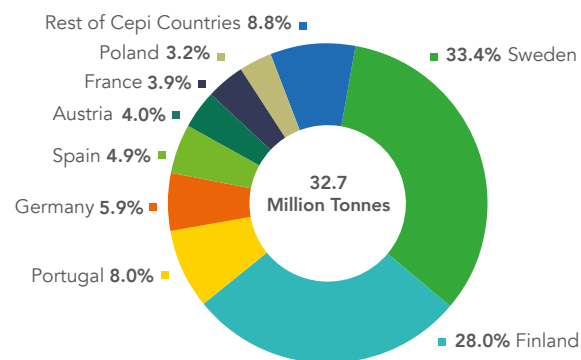
'000 Tonnes

Total Pulp ¹	Production			Consumption		
	2022	2023	% Change 2023/2022	2022	2023	% Change 2023/2022
Mechanical & Semi-Chemical	8 221	6 526	-20.6	8 289	6 257	-24.5
Sulphite Pulp	1 597	1 320	-17.3	1 409	933	-33.8
Sulphate Pulp	26 026	24 726	-5.0	28 102	24 023	-14.5
Chemical Pulp	27 623	26 046	-5.7	29 511	24 956	-15.4
Total Woodpulp	35 844	32 572	-9.1	37 800	31 213	-17.4
Other Pulp ²	89	87	-2.2	239	170	-28.9
Total Pulp¹	35 933	32 659	-9.1	38 040	31 383	-17.5

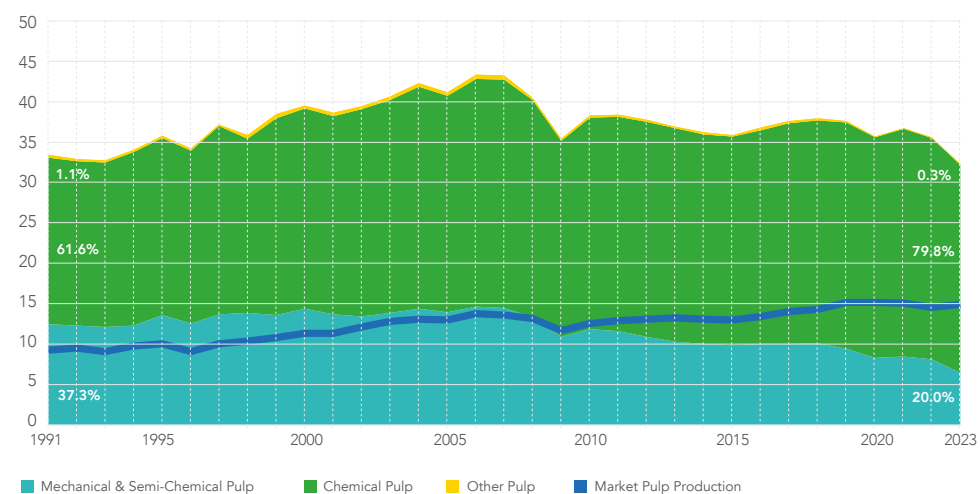
... of which Market Pulp Production and Consumption

'000 Tonnes

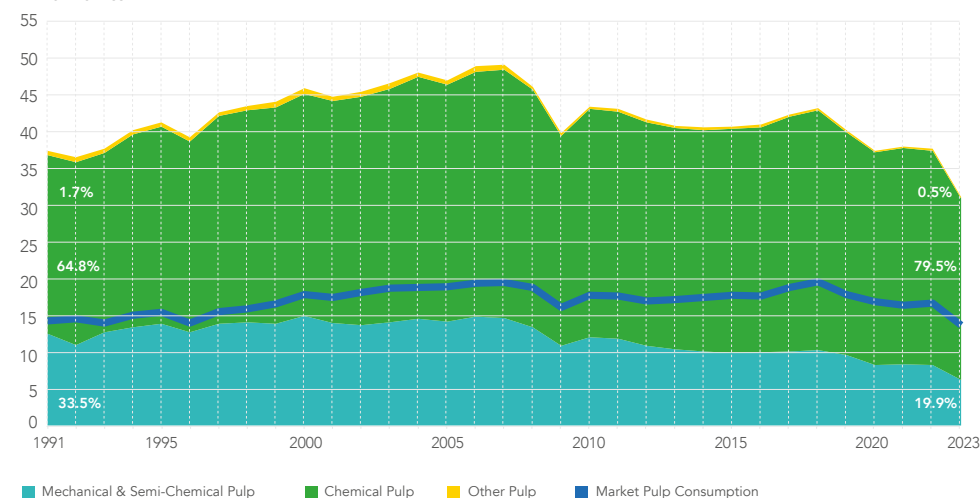
Market Pulp	Production			Consumption		
	2022	2023	% Change 2023/2022	2022	2023	% Change 2023/2022
Mechanical & Semi-Chemical	1 123	971	-13.6	1 192	702	-41.1
Sulphite Pulp	578	502	-13.1	389	115	-70.5
Sulphate Pulp	12 931	13 492	4.3	15 008	12 790	-14.8
Total Chemical Pulp	13 509	13 994	3.6	15 397	12 904	-16.2
Total Woodpulp	14 632	14 965	2.3	16 588	13 606	-18.0
Other Pulp ²	60	58	-3.8	211	141	-33.0
Total Market Pulp	14 692	15 023	2.3	16 799	13 747	-18.2

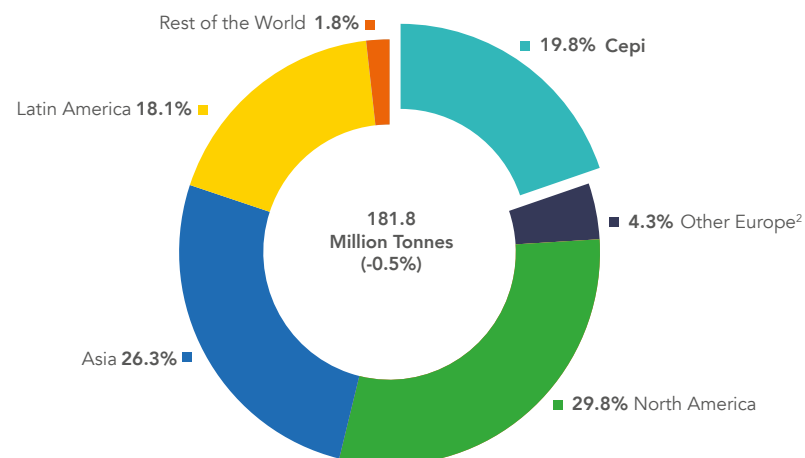
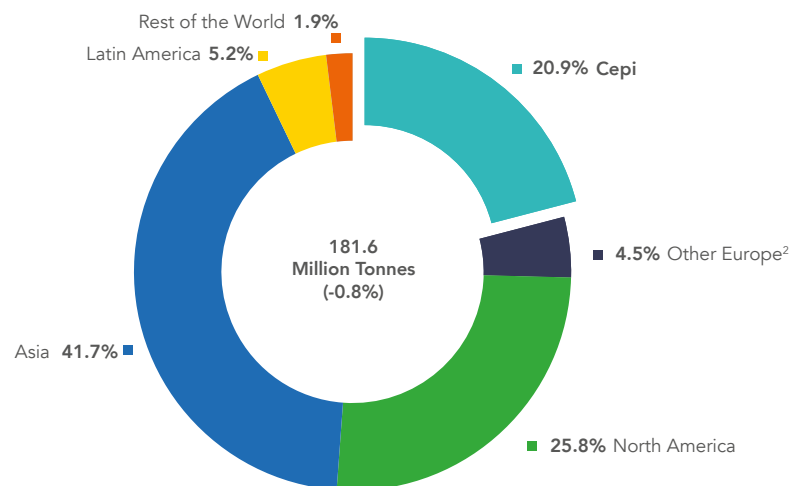
Total Pulp¹ Production by Country in 2023¹ Total Pulp = Market Pulp + Integrated Pulp² Other Pulp: see definition page 30Total Pulp¹ Production by Grade and Market Pulp Production

Million Tonnes

Total Pulp¹ Consumption by Grade and Market Pulp Consumption

Million Tonnes

¹ Total Pulp = Market Pulp + Integrated Pulp

World Total Pulp¹ Production by Region in 2022³World Total Pulp¹ Consumption by Region in 2022³¹ Total Pulp = Integrated Pulp + Market Pulp² Other Europe: total Europe excluding Cepi countries³ Sources: Cepi, Fastmarkets RISI - 2023 figures available in 2025

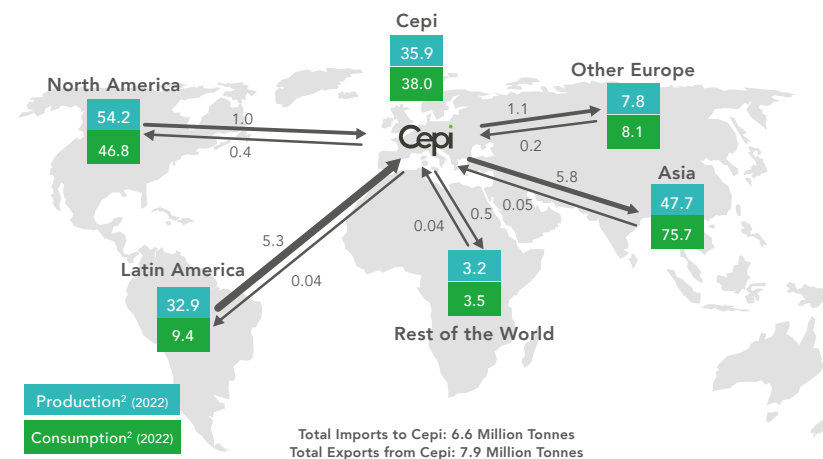
Market Pulp Exports to Other Regions

'000 Tonnes	2000	2010	2020	2022	2023	% Change 2023/2022	% Share of Total
Other Europe ¹	724	719	1 167	1 017	1 087	6.9	13.8
North America	104	62	266	429	391	-8.7	5.0
Latin America	6	49	61	47	41	-13.3	0.5
Asia	412	1 595	4 662	3 451	5 841	69.2	74.3
Rest of the World	86	142	377	372	498	33.8	6.3
Total	1 332	2 567	6 532	5 317	7 858	47.8	100.0

Market Pulp Imports from Other Regions

'000 Tonnes	2000	2010	2020	2022	2023	% Change 2023/2022	% Share of Total
Other Europe ¹	657	480	553	497	219	-55.8	3.3
North America	4 623	2 292	1 333	1 175	991	-15.7	15.1
Latin America	1 916	4 733	6 122	5 662	5 282	-6.7	80.2
Asia	272	134	53	51	47	-6.9	0.7
Rest of the World	456	81	215	40	43	8.7	0.7
Total	7 924	7 721	8 277	7 424	6 583	-11.3	100.0

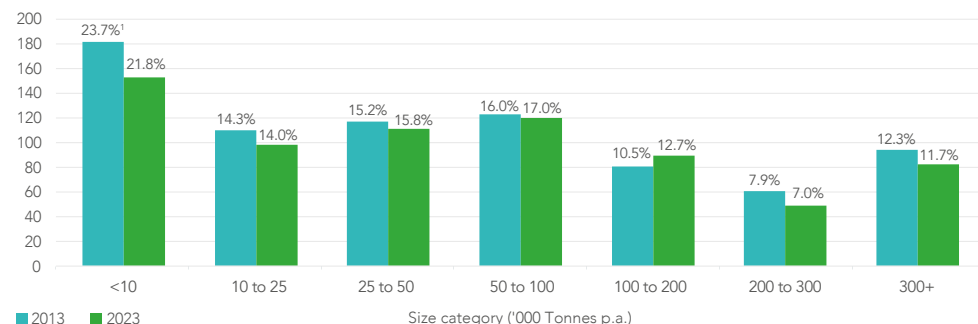
Trade Flows of Market Pulp in 2023 (Million Tonnes)

¹ Other Europe: total Europe excluding Cepi countries² Production and consumption of total pulp (market and integrated)

Sources: Cepi, Fastmarkets RISI - 2023 figures available in 2025

Number of Paper and Board Mills by Volume in 2013 and 2023

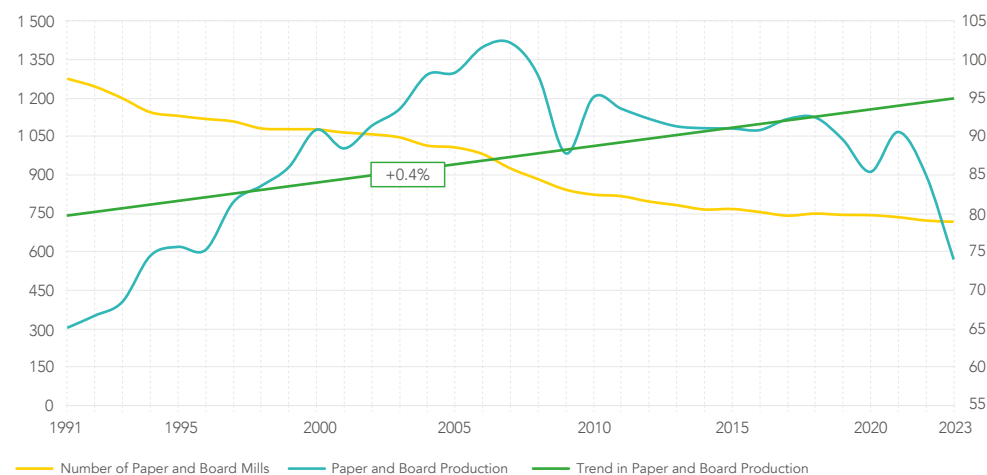
Number of Paper and Board Mills

¹ Share of Total Number of Mills

Number of Paper and Board Mills and Paper and Board Production

Number of Paper and Board Mills

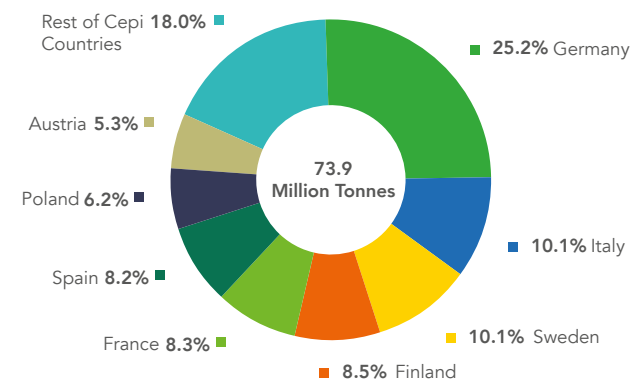
Paper and Board Production (Million Tonnes)



Paper and Board Production and Consumption

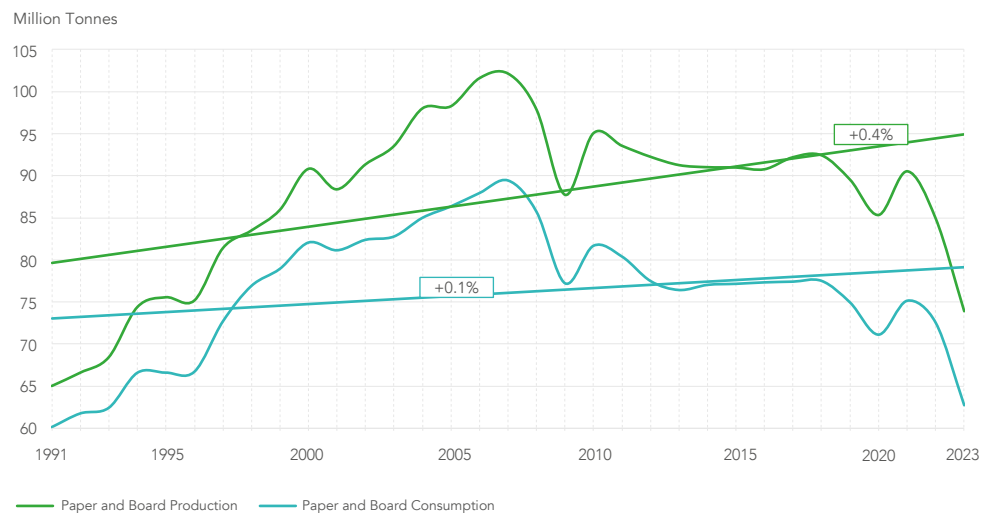
'000 Tonnes	Production			Consumption		
	2022	2023	% Change 2023/2022	2022	2023	% Change 2023/2022
Newsprint	3 442	2 778	-19.3	3 323	2 638	-20.6
Uncoated Mechanical	3 871	2 983	-22.9	3 415	2 597	-24.0
Coated Mechanical	3 603	2 718	-24.6	2 692	2 001	-25.7
Uncoated Woodfree	7 284	5 581	-23.4	6 148	4 573	-25.6
Coated Woodfree	3 869	2 668	-31.0	2 160	1 727	-20.0
Printing and Writing Papers	18 628	13 950	-25.1	14 416	10 898	-24.4
Total Graphic Papers	22 069	16 727	-24.2	17 739	13 536	-23.7
Sanitary and Household	7 963	7 647	-4.0	7 746	7 484	-3.4
Containerboard	32 456	30 852	-4.9	30 169	27 873	-7.6
Carton Board	9 548	7 769	-18.6	6 384	5 172	-19.0
Wrappings	4 345	3 628	-16.5	2 684	2 062	-23.2
Other Paper and Board for Packaging	4 655	3 914	-15.9	4 194	3 546	-15.4
Total Packaging Paper and Board	51 004	46 163	-9.5	43 431	38 653	-11.0
Other Paper and Board	3 897	3 394	-12.9	3 611	3 039	-15.8
Total Paper and Board	84 933	73 933	-13.0	72 527	62 712	-13.5
Including Speciality Paper and Board¹	10 777	9 740	-9.6			

Paper and Board Production by Country in 2023

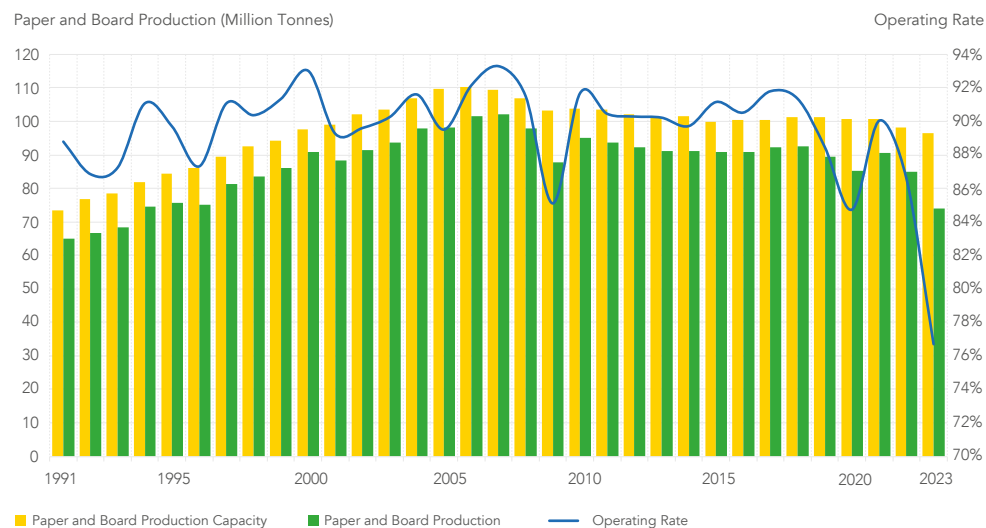


¹Speciality paper and board can be defined as paper or board that require properties (physical, optical, electrical, chemical and/or other special considerations) that are different from the norm for the market sector and application being served. Based on data received from National Associations and Cepi estimates.

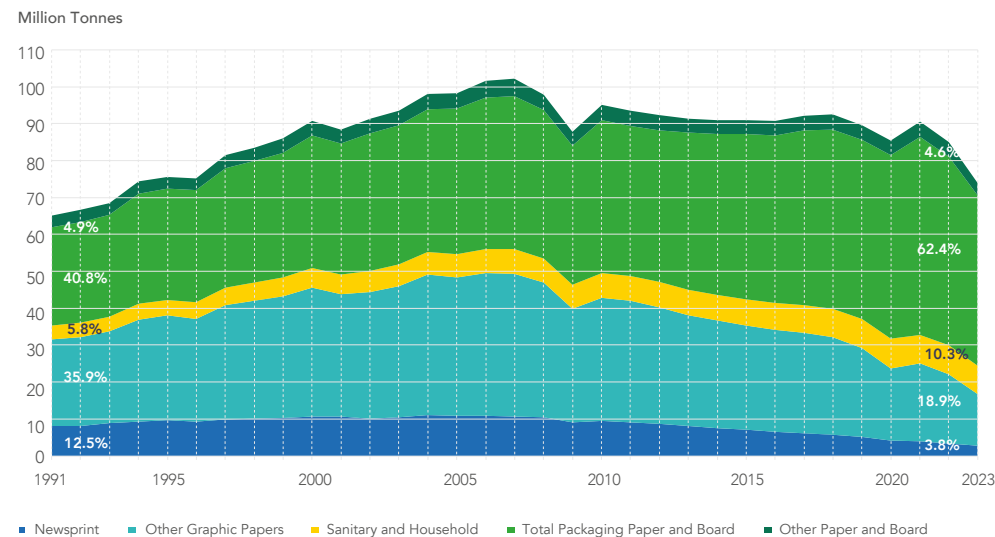
Paper and Board Production and Consumption



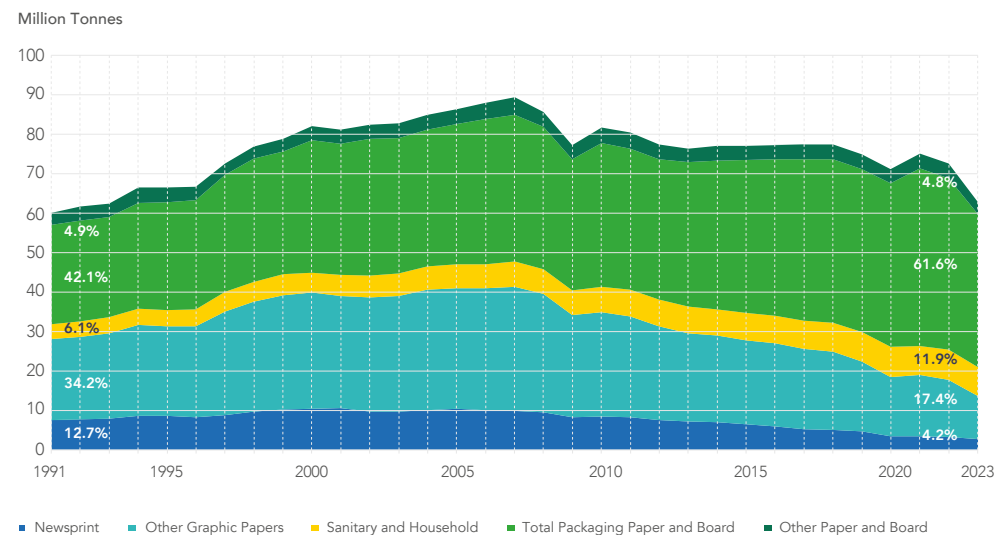
Paper and Board Production and Capacity

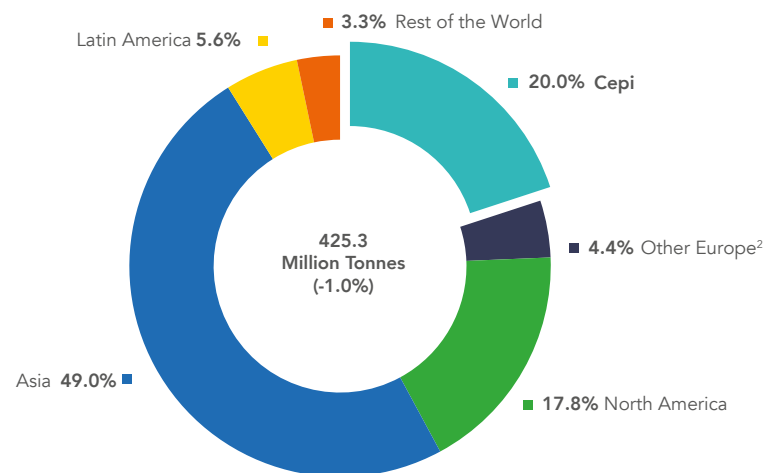
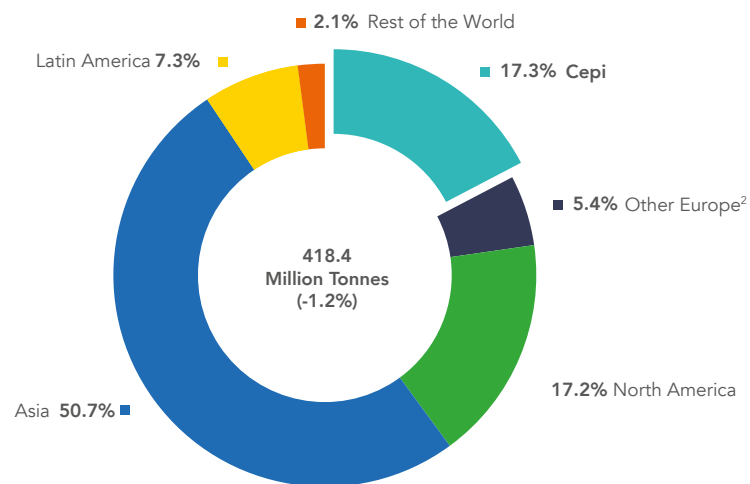


Paper and Board Production by Grade



Paper and Board Consumption by Grade



Paper and Board Production by Region in 2022¹Paper and Board Consumption by Region in 2022¹¹ Sources: Cepi, Fastmarkets RISI - 2023 figures available in 2025² Other Europe: total Europe excluding Cepi countries

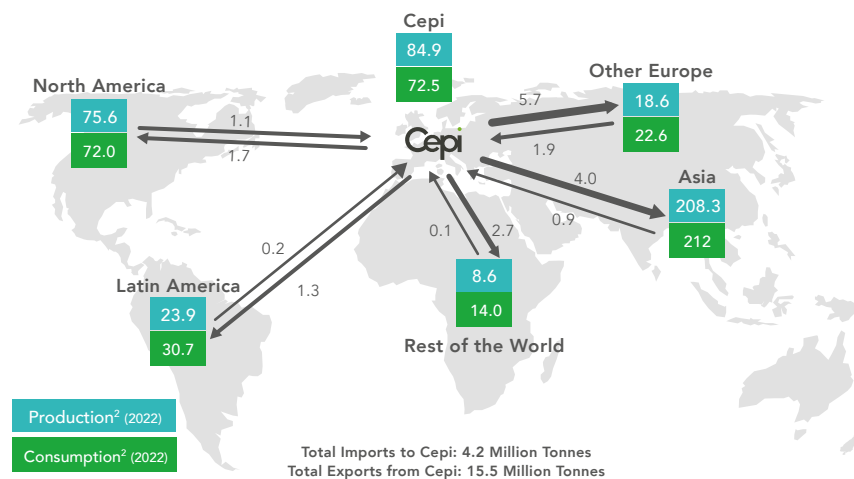
Paper and Board Exports to Other Regions

'000 Tonnes	2000	2010	2020	2022	2023	% Change 2023/2022	% Share of Total
Other Europe ¹	6 090	7 349	7 123	6 563	5 732	-12.7	37.1
North America	2 283	2 055	2 160	2 593	1 713	-34.0	11.1
Latin America	874	1 879	1 604	1 732	1 327	-23.4	8.6
Asia	2 933	5 099	5 504	3 726	4 030	8.1	26.1
Rest of the World	1 707	2 783	2 975	2 896	2 659	-8.2	17.2
Total	13 887	19 164	19 366	17 511	15 459	-11.7	100.0

Paper and Board Imports from Other Regions

'000 Tonnes	2000	2010	2020	2022	2023	% Change 2023/2022	% Share of Total
Other Europe ¹	3 318	2 525	2 443	2 392	1 874	-21.6	44.2
North America	2 191	1 829	1 513	1 223	1 125	-8.0	26.5
Latin America	198	498	348	402	242	-39.8	5.7
Asia	332	625	662	899	874	-2.8	20.6
Rest of the World	344	307	157	190	125	-34.3	2.9
Total	6 383	5 783	5 124	5 105	4 239	-17.0	100.0

Trade Flows of Paper and Board in 2023 (Million Tonnes)

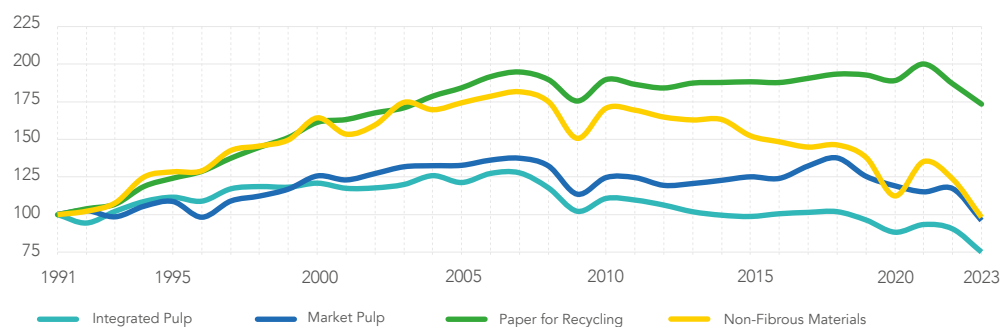
¹ Other Europe: total Europe excluding Cepi countries² Source: Cepi, Fastmarkets RISI - 2023 figures available in 2025

Raw Materials Consumption

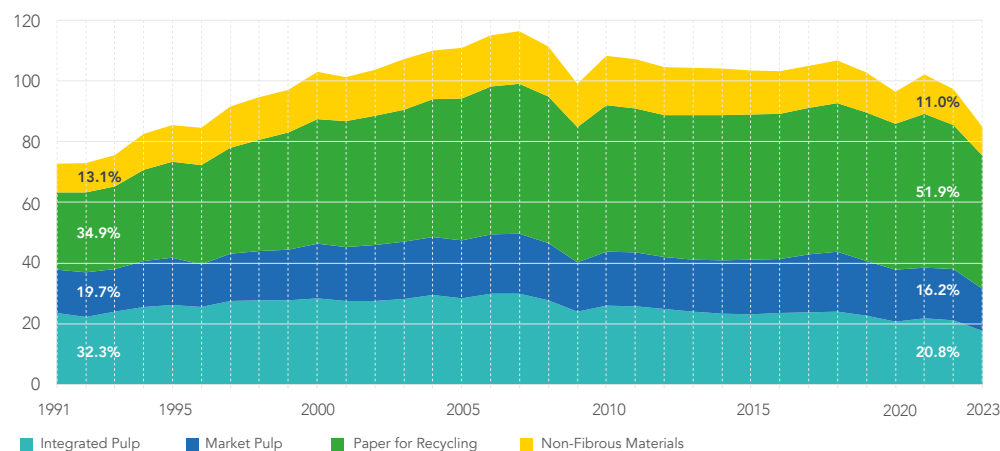
'000 Tonnes	1991	2000	2010	2020	2022	2023	% Change 2023/2022	% Share of Total
Integrated Pulp	23 483	28 362	25 989	20 728	21 240	17 636	-17.0	20.8
Market Pulp	14 332	18 015	17 860	17 065	16 799	13 747	-18.2	16.2
Paper for Recycling	25 360	40 922	48 122	47 951	47 408	43 989	-7.2	51.9
Non-Fibrous Materials	9 504	15 609	16 218	10 684	11 749	9 334	-20.6	11.0
Total Raw Materials	72 679	102 908	108 189	96 429	97 197	84 706	-12.9	100.0

Raw Materials Consumption

Index (1991 = 100)



Million Tonnes

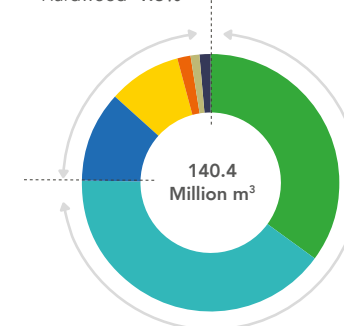
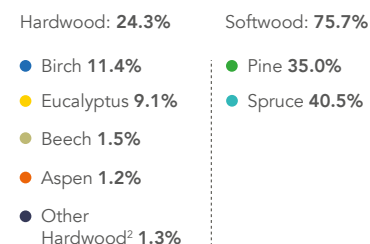


Wood Consumption

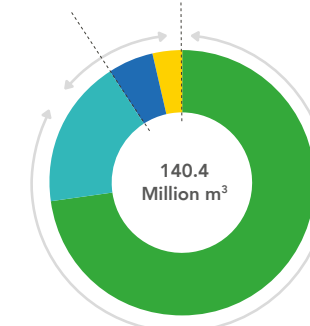
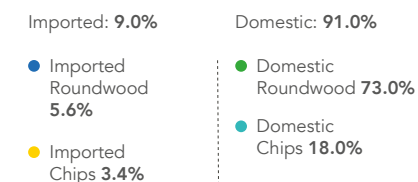
'000 m³	1991	2000	2010	2020	2022	2023	% Change 2023/2022	% Share of Total
Softwood Roundwood	65 240	72 372	76 641	71 963	76 338	75 466	-1.1	53.8
Softwood Chips	24 623	35 673	34 141	34 360	32 305	30 858	-4.5	22.0
Total Softwood	89 863	108 046	110 782	106 323	108 643	106 324	-2.1	75.7
Hardwood Roundwood	28 963	38 542	36 635	38 892	34 244	32 297	-5.7	23.0
Hardwood Chips	1 447	1 505	1 483	1 301	2 506	1 746	-30.3	1.2
Total Hardwood	30 410	40 048	38 119	40 192	36 750	34 043	-7.4	24.3
Total Roundwood	94 204	110 915	113 276	110 854	110 582	107 764	-2.5	76.8
Total Chips	26 070	37 179	35 625	35 661	34 811	32 604	-6.3	23.2
Total Wood	120 274	148 093	148 901	146 515	145 393	140 368	-3.5	100.0

Woodchips used to produce pulp are residues from sawmills and woodworking industry, and are in fact an important contribution to circular economy through industrial symbiosis, although traditionally not reported by Cepi as recycling.

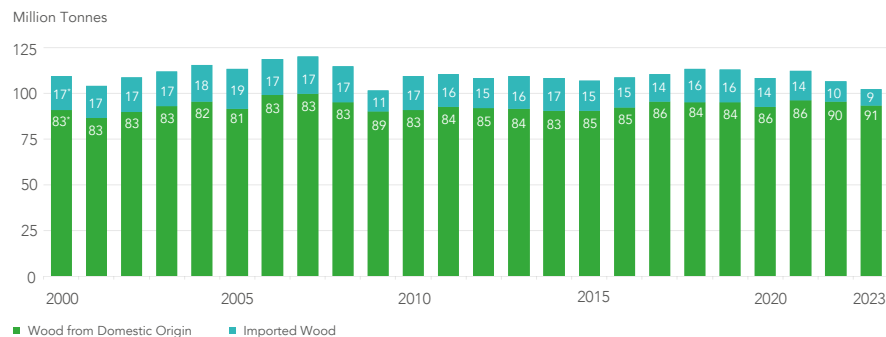
Share in Wood Consumption in 2023

By Species¹

By Origin

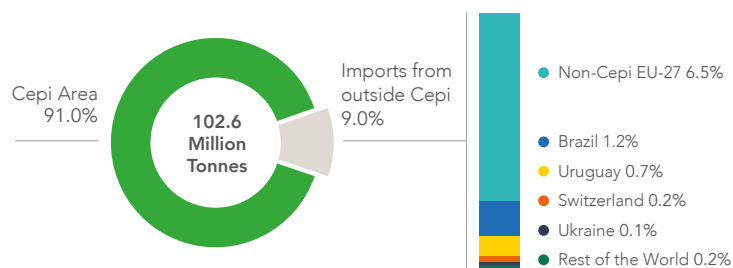
¹ Based on a sample representing 90% of total Cepi consumption² Other Hardwood = hornbeam, ash, maple, accacia, quercus-cerris, oak, alder, poplar, willow, chesnut

Wood Consumption by Origin

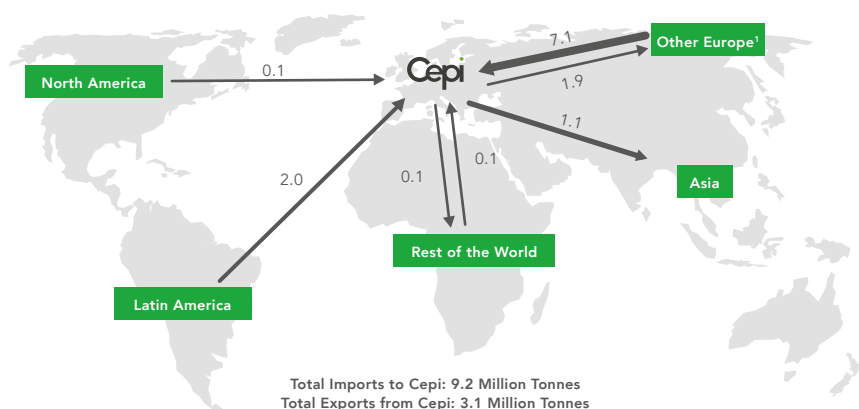


* Percentage of total wood consumption

Wood Consumption Origin in 2023



Trade Flows of Wood in 2023 (Million Tonnes)



Source: Eurostat

¹ Other Europe: total Europe excluding Cepi countries

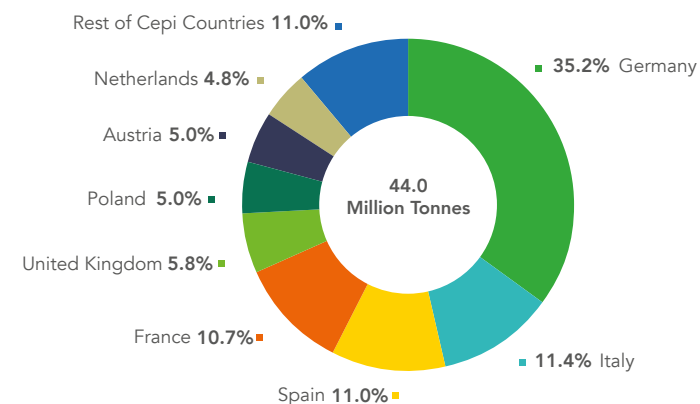
Utilisation of Paper for Recycling by Paper and Board Sector in 2023

'000 Tonnes	Grades of Paper for Recycling							
	A	B	C	D	E	F	G	E/G
Paper and Board Sector	Mixed Grades	Corrugated and Kraft	Newspapers & Magazines	Other Grades	Total Use of Paper for Recycling	Utilisation by Sector ¹ %	Total P&B Production	Utilisation Rate ² %
Newsprint	0	0	2 517	32	2 550	5.8	2 778	91.8
Printing and Writing Papers	47	56	1 467	452	2 022	4.6	13 950	14.5
Total Graphic Papers	47	56	3 984	485	4 572	10.4	16 727	27.3
Containerboard	4 059	24 308	346	725	29 437	66.9	30 852	95.4
Carton Board	1 438	947	39	602	3 027	6.9	7 769	39.0
Wrappings & Other Packaging	1 608	1 251	117	261	3 237	7.4	7 542	42.9
Total Packaging Paper and Board	7 105	26 506	502	1 588	35 701	81.2	46 163	77.3
Sanitary and Household	236	194	387	1 392	2 209	5.0	7 647	28.9
Other Paper and Board	271	917	37	283	1 507	3.4	3 394	44.4
Total Paper and board	7 660	27 672	4 909	3 747	43 989	100.0	73 933	59.5
Share of Total	17.4%	62.9%	11.2%	8.5%	100.0%			

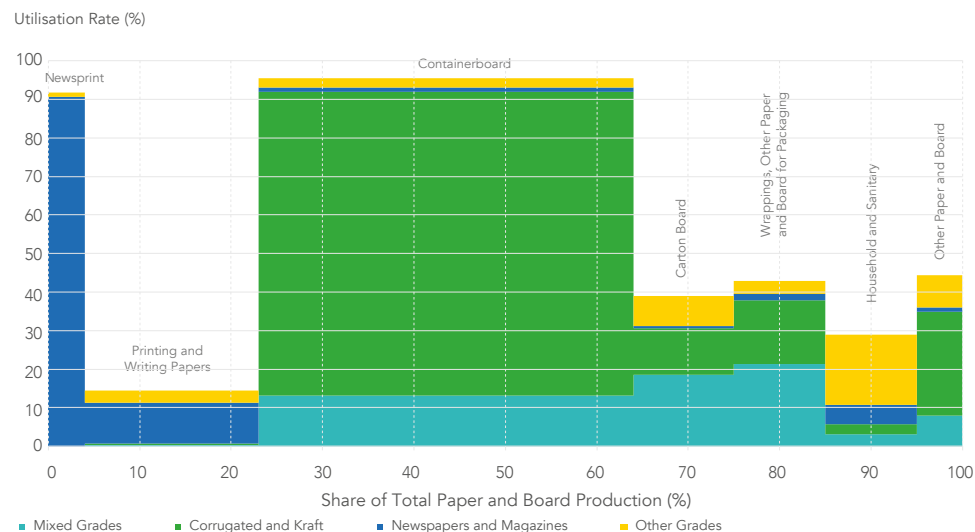
¹ Utilisation by paper and board sector: total use of paper for recycling in a sector as a percentage of the total paper for recycling used by the industry

² Utilisation rate: use of paper for recycling in a sector as a percentage of total paper & board production in that sector

Utilisation of Paper for Recycling by Country in 2023



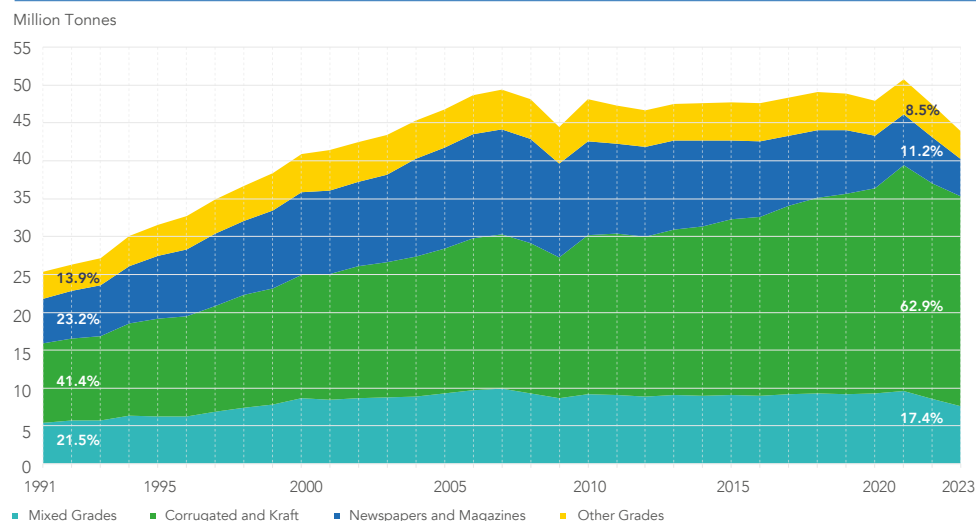
Utilisation of Paper for Recycling by Paper and Board Sector in 2023



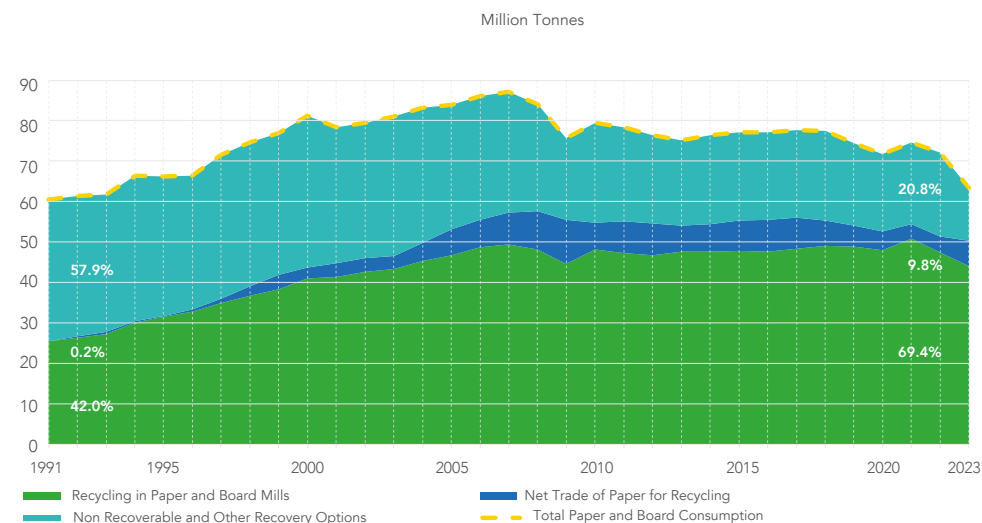
For instance: case materials represent 42% of total paper and board production, have an utilisation rate of 95% and use 67% of total paper for recycling volumes used by the industry.

Important Note: Paper for recycling is composed of fibres but also unusable materials - non-paper components as well as paper and board detrimental to production. The share of unusable materials depends on the actual sorting and collection of used paper. It varies according to grades of paper for recycling and countries. The volume of recycled fibres actually used to produce new paper is therefore lower than the volume of paper for recycling considered. The utilisation rate compares utilisation of paper for recycling to paper & board production.

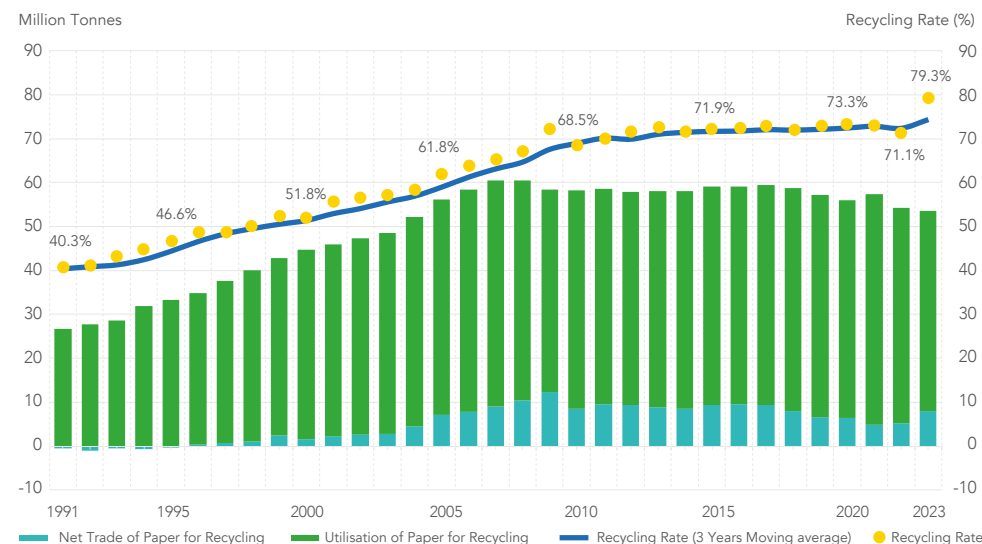
Utilisation of Paper for Recycling by Grade



Paper and Board Consumption and Recycling



Utilisation, Net Trade and Recycling Rate¹ of Paper for Recycling in Europe²



¹ Recycling Rate = "Utilisation of Paper for Recycling + Net Trade of Paper for Recycling", compared to Paper and Board Consumption

Important Note: The exceptionally high recycling rate in 2023 can, to some extent, be explained by the relatively low level of the apparent consumption, which does not take into account the consumption of large volumes of paper and board stocks along the supply chain that lasted most of the year.

² Europe means EU-27 countries plus Norway, Switzerland and the United Kingdom

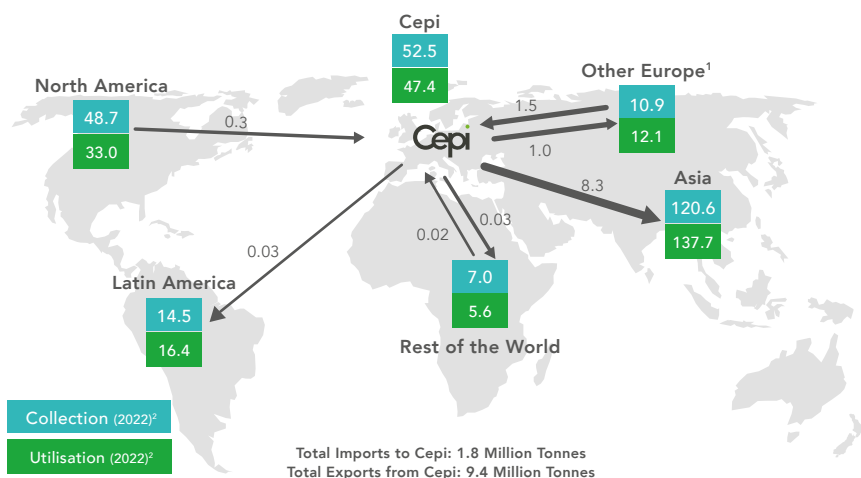
Exports of Paper for Recycling to Other Regions

'000 Tonnes	2000	2010	2020	2022	2023	% Change 2023/2022	% Share of Total
Other Europe ¹	676	373	1 709	1 421	1 041	-26.7	11.1
North America	47	27	1	0	1	220.7	0.0
Latin America	7	21	38	4	30	671.6	0.3
Asia	2 894	9 157	6 600	5 541	8 314	50.1	88.3
Rest of the World	127	14	16	116	31	-73.6	0.3
Total	3 751	9 592	8 364	7 082	9 418	33.0	100.0

Imports of Paper for Recycling from Other Regions

'000 Tonnes	2000	2010	2020	2022	2023	% Change 2023/2022	% Share of Total
Other Europe ¹	735	1 596	1 477	1 632	1 524	-6.6	84.3
North America	264	184	323	289	250	-13.3	13.9
Latin America	0	3	11	13	3	-75.9	0.2
Asia	9	6	10	10	5	-48.2	0.3
Rest of the World	7	8	30	93	25	-73.7	1.4
Total	1 015	1 796	1 852	2 037	1 807	-11.3	100.0

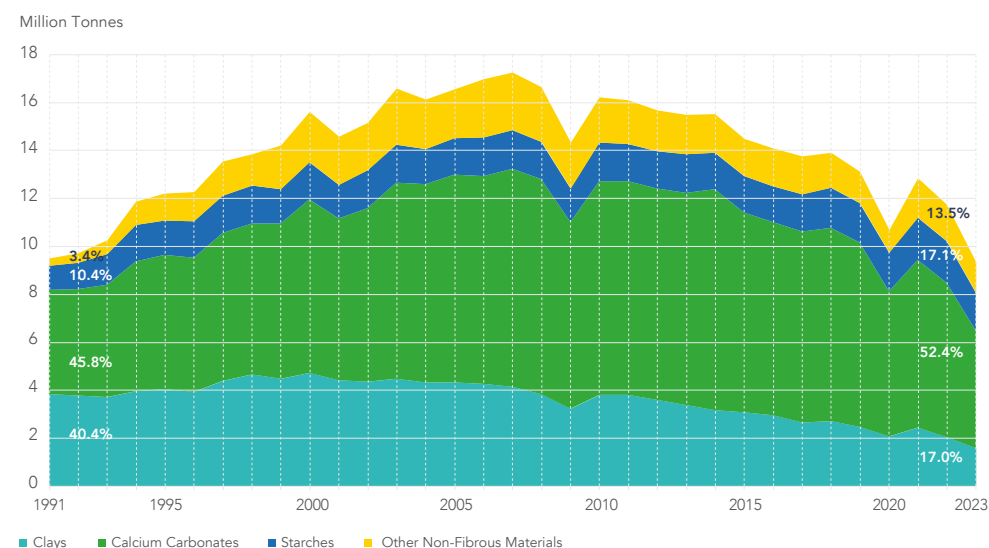
Trade Flows of Paper for Recycling in 2023 (Million Tonnes)

¹ Other Europe: total Europe excluding Cepi countries² Source: Cepi, Fastmarkets RISI - 2023 figures available in 2025

Non-Fibrous Materials Consumption

'000 Tonnes	1991	2000	2010	2020	2022	2023	% Change 2023/2022	% Share of Total
Clays (coating and filler)	3 842	4 716	3 825	2 078	2 054	1 591	-22.6	17.0
Calcium Carbonates (coating and filler)	4 349	7 247	8 903	6 041	6 452	4 893	-24.2	52.4
Starches (native and modified)	989	1 551	1 593	1 609	1 712	1 594	-6.9	17.1
Other Non-Fibrous Materials	324	2 095	1 897	957	1 531	1 256	-17.9	13.5
Non-Fibrous Materials	9 504	15 609	16 218	10 684	11 749	9 334	-20.6	100.0

Non-Fibrous Materials Consumption

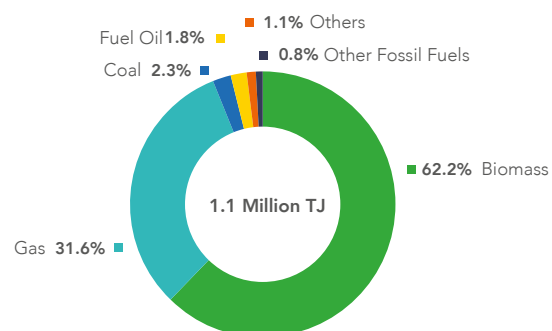


Primary Energy and Electricity Consumption¹

Primary Energy Consumption TJ	1991	2000	2010	2020	2021	2022	% Change 2022/2021	% Share of Total ³
Gas	259 593	404 946	489 565	373 840	395 376	353 214	-10.7	28.1
Fuel Oil	129 461	90 914	37 856	17 292	16 630	20 119	21.0	1.6
Coal	113 867	59 304	53 280	31 930	32 162	26 131	-18.8	2.1
Other Fossil Fuels	10 134	19 052	14 529	8 925	7 742	9 253	19.5	0.7
Biomass 	413 248	562 865	677 569	694 243	742 566	694 546	-6.5	55.3
Other	3 560	4 151	8 948	23 116	14 310	12 822	-10.4	1.0
Total Fuels Consumption	929 863	1 141 232	1 281 746	1 149 346	1 208 786	1 116 086	-7.7	88.9
Net Bought Electricity	205 852	246 864	202 945	148 251	153 145	139 623	-8.8	11.1
Total Primary Energy Consumption	1 135 715	1 388 096	1 484 691	1 297 596	1 361 931	1 255 709	-7.8	100.0
Fraction of Biomass in Total Fuels Consumption	44.4%	49.3%	52.9%	60.4%	61.4%	62.2%	0.8	

Electricity Consumption GWh	1991	2000	2010	2020	2021	2022	% Change 2022/2021	% Share of Total
Total Electricity Produced at Site	29 416	41 930	56 780	49 900	50 845	47 786	-6.0	55.2
Purchased Electricity	59 045	72 255	67 567	52 485	53 311	49 254	-7.6	56.9
Sold Electricity	-1 864	-3 681	-11 193	-11 305	-10 771	-10 470	-2.8	12.1
Total Electricity Consumption	86 527	110 424	113 137	91 081	93 385	86 571	-7.3	100.0
% of Electricity produced through CHP²	88.0%	90.4%	95.4%	95.7%	95.5%	95.7%	0.2	

 In 2022, 62% of fuels used in the pulp and paper industry came from biomass; large amount of that is process residues

Fuels Consumption in 2022¹

¹ Excluding Hungary, Romania and Slovenia - excluding Poland before 2003

2023 data will be available in 2025

² CHP: combined heat and power (compared to total on-site electricity generation)

³ Share of total primary energy consumption (including net bought electricity)

Key Figures on Energy and Environment¹

	1991	2000	2010	2020	2021	2022	% Change 2022/2021	% Change 2022/1991
Energy Consumption								
Production of Market Pulp and Paper and Board ('000 Tonnes)	71 971	98 691	106 084	98 098	103 040	96 685	-6.2	34.3
Specific Primary Energy Consumption (TJ/kt)	15.78	14.07	14.00	13.23	13.22	12.99	-1.7	-17.7
Specific Electricity Consumption (GWh/kt)	1.20	1.12	1.07	0.93	0.91	0.90	-1.2	-25.5
Direct CO₂ Emissions²								
Absolute (Mega Tonnes)	39.05	41.94	37.83	28.93	28.14	27.03	-3.9	-30.8
Specific (kt CO ₂ / kt of product)	0.54	0.42	0.35	0.29	0.27	0.27	2.0	-50.0
Indirect CO₂ Emissions³								
Absolute (Mega Tonnes)	13.88	14.33	11.59	8.27	9.68	9.96	2.9	-28.2
Specific (kt CO ₂ / kt of product)	0.19	0.15	0.11	0.08	0.09	0.10	9.6	-46.6
Water Specific Emissions								
COD (kg / T of product)	23.36	9.08	6.32	5.34	4.90	4.88	-0.4	-79.1
AOX (kg / T of product)	0.433	0.049	0.030	0.023	0.021	0.021	0.0	-95.3
Air Specific Emissions								
SO ₂ (kg S / T of product)	1.32	0.40	0.24	0.10	0.07	0.07	-1.1	-94.4
NOx (kg NOx / T of product)	1.31	0.90	0.85	0.66	0.64	0.62	-2.9	-52.7

¹ Excluding Hungary, Romania & Slovenia - excluding Poland before 2003

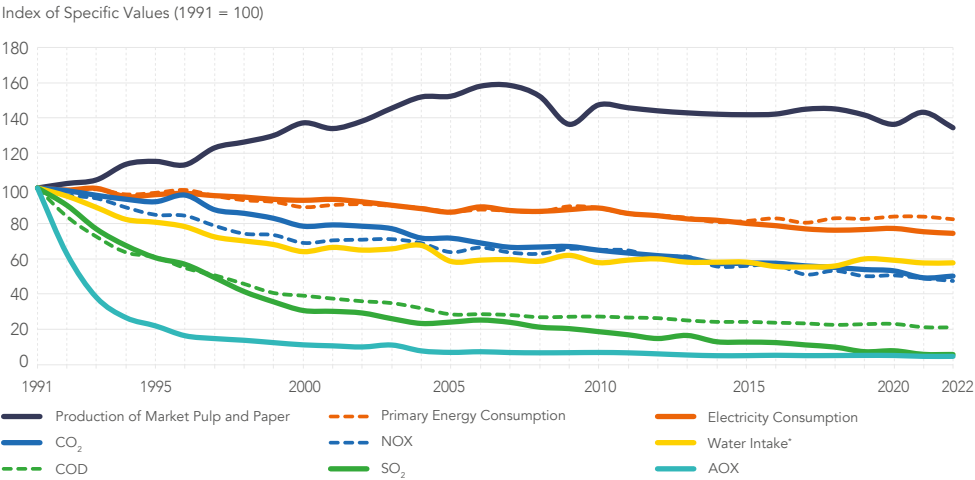
2023 data will be available in 2025

² Including all Cepi countries from 2005

Direct CO₂ Emissions: fossil emissions produced by the pulp and paper mills and connected energy plants

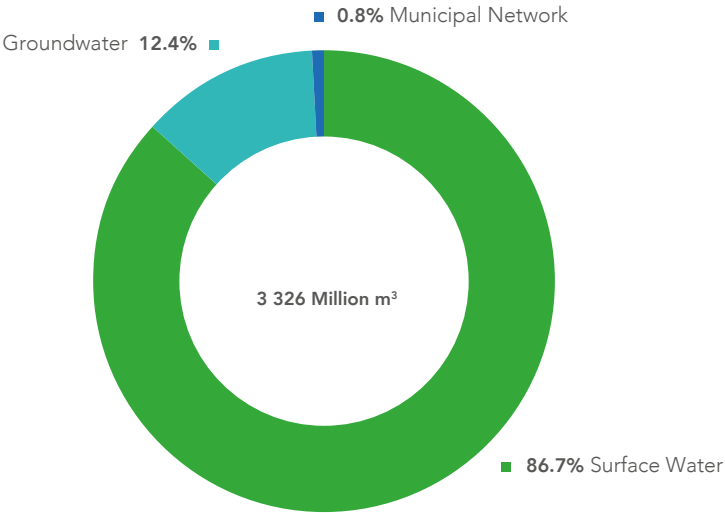
³ Indirect CO₂ Emissions: CO₂ emissions from net bought electricity, calculated as "net bought electricity" multiplied by the "electricity emissions factor" applied in each country

Evolution of Environmental Impacts



Water Emissions: COD (Chemical Oxygen Demand) - AOX
Air Emissions: CO₂ - NOX (Azote Oxydes) - SO₂
*Water Intake: Due to the change in data collection system in one country, 2019 data on water can't be compared to 2018 data

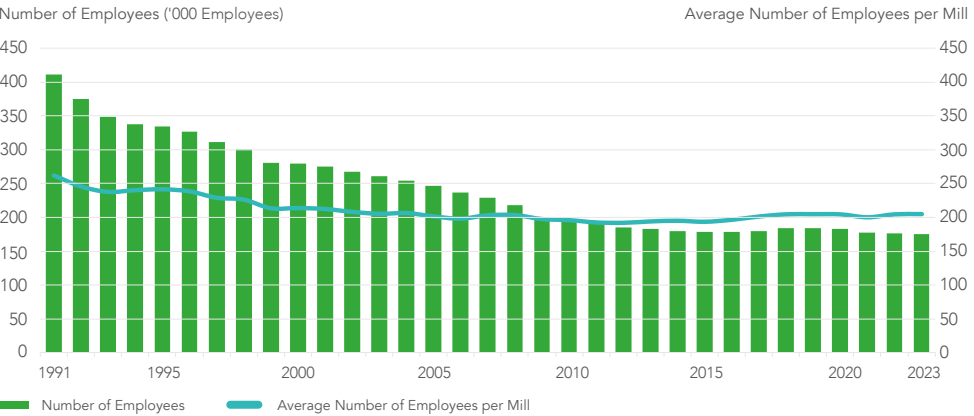
Sources of Water Intake in 2022¹



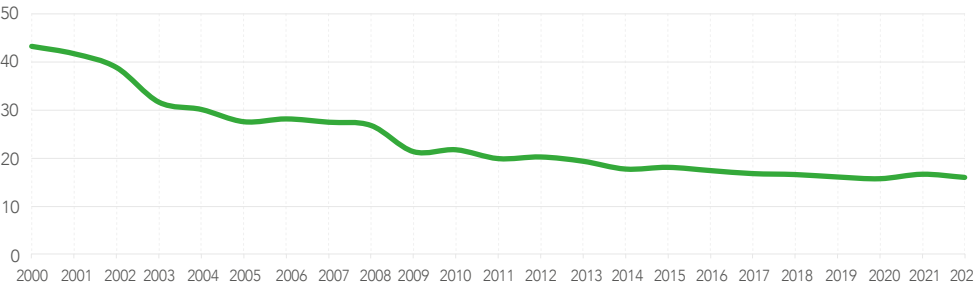
¹ Excluding Hungary, Romania & Slovenia - excluding Poland before 2003

In 2022, around 90% of water abstracted to produce paper and board has been returned to its source after treatment

Employment Evolution



Accident Rate¹



¹ Accident rate: Number of accidents (fatal and non-fatal) x 1000/number of employees (absence of more than 3 days)
Include Austria, Finland, France, Germany, Italy, Netherlands, Norway, Portugal, Spain, Sweden, United Kingdom
Data for 2023 will be available end-2024

Pulp

Pulp Consumption: Production + Imports from outside Cepi - Exports to outside Cepi.

Integrated Pulp Production: Integrated pulp is produced for use as raw material in the production of paper at the same mill, or for shipment by a producing mill to other mills, which it owns, controls or with which it is affiliated within the same country and therefore not sold on the open market.

Pulp Grades:

Mechanical - Stone groundwood: pulp produced by grinding wood into relatively short fibres

Cepi Harmonised Code is 923 000 000.

Semi-chemical: pulp produced in a two-stage process which involves partial digestion with chemicals, followed by mechanical treatment in a disc refiner. Cepi Harmonised Code is 921 000 000.

Chemical - Sulphite: pulp produced by cooking wood chips in a pressure vessel in the presence of bisulphite liquor
Cepi Harmonised Code is 922 200 000.

Chemical - Sulphate (or kraft): pulp produced by cooking wood chips in pressure vessels in the presence of a sodium hydroxide (soda) liquor. Cepi Harmonised Code is 922 100 000.

Other Pulp: Pulp produced from fibres other than wood, such as sugar cane bagasse, wheat straw, kenaf, cotton rags and hemp.

Paper and Board

Paper and Board Consumption: Production + Imports from outside Cepi - Exports to outside Cepi.

Paper and Board Grades:

Newsprint: paper mainly used for printing newspapers. Cepi Harmonised Code is 100 000 000.

Uncoated mechanical: paper suitable for printing or other graphic purposes where less than 90% of the fibre furnish consists of chemical pulp fibres. Cepi Harmonised Code is 211 000 000.

Uncoated woodfree: paper suitable for printing or other graphic purposes, where at least 90% of the fibre furnish consists of chemical pulp fibres. Cepi Harmonised Code is 231 000 000.

Coated papers: all paper suitable for printing or other graphic purposes and coated on one or both sides with minerals such as china clay (kaolin), calcium carbonate, etc.

Cepi Harmonised Code for Coated Mechanical is 212 000 000 and for Coated Woodfree is 232 000 000.

Sanitary and Household: This covers a wide range of tissue and other hygienic papers for use in households or commercial and industrial premises. Cepi Harmonised Code is 700 000 000.

Containerboard: papers and boards mainly used in the manufacture of corrugated board.

Included are kraftliner, testliner, semi-chemical fluting, and waste-based fluting (Wellenstoff).

Also known as case materials, corrugated case materials, cardboard, linerboard or corrugating medium
Cepi Harmonised Code is 300 000 000.

Carton board: made from virgin and/or recovered fibres, mainly used in cartons for consumer products.

Also known as solid board, folding box board, boxboard or carrier board. Cepi Harmonised Code is 400 000 000.

Wrappings: papers whose main use is wrapping or packaging made from any combination of virgin or recovered fibres, bleached or unbleached. Included are sack kraft, other wrapping krafts, sulphite and grease-proof papers.
Cepi Harmonised Code is 500 000 000.

Other paper and board for packaging: this category embraces all paper and board mainly for packaging purposes.
other than those listed above. Cepi Harmonised Code is 600 000 000.

Other paper and board: includes cigarette papers and filter papers, as well as gypsum liners and special papers.
for waxing, insulating, roofing, asphaltting, and other specific applications or treatments. Cepi Harmonised Code is 800 000 000.

Paper for Recycling

Collection: Utilisation - Imports from outside Cepi + Exports to outside Cepi.

Utilisation rate: percentage of paper for recycling utilisation compared to the total paper & board production.

Recycling rate: utilisation of paper for recycling + net trade of paper for recycling , compared to paper & board consumption.

Utilisation by sector: total utilisation of paper for recycling in a sector as percentage of the overall utilisation of paper for recycling.

Wood

The wood used for pulp and paper manufacturing is mainly constituted of the following assortments: pulpwood (roundwood other than sawlogs, from silvicultural measures such as thinning or final felling), chips and residues from sawmills. The utilisation of sawlogs is very limited and sawdust volumes consumed are negligible. The relative shares of softwood and hardwood used depend on the country considered and the pulp and paper grades produced. The main softwood species used are pine and spruce. The main hardwood species used are birch, eucalyptus, beech and aspen. Oak is hardly used.

The wood consumption figures reported by the pulp and paper companies and included in the Cepi statistics are the volumes of wood at the mill gates and come from domestic supply or imports.

More information can be found in the Cepi booklet Pulp and paper industry - definitions and concepts available on Cepi's website.

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