

KEY STATISTICS 2020

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 2020.

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 495 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 91% of the European² pulp and paper industry in terms of production.

The pulp and paper industry provides 180 000 jobs in Europe directly. It has a turnover of 83 billion euros and adds 18.5 billion euros to the EU GDP. It is strong in export markets, with an export rate of 23% 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 2020

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
Marjukka Rautavirta – Statistics Officer – m.rautavirta@cepi.org






² Europe minus the Russian Federation



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Pulp and Paper Industry

| | 1991 | 2000 | 2010 | 2015 | 2019 | 2020 | % Change 2020/2019 | % Change 2020/2010 |
|---|---------|---------|---------|---------|----------------|----------------|-----------------------|-----------------------|
| Industry Structure | | | | | | | | |
| Number of Companies ¹ | 1 082 | 979 | 728 | 688 | 685 | 683 | -0.3 | -6.2 |
| Number of Mills | 1 570 | 1 309 | 994 | 921 | 896 | 894 | -0.2 | -10.1 |
| Pulp | 296 | 233 | 172 | 155 | 153 | 151 | -1.3 | -12.2 |
| Paper and Board | 1 274 | 1 076 | 822 | 766 | 743 | 743 | 0.0 | -9.6 |
| Number of Paper Machines | 2 182 | 1 858 | 1 396 | 1 292 | 1 253 | 1 245 | -0.6 | -10.8 |
| Employment | 411 113 | 279 987 | 194 894 | 178 418 | 180 863 | 179 647 | -0.7 | -7.8 |
| Turnover ² (Million Euros) | n.a. | 79 388 | 75 790 | 80 679 | 91 500 | 83 000 | -9.3 | 9.5 |
| Investments ² (Million Euros) | n.a. | 5 637 | 2 913 | 4 181 | 5 000 | 4 500 | -10.0 | 54.5 |
| Added Value ² (Million Euros) | n.a. | 24 494 | 16 560 | 18 262 | 20 300 | 18 500 | -8.9 | 11.7 |
| Total Pulp³ ('000 Tonnes) | | | | | | | | |
| Production Capacity | 39 584 | 43 842 | 44 189 | 40 805 | 43 812 | 43 464 | -0.8 | -1.6 |
| Operating Rate | 85.4% | 91.2% | 87.6% | 88.9% | 86.7% | 83.3% | -3.4 | -4.9 |
| Production | 33 807 | 39 962 | 38 695 | 36 256 | 37 977 | 36 190 | -4.7 | -6.5 |
| Cepi Internal Deliveries | n.a. | 39 224 | 37 045 | 35 392 | 36 903 | 34 581 | -6.3 | -6.7 |
| Consumption ⁷ (Apparent) | 37 815 | 46 377 | 43 849 | 41 108 | 40 625 | 38 028 | -6.4 | -13.3 |
| Market Pulp ('000 Tonnes) | | | | | | | | |
| Production | 9 314 | 11 423 | 12 706 | 13 078 | 15 333 | 15 344 | 0.1 | 20.8 |
| Exports to Outside Cepi | n.a. | 1 332 | 2 567 | 3 240 | 6 321 | 6 498 | 2.8 | 153.1 |
| Imports from Outside Cepi | n.a. | 7 924 | 7 721 | 8 091 | 8 969 | 8 336 | -7.1 | 8.0 |
| Trade Balance with Outside Cepi | n.a. | -6 592 | -5 154 | -4 851 | -2 648 | -1 838 | 30.6 | -64.3 |
| Consumption ⁷ (Apparent) | n.a. | 18 015 | 17 860 | 17 930 | 17 981 | 17 182 | -4.4 | -3.8 |
| Exports/Production | n.a. | 11.7% | 20.2% | 24.8% | 41.2% | 42.3% | 1.1 | 22.1 |
| Imports/Consumption | n.a. | 44.0% | 43.2% | 45.1% | 49.9% | 48.5% | -1.4 | 5.3 |
| Paper and Board ('000 Tonnes) | | | | | | | | |
| Production Capacity | 73 280 | 97 658 | 103 714 | 99 832 | 101 600 | 101 031 | -0.6 | -2.6 |
| Operating Rate | 88.8% | 93.0% | 91.7% | 91.1% | 88.1% | 84.3% | -3.8 | -8.0 |
| Production | 65 052 | 90 823 | 95 065 | 90 982 | 89 543 | 85 208 | -4.8 | -10.4 |
| Cepi Internal Deliveries | n.a. | 78 796 | 80 263 | 77 628 | 76 809 | 73 117 | -4.8 | -8.9 |
| Exports to Outside Cepi | n.a. | 13 887 | 19 164 | 19 194 | 20 035 | 19 409 | -3.1 | 1.3 |
| Imports from Outside Cepi | n.a. | 6 383 | 5 783 | 5 367 | 5 430 | 5 185 | -4.5 | -10.3 |
| Trade Balance with Outside Cepi | n.a. | 7 504 | 13 381 | 13 827 | 14 605 | 14 224 | -2.6 | 6.3 |
| Consumption ⁷ (Apparent) | 60 102 | 82 065 | 81 684 | 77 155 | 74 938 | 70 984 | -5.3 | -13.1 |
| Exports/Production | n.a. | 15.3% | 20.2% | 21.1% | 22.4% | 22.8% | 0.4 | 2.6 |
| Imports/Consumption | n.a. | 7.8% | 7.1% | 7.0% | 7.2% | 7.3% | 0.1 | 0.2 |

| | 1991 | 2000 | 2010 | 2015 | 2019 | 2020 | % Change 2020/2019 | % Change 2020/2010 |
|--|---------|---------|---------|---------|----------------|----------------|-----------------------|-----------------------|
| Wood ('000 m³) | | | | | | | | |
| Consumption | 120 274 | 148 093 | 148 901 | 144 456 | 152 861 | 146 360 | -4.3 | -1.7 |
| Hardwood | 30 410 | 40 048 | 38 119 | 40 428 | 42 075 | 40 397 | -4.0 | 6.0 |
| Softwood | 89 863 | 108 046 | 110 782 | 104 028 | 110 787 | 105 962 | -4.4 | -4.4 |
| Imports/Consumption | 12.8% | 17.1% | 17.1% | 15.3% | 15.8% | 14.5% | -1.3 | -2.6 |
| Domestic/Consumption | 87.2% | 82.9% | 82.9% | 84.7% | 84.2% | 85.5% | 1.3 | 2.6 |
| Paper for Recycling ('000 Tonnes)  | | | | | | | | |
| Collection | 25 452 | 43 658 | 55 917 | 55 829 | 55 603 | 54 475 | -2.0 | -2.6 |
| Utilisation | 25 360 | 40 922 | 48 122 | 47 751 | 48 894 | 47 950 | -1.9 | -0.4 |
| Exports to Outside Cepi | n.a. | 3 751 | 9 592 | 10 086 | 8 729 | 8 419 | -3.6 | -12.2 |
| Imports from Outside Cepi | n.a. | 1 015 | 1 796 | 2 008 | 2 019 | 1 895 | -6.2 | 5.5 |
| Trade Balance with Outside Cepi | n.a. | 2 736 | 7 795 | 8 078 | 6 709 | 6 524 | -2.8 | -16.3 |
| Utilisation Rate | 39.0% | 45.1% | 50.6% | 52.5% | 54.6% | 56.3% | 1.7 | 11.2 |
| Exports/Collection | n.a. | 8.6% | 17.2% | 18.1% | 15.7% | 15.5% | -0.2 | -1.7 |
| Imports/Utilisation | n.a. | 2.5% | 3.7% | 4.2% | 4.1% | 4.0% | -0.2 | 0.2 |
| Recycling Rate in Europe⁴    | | | | | | | | |
| Recycling Rate | 40.3% | 51.8% | 68.5% | 71.9% | 72.5% | 73.9% | 1.4 | 5.3 |
| Non-Fibrous Materials ('000 Tonnes) | | | | | | | | |
| Consumption | 9 504 | 15 609 | 16 218 | 14 475 | 13 116 | 11 555 | -11.9 | -28.7 |
| Energy and Environment⁵ | | | | | | | | |
| Fuels Consumption ('000 Tj) | 930 | 1 141 | 1 282 | 1 141 | 1 212 | n.a. | | |
| Biomass Use (%) of Total FC  | 44.4 | 49.3 | 52.9 | 57.7 | 62.2 | n.a. | | |
| Electricity Consumption (GWh) | 86 527 | 110 424 | 113 137 | 98 243 | 94 354 | n.a. | | |
| % of Electricity produced through CHP ⁶ | 88.0 | 90.4 | 95.4 | 96.2 | 96.0 | n.a. | | |
| CO ₂ Direct Emissions (Mega Tonnes) | 39.05 | 41.94 | 37.83 | 32.39 | 31.14 | 28.93 | -7.1 | -23.5 |
| Specific CO ₂ Emissions (kt Co ₂ / kt of product) | 0.54 | 0.42 | 0.35 | 0.31 | 0.30 | 0.29 | -3.1 | -18.0 |

¹ 495 groups or corporations in 2020, when considering the entities established in one or several countries that are not bound together by legal and/or financial links.

² 2019 and 2020 figures are based on members' data, Eurostat and estimates for some countries.

³ Total Pulp = Market Pulp + Integrated Pulp.

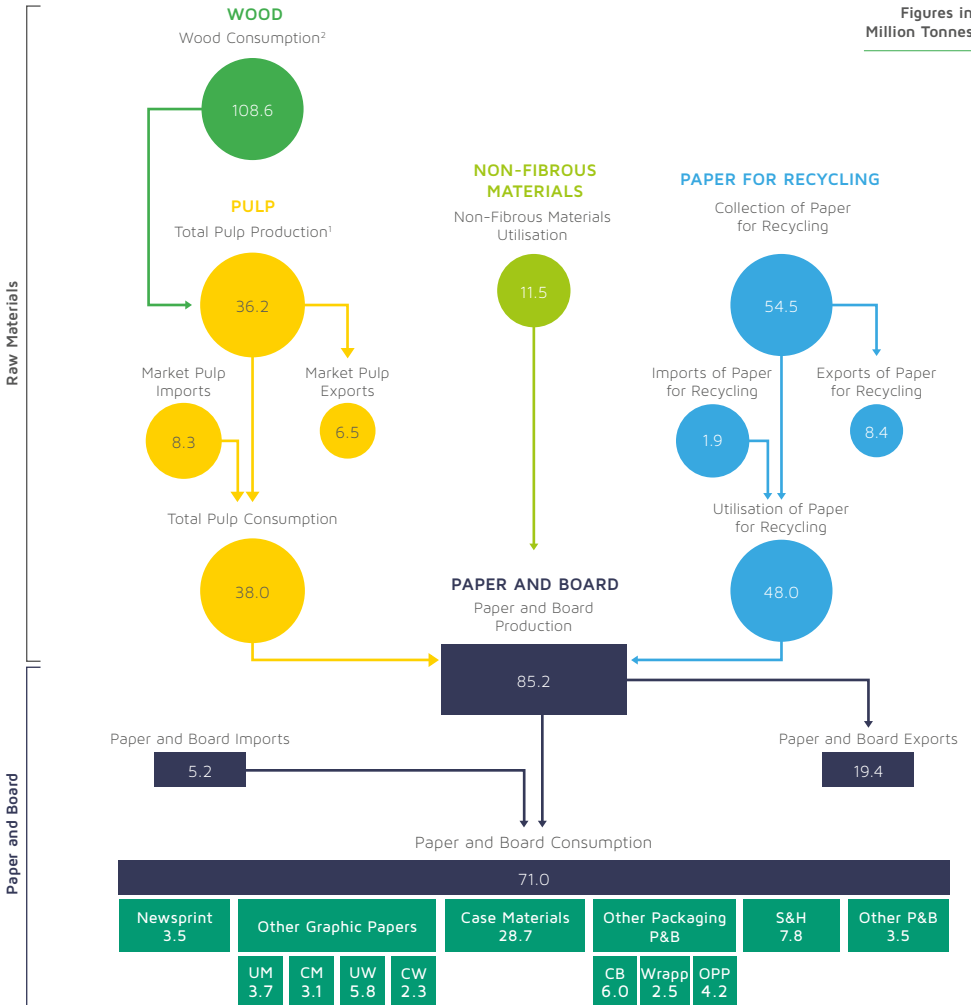
⁴ Europe means EU-27 countries plus Norway, Switzerland and United Kingdom.

⁵ Hungary, Romania and Slovenia are not included in Energy data, except for CO₂ emissions.

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.

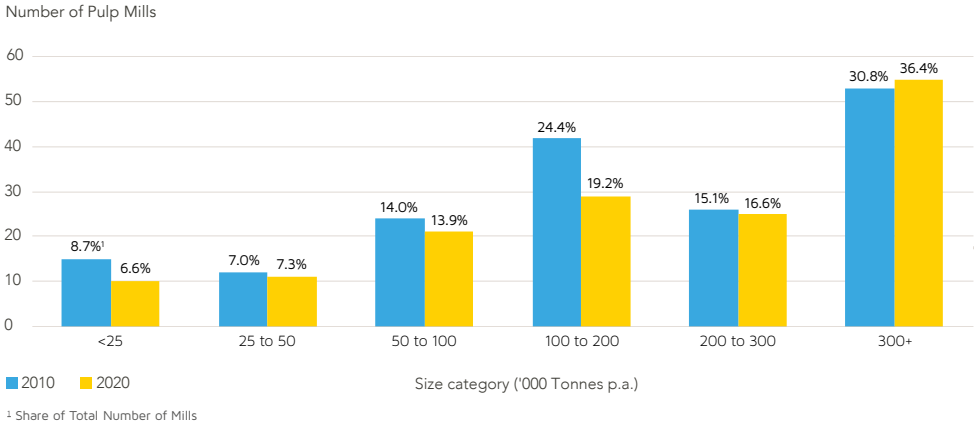
Pulp and Paper Industry in 2020



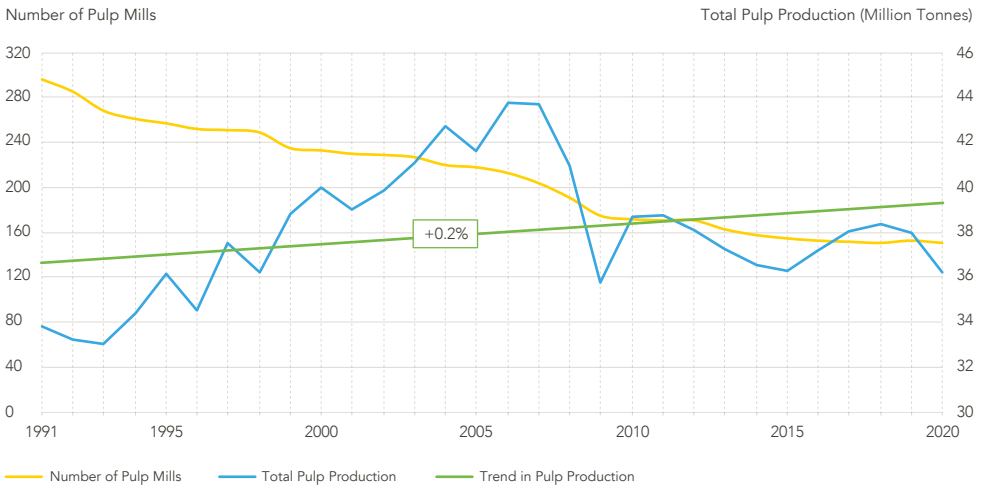
Paper and Board Consumption = Production + Imports from outside Cepi - Exports to outside Cepi.
 UM = Uncoated Mechanical - CM = Coated Mechanical - UW = Uncoated Woodfree - CW = Coated Woodfree
 CB = Carton Board - W = Wrappings - OPP = Other Paper and Board for Packaging - S&H = Sanitary and Household

¹ of which Integrated Pulp 20.8 Million Tonnes
² Wood consumption: see definition on page 30.

Number of Pulp Mills by Volume in 2010 and 2020



Number of Pulp Mills and Total Pulp Production



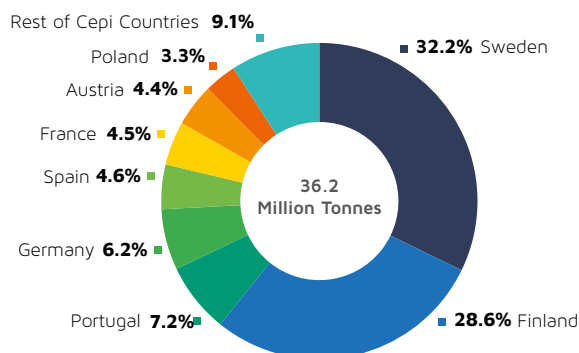
Total Pulp¹ Production and Consumption

| '000 Tonnes | Production | | | Consumption | | |
|-------------------------------|---------------|---------------|--------------------|---------------|---------------|--------------------|
| | 2019 | 2020 | % Change 2020/2019 | 2019 | 2020 | % Change 2020/2019 |
| Total Pulp¹ | | | | | | |
| Mechanical & Semi-Chemical | 9 542 | 8 323 | -12.8 | 9 630 | 8 263 | -14.2 |
| Sulphite Pulp | 1 672 | 1 607 | -3.8 | 1 425 | 1 346 | -5.5 |
| Sulphate Pulp | 26 601 | 26 167 | -1.6 | 29 261 | 28 191 | -3.7 |
| Total Chemical Pulp | 28 273 | 27 774 | -1.8 | 30 686 | 29 537 | -3.7 |
| Total Woodpulp | 37 814 | 36 098 | -4.5 | 40 316 | 37 800 | -6.2 |
| Other Pulp ² | 163 | 92 | -43.4 | 309 | 228 | -26.4 |
| Total Pulp¹ | 37 977 | 36 190 | -4.7 | 40 625 | 38 028 | -6.4 |

... of which Market Pulp Production and Consumption

| '000 Tonnes | Production | | | Consumption | | |
|-------------------------------|---------------|---------------|--------------------|---------------|---------------|--------------------|
| | 2019 | 2020 | % change 2020/2019 | 2019 | 2020 | % change 2020/2019 |
| Market Pulp | | | | | | |
| Mechanical & Semi-Chemical | 999 | 1 190 | 19.1 | 1 088 | 1 130 | 3.9 |
| Sulphite Pulp | 565 | 598 | 5.8 | 318 | 336 | 5.7 |
| Sulphate Pulp | 13 718 | 13 497 | -1.6 | 16 378 | 15 521 | -5.2 |
| Total Chemical Pulp | 14 283 | 14 095 | -1.3 | 16 696 | 15 858 | -5.0 |
| Total Woodpulp | 15 282 | 15 285 | 0.0 | 17 783 | 16 988 | -4.5 |
| Other Pulp ² | 52 | 59 | 13.9 | 198 | 194 | -1.9 |
| Total Pulp¹ | 15 333 | 15 344 | 0.1 | 17 981 | 17 182 | -4.4 |

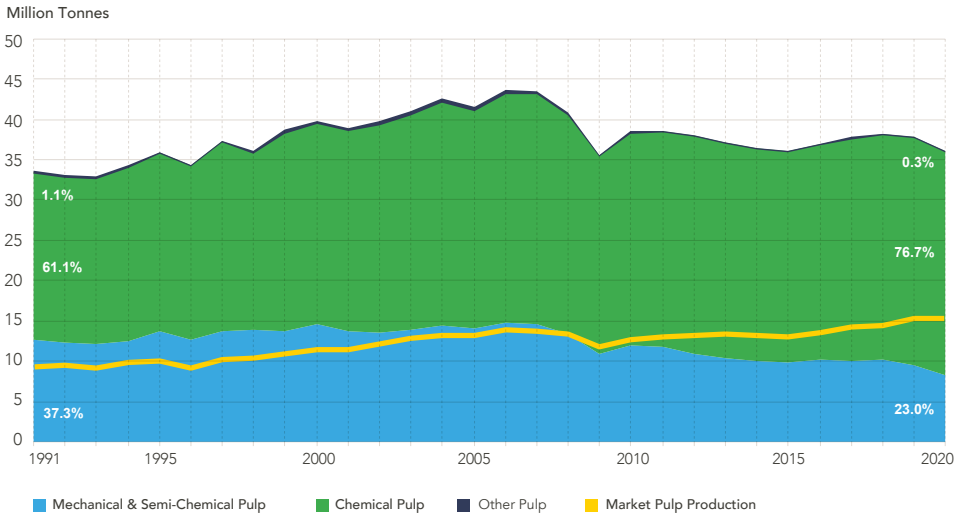
Total Pulp¹ Production by Country in 2020



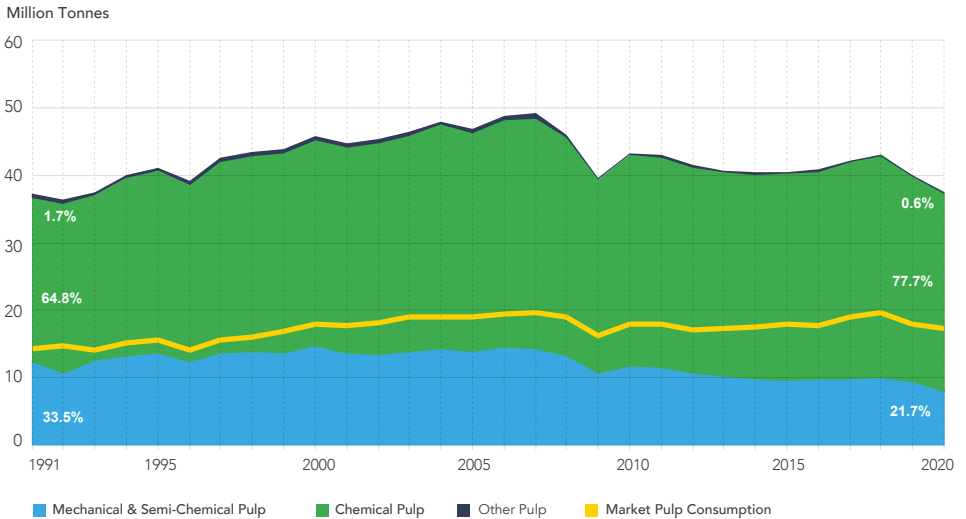
¹ Total Pulp = Market Pulp + Integrated Pulp

² Other Pulp: see definition page 30.

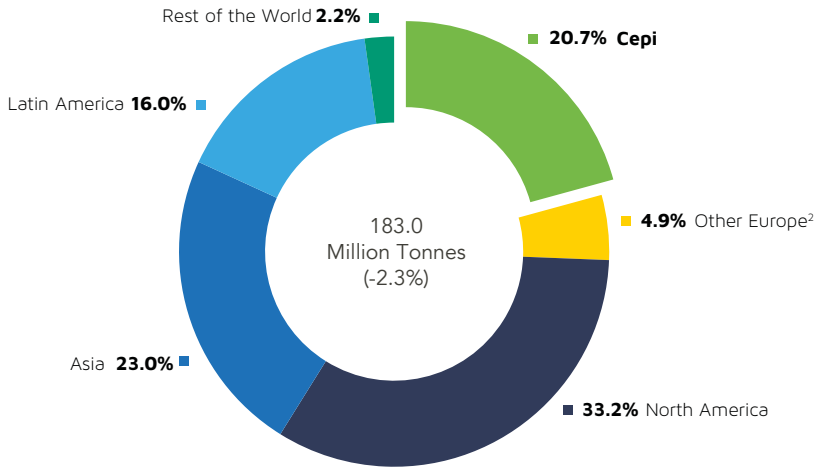
Total Pulp¹ Production by Grade and Market Pulp Production



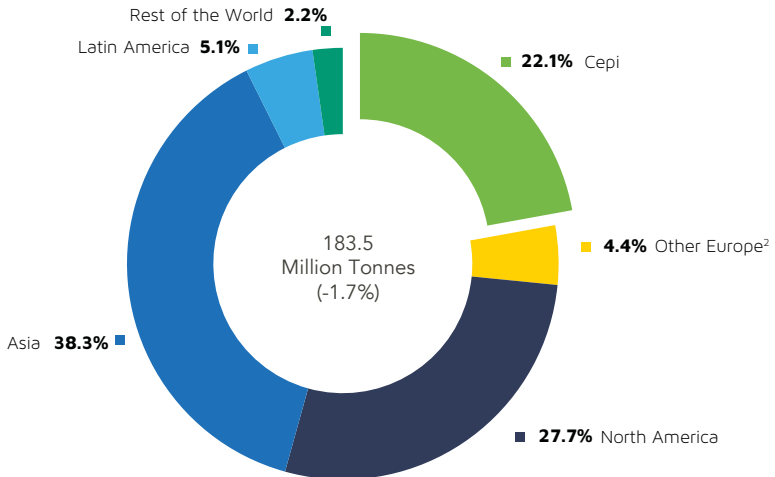
Total Pulp¹ Consumption by Grade and Market Pulp Consumption



World Total Pulp¹ Production by Region in 2019³



World Total Pulp¹ Consumption by Region in 2019³



¹Total Pulp = Integrated Pulp + Market Pulp.

²Other Europe: total Europe excluding Cepi countries.

³Sources: Cepi, Fastmarkets RISI - 2020 figures available end-2021

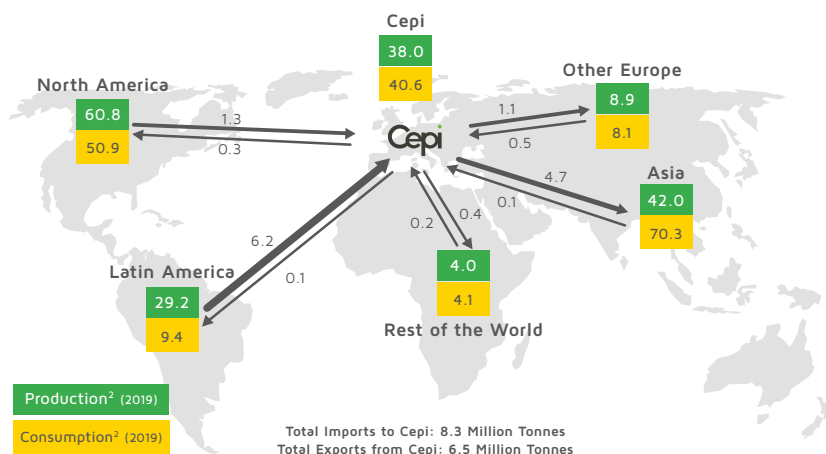
Market Pulp Exports to Other Regions

| '000 Tonnes | 2000 | 2010 | 2015 | 2019 | 2020 | % Share of Total | % Change 2020/2019 |
|---------------------------|--------------|--------------|--------------|--------------|--------------|------------------|--------------------|
| Other Europe ¹ | 724 | 719 | 768 | 1 097 | 1 140 | 17.5 | 3.9 |
| North America | 104 | 62 | 59 | 137 | 265 | 4.1 | 92.7 |
| Latin America | 6 | 49 | 69 | 59 | 53 | 0.8 | -10.4 |
| Asia | 412 | 1 595 | 2 156 | 4 654 | 4 668 | 71.8 | 0.3 |
| Rest of the World | 86 | 142 | 187 | 373 | 372 | 5.7 | -0.2 |
| Total | 1 332 | 2 567 | 3 240 | 6 321 | 6 498 | 100.0 | 2.8 |

Market Pulp Imports from Other Regions

| '000 Tonnes | 2000 | 2010 | 2015 | 2019 | 2020 | % Share of Total | % Change 2020/2019 |
|---------------------------|--------------|--------------|--------------|--------------|--------------|------------------|--------------------|
| Other Europe ¹ | 657 | 480 | 663 | 629 | 542 | 6.5 | -13.8 |
| North America | 4 623 | 2 292 | 1 415 | 1 533 | 1 339 | 16.1 | -12.6 |
| Latin America | 1 916 | 4 733 | 5 657 | 6 537 | 6 193 | 74.3 | -5.3 |
| Asia | 272 | 134 | 220 | 55 | 52 | 0.6 | -6.3 |
| Rest of the World | 456 | 81 | 135 | 215 | 210 | 2.5 | -2.3 |
| Total | 7 924 | 7 721 | 8 091 | 8 969 | 8 336 | 100.0 | -7.1 |

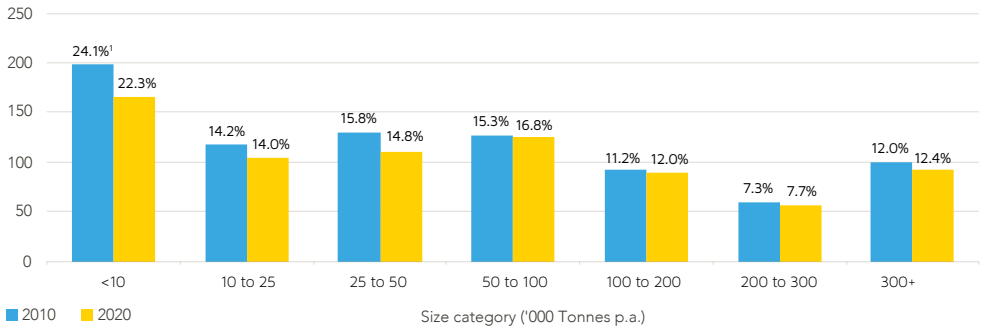
Trade Flows of Market Pulp in 2020 (Million Tonnes)

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

Sources: Cepi, Fastmarkets RISI - 2020 figures available end-2021

Number of Paper and Board Mills by Volume in 2010 and 2020

Number of Paper and Board Mills

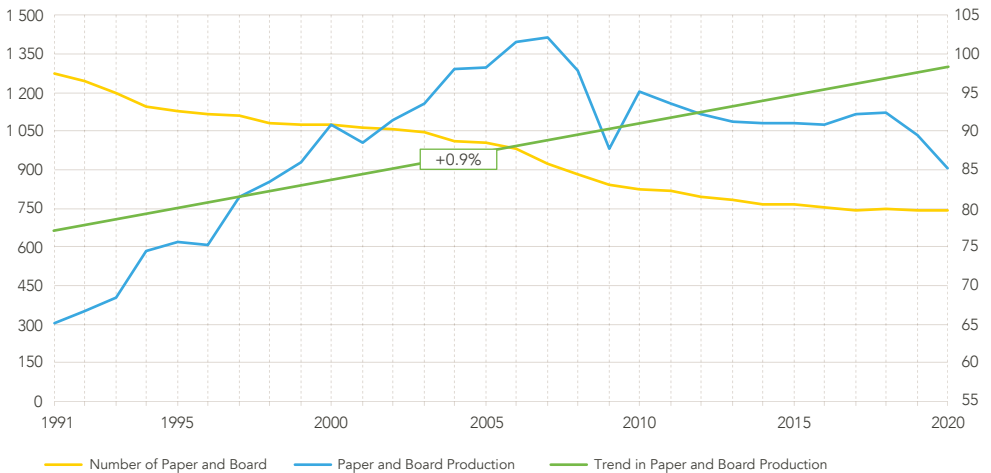


¹ Share of Total Number of Mills

Number of Paper and Board Mills and Paper and Board Production

Number of Paper and Board Mills

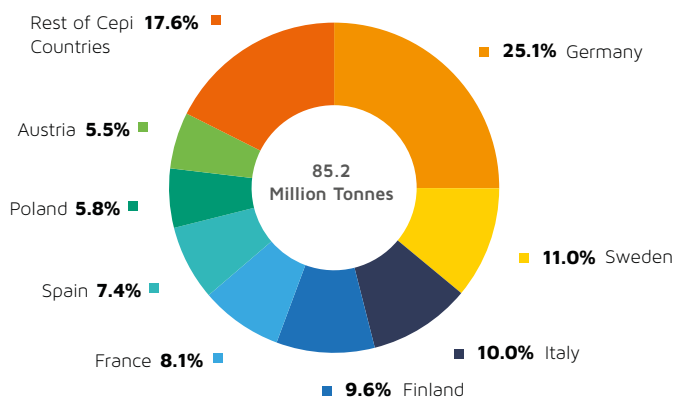
Paper and Board Production (Million Tonnes)



Paper and Board Production and Consumption

| '000 Tonnes | Production | | | Consumption | | |
|---|---------------|---------------|-----------------------|---------------|---------------|-----------------------|
| | 2019 | 2020 | % Change 2020/2019 | 2019 | 2020 | % Change 2020/2019 |
| Newsprint | 5 202 | 4 126 | -20.7 | 4 717 | 3 510 | -25.6 |
| Uncoated Mechanical | 4 972 | 4 229 | -14.9 | 4 106 | 3 670 | -10.6 |
| Coated Mechanical | 5 561 | 4 216 | -24.2 | 3 738 | 3 092 | -17.3 |
| Uncoated Woodfree | 8 067 | 7 173 | -11.1 | 6 498 | 5 811 | -10.6 |
| Coated Woodfree | 5 433 | 4 006 | -26.3 | 3 353 | 2 329 | -30.5 |
| Other Graphic Papers | 24 033 | 19 624 | -18.3 | 17 695 | 14 902 | -15.8 |
| Total Graphic Papers | 29 235 | 23 750 | -18.8 | 22 412 | 18 412 | -17.8 |
| Sanitary and Household | 7 769 | 8 013 | 3.1 | 7 466 | 7 754 | 3.9 |
| Case Materials | 30 323 | 31 301 | 3.2 | 28 420 | 28 703 | 1.0 |
| Carton Board | 9 537 | 9 629 | 1.0 | 6 101 | 5 966 | -2.2 |
| Wrappings | 4 049 | 4 055 | 0.1 | 2 634 | 2 471 | -6.2 |
| Other Paper and Board for Packaging | 4 684 | 4 646 | -0.8 | 4 198 | 4 158 | -0.9 |
| Total Packaging Paper and Board | 48 594 | 49 631 | 2.1 | 41 352 | 41 298 | -0.1 |
| Other Paper and Board | 3 945 | 3 814 | -3.3 | 3 707 | 3 519 | -5.1 |
| Total Paper and Board | 89 543 | 85 208 | -4.8 | 74 938 | 70 984 | -5.3 |
| Including Speciality Paper and Board¹ | 10 519 | 10 547 | 0.3 | | | |

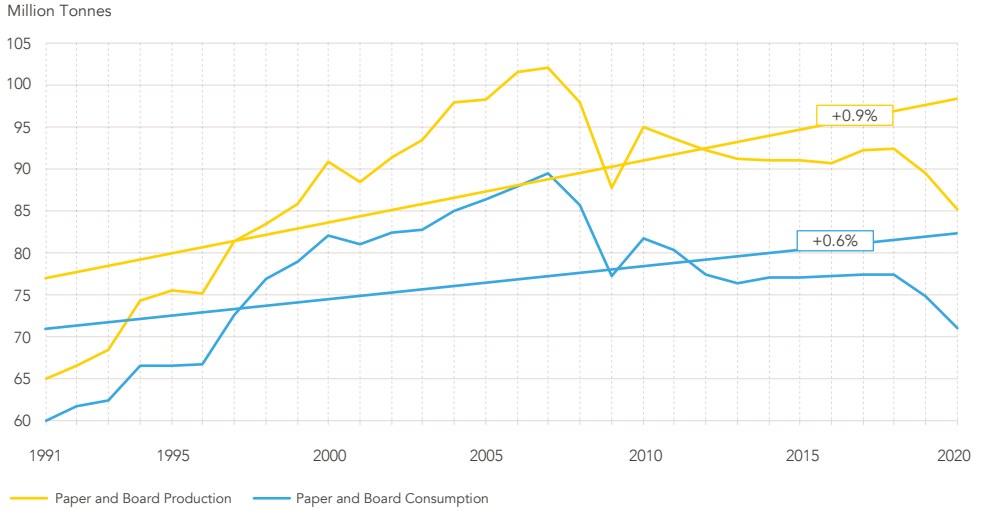
Paper and Board Production by Country in 2020



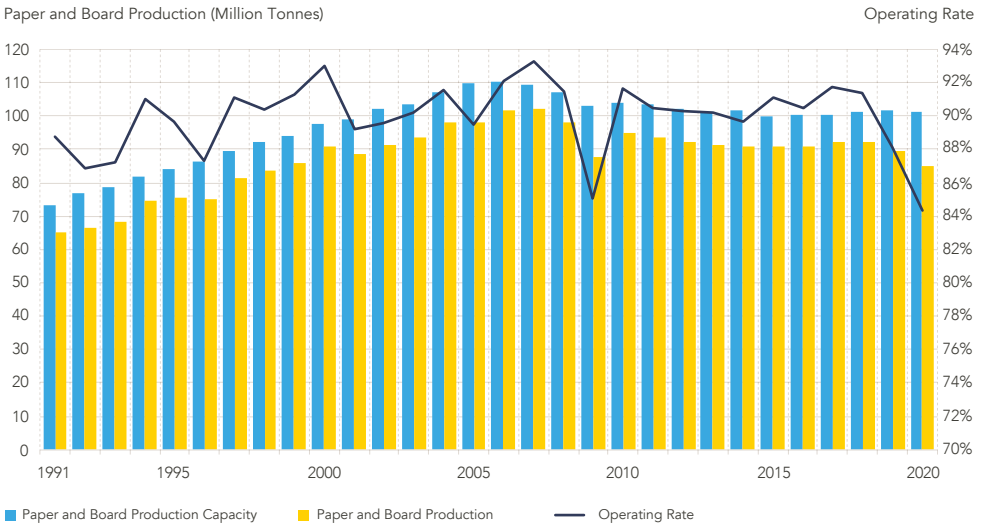
¹Speciality paper and board can be defined as paper or board that require properties (physical, optical, electrical, chemical and/or other special considerations) that are different from the norm for the market sector and application being served.

Based on AWA (Alexander Watson Associates) and Cepi estimates.

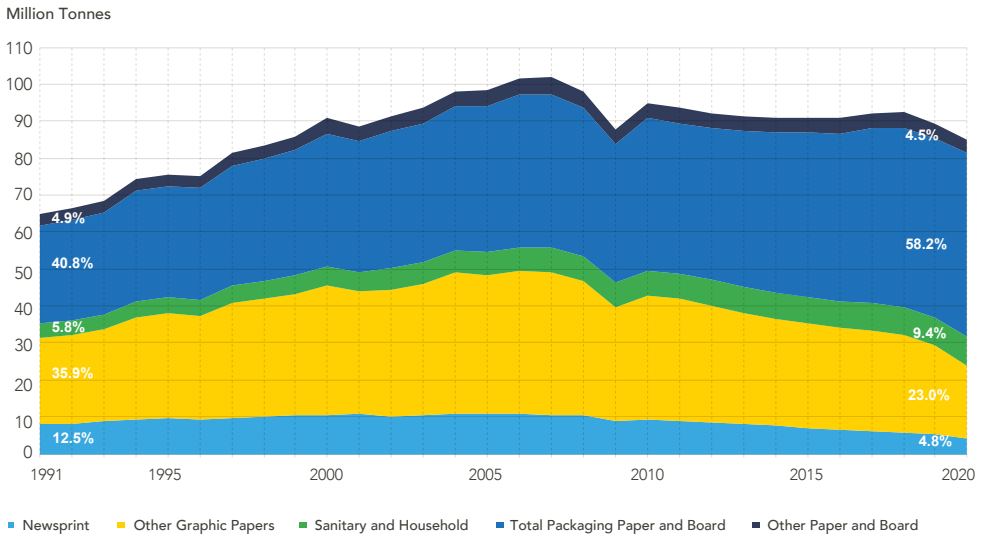
Paper and Board Production and Consumption



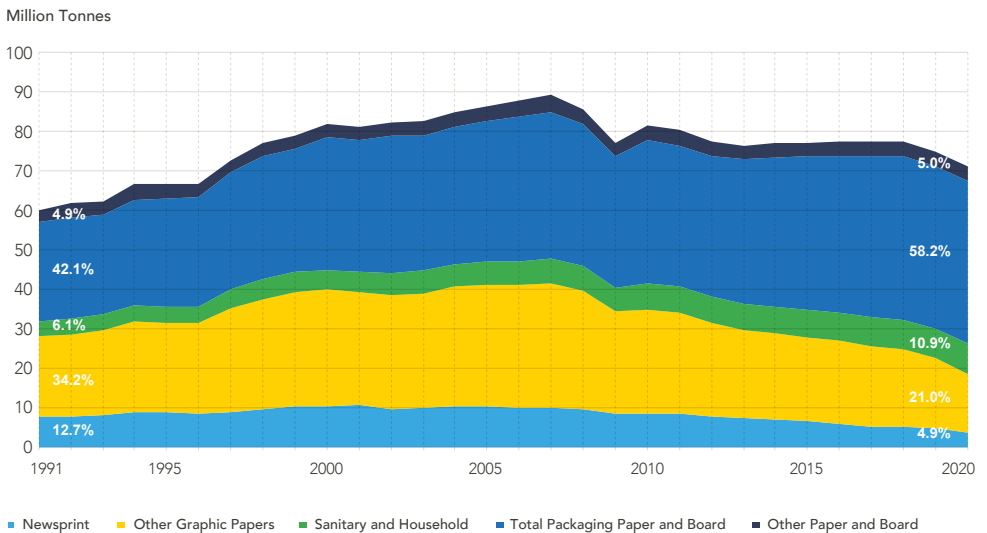
Paper and Board Production and Capacity



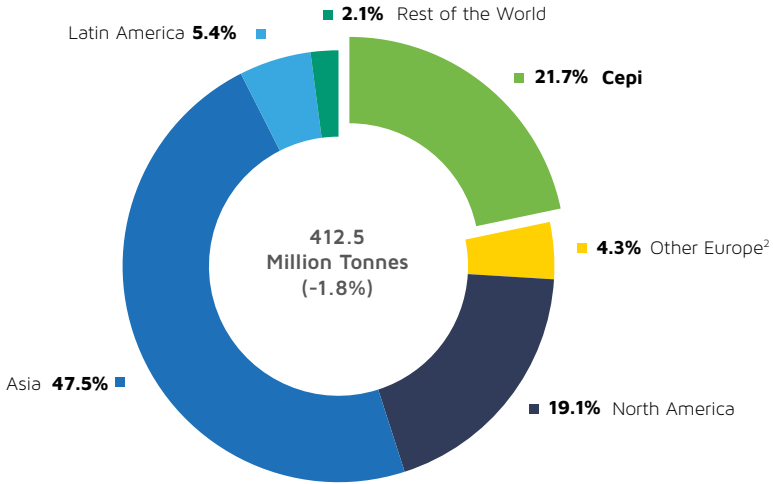
Paper and Board Production by Grade



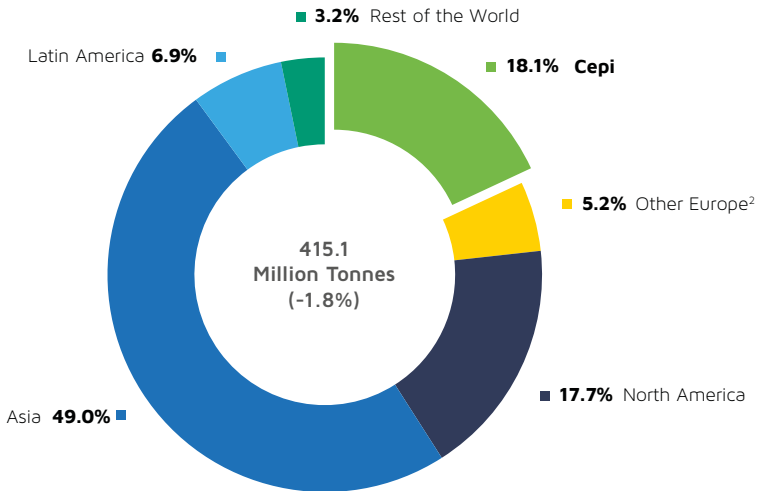
Paper and Board Consumption by Grade



Paper and Board Production by Region in 2019¹



Paper and Board Consumption by Region in 2019¹



¹ Sources: Cepi, Fastmarkets RISI - 2020 figures available end-2021

² Other Europe: total Europe excluding Cepi countries

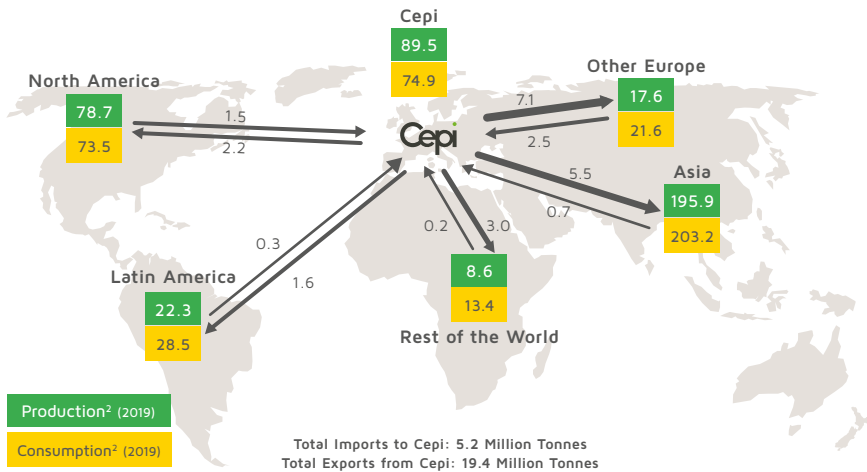
Paper and Board Exports to Other Regions

| '000 Tonnes | 2000 | 2010 | 2015 | 2019 | 2020 | % Share of Total | % Change 2020/2019 |
|---------------------------|---------------|---------------|---------------|---------------|---------------|------------------|--------------------|
| Other Europe ¹ | 6 090 | 7 349 | 7 288 | 7 378 | 7 127 | 36.7 | -3.4 |
| North America | 2 283 | 2 055 | 2 069 | 2 338 | 2 167 | 11.2 | -7.3 |
| Latin America | 874 | 1 879 | 1 794 | 1 864 | 1 610 | 8.3 | -13.6 |
| Asia | 2 933 | 5 099 | 4 980 | 5 135 | 5 521 | 28.4 | 7.5 |
| Rest of the World | 1 707 | 2 783 | 3 063 | 3 320 | 2 984 | 15.4 | -10.1 |
| Total | 13 887 | 19 164 | 19 194 | 20 035 | 19 409 | 100.0 | -3.1 |

Paper and Board Imports from Other Regions

| '000 Tonnes | 2000 | 2010 | 2015 | 2019 | 2020 | % Share of Total | % Change 2020/2019 |
|---------------------------|--------------|--------------|--------------|--------------|--------------|------------------|--------------------|
| Other Europe ¹ | 3 318 | 2 525 | 2 544 | 2 522 | 2 489 | 48.0 | -1.3 |
| North America | 2 191 | 1 829 | 1 608 | 1 601 | 1 524 | 29.4 | -4.8 |
| Latin America | 198 | 498 | 363 | 333 | 350 | 6.7 | 4.9 |
| Asia | 332 | 625 | 581 | 709 | 664 | 12.8 | -6.3 |
| Rest of the World | 344 | 307 | 270 | 265 | 158 | 3.0 | -40.3 |
| Total | 6 383 | 5 783 | 5 367 | 5 430 | 5 185 | 100.0 | -4.5 |


Trade Flows of Paper and Board in 2020 (Million Tonnes)



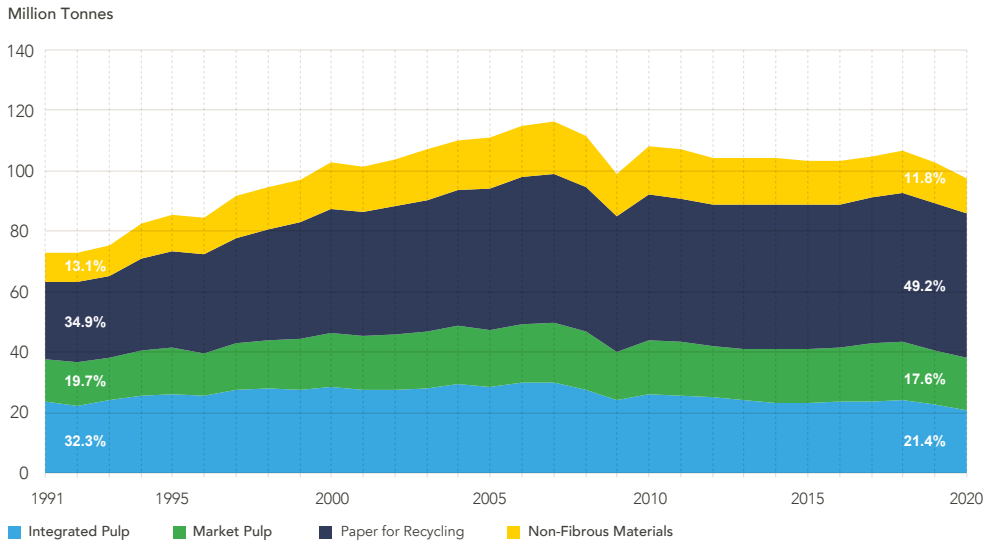
¹Other Europe: total Europe excluding Cepi countries

²Source: Cepi, Fastmarkets RISI - 2020 figures available end-2021



Raw Materials Consumption

| '000 Tonnes | 1991 | 2000 | 2010 | 2015 | 2019 | 2020 | % Share of Total | % Change 2020/2019 |
|---|---------------|----------------|----------------|----------------|----------------|---------------|------------------|--------------------|
| Integrated Pulp | 23 483 | 28 362 | 25 989 | 23 178 | 22 644 | 20 846 | 21.4 | -7.9 |
| Market Pulp | 14 332 | 18 015 | 17 860 | 17 930 | 17 981 | 17 182 | 17.6 | -4.4 |
| Paper for Recycling  | 25 360 | 40 922 | 48 122 | 47 751 | 48 894 | 47 950 | 49.2 | -1.9 |
| Non-Fibrous Materials | 9 504 | 15 609 | 16 218 | 14 475 | 13 116 | 11 555 | 11.8 | -11.9 |
| Total Raw Materials | 72 679 | 102 908 | 108 189 | 103 333 | 102 635 | 97 534 | 100.0 | -5.0 |

Raw Materials Consumption



Wood Consumption

| '000 m ³ | 1991 | 2000 | 2010 | 2015 | 2019 | 2020 | % Share of Total | % Change 2020/2019 |
|--|----------------|----------------|----------------|----------------|----------------|----------------|------------------|--------------------|
| Softwood Roundwood | 65 240 | 72 372 | 76 641 | 70 532 | 75 712 | 72 036 | 49.2 | -4.9 |
| Softwood Chips  | 24 623 | 35 673 | 34 141 | 33 497 | 35 074 | 33 926 | 23.2 | -3.3 |
| Total Softwood | 89 863 | 108 046 | 110 782 | 104 028 | 110 787 | 105 962 | 72.4 | -4.4 |
| Hardwood Roundwood | 28 963 | 38 542 | 36 635 | 38 293 | 39 822 | 39 064 | 26.7 | -1.9 |
| Hardwood Chips  | 1 447 | 1 505 | 1 483 | 2 134 | 2 252 | 1 333 | 0.9 | -40.8 |
| Total Hardwood | 30 410 | 40 048 | 38 119 | 40 428 | 42 075 | 40 397 | 27.6 | -4.0 |
| Total Roundwood | 94 204 | 110 915 | 113 276 | 108 825 | 115 535 | 111 101 | 75.9 | -3.8 |
| Total Chips | 26 070 | 37 179 | 35 625 | 35 631 | 37 326 | 35 259 | 24.1 | -5.5 |
| Total Wood | 120 274 | 148 093 | 148 901 | 144 456 | 152 861 | 146 360 | 100.0 | -4.3 |

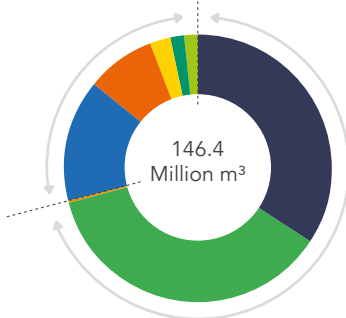


Woodchips used to produce pulp are residues from sawmills and woodworking industry, and are in fact an important contribution to circular economy through industrial symbiosis, although traditionally not reported by Cepi as recycling.

Share in Wood Consumption in 2020

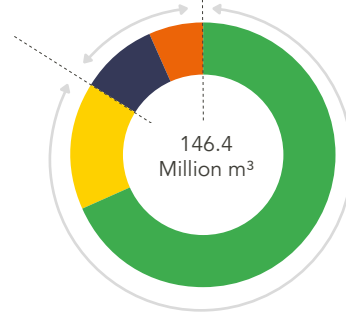
By Species¹

- Hardwood: **28.3%**
- Softwood: **71.7%**
- Birch **14.8%**
- Eucalyptus **8.6%**
- Beech **2.3%**
- Aspen **1.2%**
- Other Hardwood² **1.4%**
- Pine **33.6%**
- Spruce **38.0%**
- Other Softwood **0.1%**



By Origin

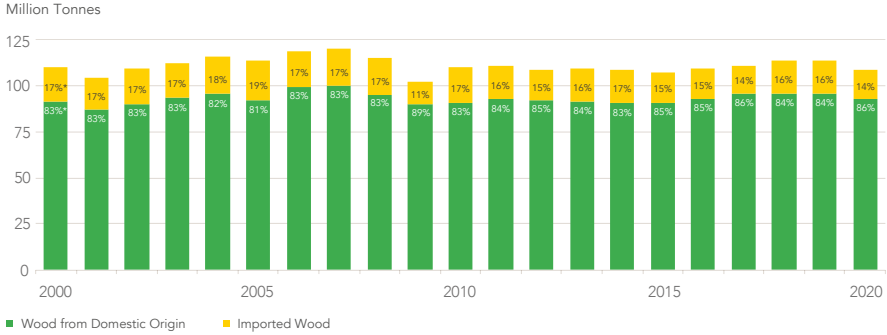
- Imported: **14.5%**
- Domestic: **85.5%**
- Imported Roundwood **8.8%**
- Imported Chips **5.7%**
- Domestic Roundwood **69.4%**
- Domestic Chips **16.1%**



¹ Based on a sample representing 90% of total Cepi consumption

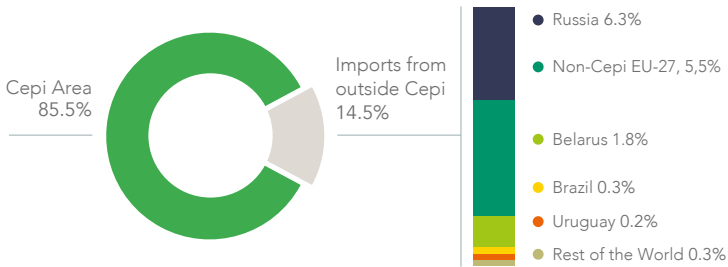
² Other Hardwood = hornbeam, ash, maple, accacia, quercus-cerris, oak, alder, poplar, willow, chesnut

Wood Consumption by Origin

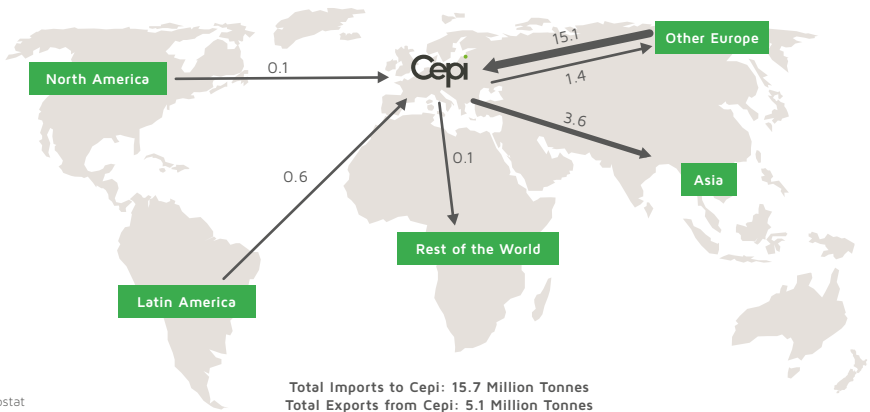


* Percentage of total wood consumption

Wood Consumption Origin in 2020



Trade Flows of Wood in 2020 (Million Tonnes)



Source: Eurostat

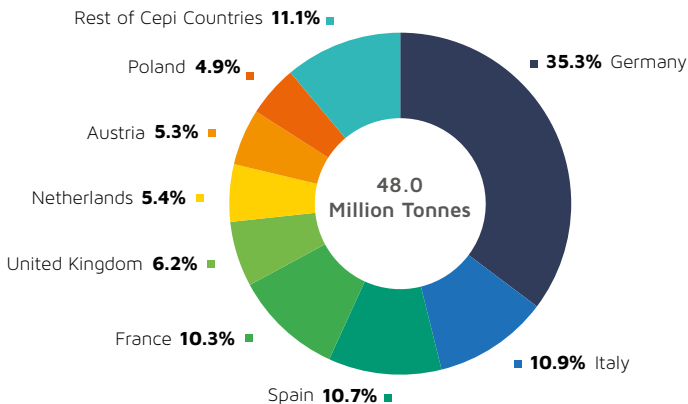
Utilisation of Paper for Recycling by Sector in 2020

| '000 Tonnes Paper Sector | Grades of Paper for Recycling | | | | | | | |
|--|-------------------------------|------------------------------|--------------------------------|----------------------|---|---|------------------------------|--|
| | A Mixed Grades | B Corrugated and Kraft | C Newspapers & Magazines | D Other Grades | E Total Use of Paper for Recycling | F Utilisation by Sector ¹ % | G Total P&B Production | E/G Utilisation Rate ² % |
| Newsprint | 5 | 1 | 3 663 | 109 | 3 778 | 7.9 | 4 126 | 91.6 |
| Other Graphic Papers | 49 | 8 | 2 193 | 531 | 2 781 | 5.8 | 19 624 | 14.2 |
| Total Graphic Papers | 54 | 9 | 5 856 | 640 | 6 559 | 13.7 | 23 750 | 27.6 |
| Case Materials | 5 010 | 23 289 | 223 | 846 | 29 367 | 61.2 | 31 301 | 93.8 |
| Carton Board | 1 685 | 810 | 85 | 765 | 3 345 | 7.0 | 9 629 | 34.7 |
| Wrappings, Other Pack. | 2 107 | 1 835 | 154 | 449 | 4 545 | 9.5 | 8 701 | 52.2 |
| Total Packaging Paper and Board | 8 802 | 25 934 | 461 | 2 060 | 37 257 | 77.7 | 49 631 | 75.1 |
| Sanitary and Household | 268 | 146 | 483 | 1 815 | 2 712 | 5.7 | 8 013 | 33.8 |
| Other Paper and Board | 191 | 1 000 | 67 | 164 | 1 422 | 3.0 | 3 814 | 37.3 |
| Total Paper and board | 9 314 | 27 089 | 6 869 | 4 679 | 47 950 | 100.0 | 85 208 | 56.3 |
| Share of Total | 19.4% | 56.5% | 14.3% | 9.8% | 100.0% | | | |

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

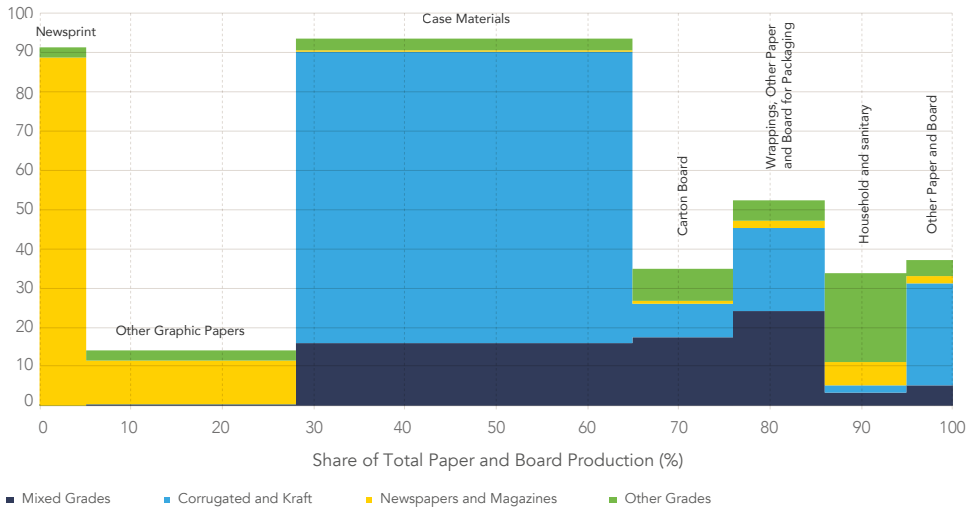
²Utilisation rate: use of paper for recycling in a sector as a percentage of total paper & board production in that sector

Utilisation of Paper for Recycling by Country in 2020



Utilisation of Paper for Recycling by Sector in 2020

Utilisation Rate (%)

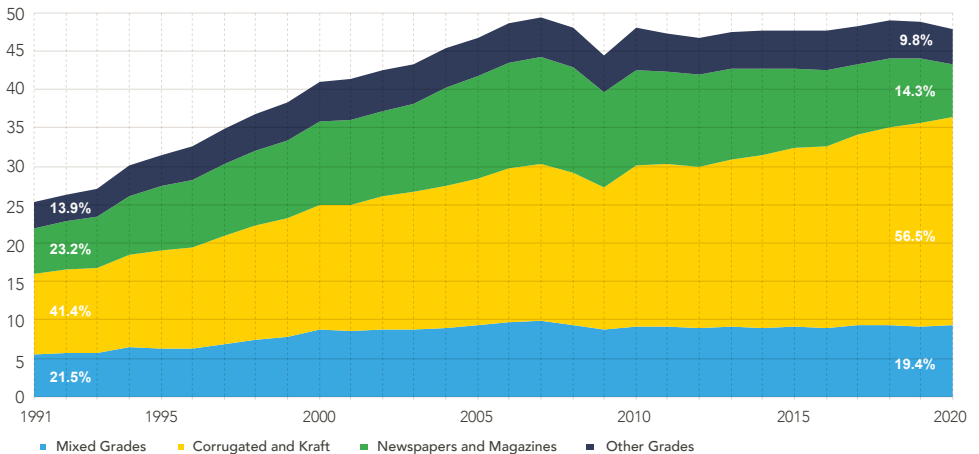


For instance: case materials represent 37% of total paper and board production, have an utilisation rate of 94% and use 61% of total paper for recycling volumes used by the industry.

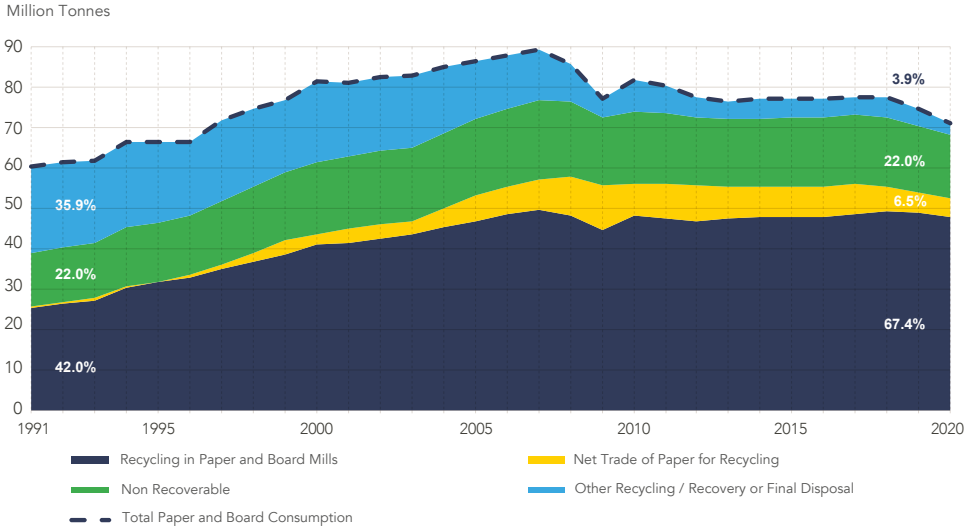
Important Note: Paper for recycling is composed of fibres but also unusable materials - non-paper components as well as paper and board detrimental to production. The share of unusable materials depends on the actual sorting and collection of used paper. It varies according to grades of paper for recycling 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

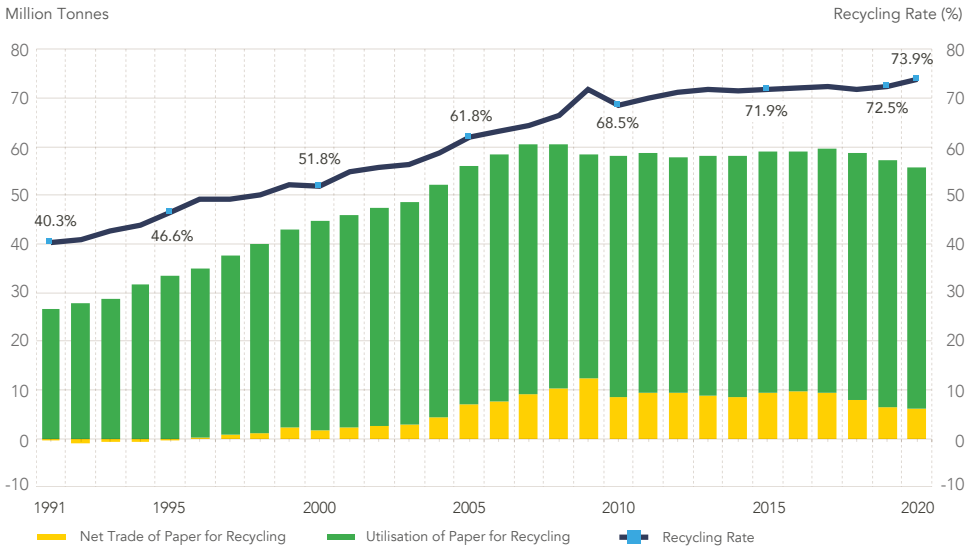
Million Tonnes



Paper & 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.

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

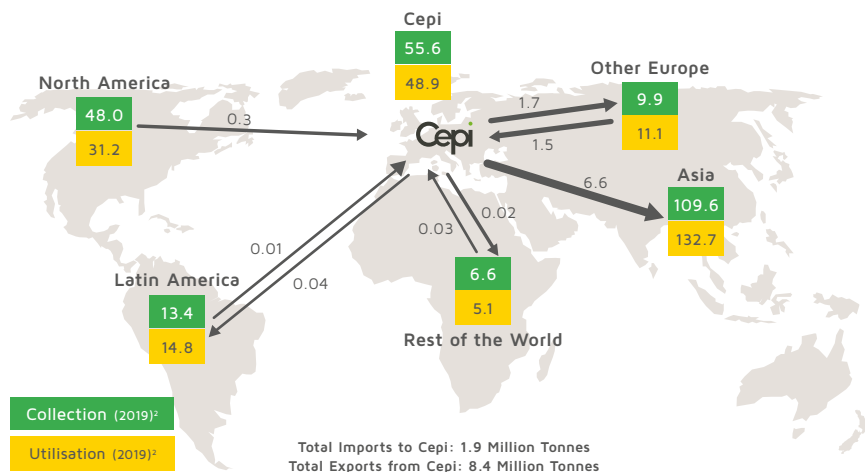
Exports of Paper for Recycling to Other Regions

| '000 Tonnes | 2000 | 2010 | 2015 | 2019 | 2020 | % Share of Total | % Change 2020/2019 |
|---------------------------|--------------|--------------|---------------|--------------|--------------|------------------|--------------------|
| Other Europe ¹ | 676 | 373 | 667 | 1 482 | 1 732 | 20.6 | 16.9 |
| North America | 47 | 27 | 1 | 2 | 2 | 0.0 | -35.6 |
| Latin America | 7 | 21 | 9 | 11 | 38 | 0.4 | 240.7 |
| Asia | 2 894 | 9 157 | 9 396 | 7 113 | 6 632 | 78.8 | -6.8 |
| Rest of the World | 127 | 14 | 13 | 121 | 16 | 0.2 | -87.0 |
| Total | 3 751 | 9 592 | 10 086 | 8 729 | 8 419 | 100.0 | -3.6 |

Imports of Paper for Recycling from Other Regions

| '000 Tonnes | 2000 | 2010 | 2015 | 2019 | 2020 | % Share of Total | % Change 2020/2019 |
|---------------------------|--------------|--------------|--------------|--------------|--------------|------------------|--------------------|
| Other Europe ¹ | 735 | 1 596 | 1 787 | 1 605 | 1 517 | 80.1 | -5.4 |
| North America | 264 | 184 | 185 | 370 | 330 | 17.4 | -10.8 |
| Latin America | 0 | 3 | 18 | 15 | 8 | 0.4 | -46.9 |
| Asia | 9 | 6 | 3 | 3 | 11 | 0.6 | 271.7 |
| Rest of the World | 7 | 8 | 15 | 27 | 28 | 1.5 | 5.0 |
| Total | 1 015 | 1 796 | 2 008 | 2 019 | 1 895 | 100.0 | -6.2 |

Trade Flows of Paper for Recycling in 2020 (Million Tonnes)



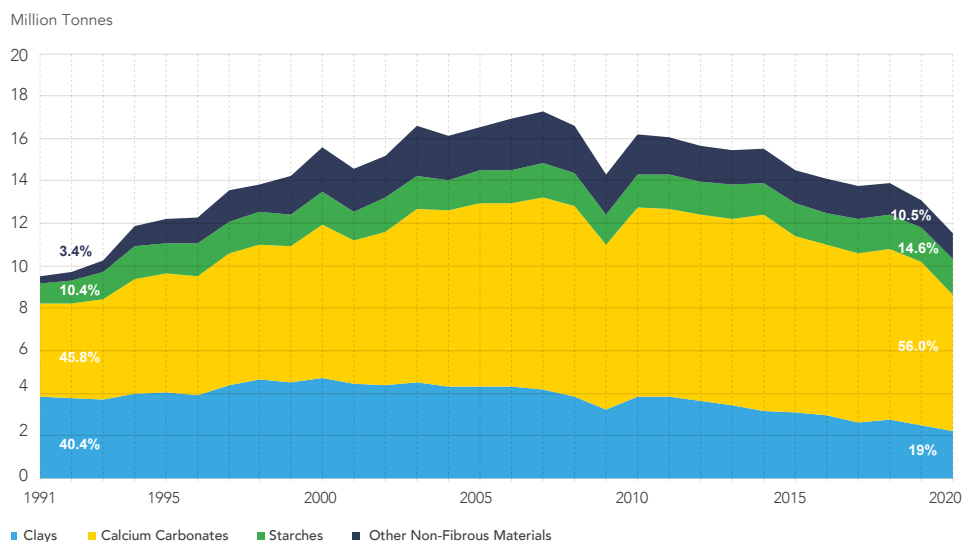
¹Other Europe: total Europe excluding Cepi countries

²Source: Cepi, Fastmarkets RISI - 2020 figures available end-2021

Non-Fibrous Materials Consumption

| '000 Tonnes | 1991 | 2000 | 2010 | 2015 | 2019 | 2020 | % Share of Total | % Change 2020/2019 |
|---|--------------|---------------|---------------|---------------|---------------|---------------|------------------|--------------------|
| Clays (coating and filler) | 3 842 | 4 716 | 3 825 | 3 080 | 2 480 | 2 192 | 19.0 | -11.6 |
| Calcium Carbonates (coating and filler) | 4 349 | 7 247 | 8 903 | 8 324 | 7 676 | 6 466 | 56.0 | -15.8 |
| Starches (native and modified) | 989 | 1 551 | 1 593 | 1 521 | 1 639 | 1 682 | 14.6 | 2.6 |
| Other Non-Fibrous Materials | 324 | 2 095 | 1 897 | 1 550 | 1 321 | 1 216 | 10.5 | -8.0 |
| Non-Fibrous Materials | 9 504 | 15 609 | 16 218 | 14 475 | 13 116 | 11 555 | 100.0 | -11.9 |

Non-Fibrous Materials Consumption

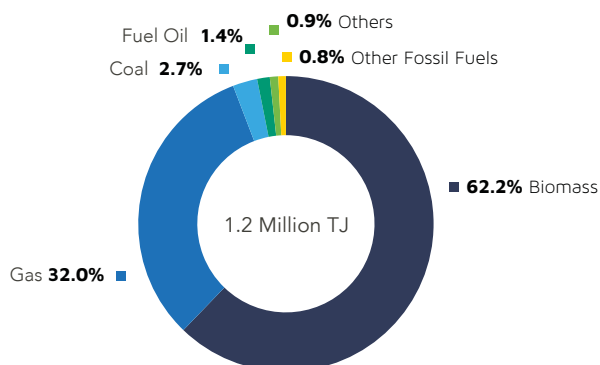


Primary Energy and Electricity Consumption¹

| Primary Energy Consumption TJ | 1991 | 2000 | 2010 | 2015 | 2018 | 2019 | % Share of Total ³ | % Change 2019/2018 |
|---|------------------|------------------|------------------|------------------|------------------|------------------|-------------------------------|--------------------|
| Gas | 259 593 | 404 946 | 489 565 | 395 064 | 385 521 | 387 514 | 28.3 | 0.5 |
| Fuel Oil | 129 461 | 90 914 | 37 856 | 19 368 | 17 675 | 16 754 | 1.2 | -5.2 |
| Coal | 113 867 | 59 304 | 53 280 | 45 925 | 33 471 | 32 648 | 2.4 | -2.5 |
| Other Fossil Fuels | 10 134 | 19 052 | 14 529 | 10 624 | 10 495 | 10 057 | 0.7 | -4.2 |
| Biomass  | 413 248 | 562 865 | 677 569 | 657 986 | 743 867 | 754 185 | 55.1 | 1.4 |
| Other | 3 560 | 4 151 | 8 948 | 12 374 | 11 998 | 11 134 | 0.8 | -7.2 |
| Total Fuels Consumption | 929 863 | 1 141 232 | 1 281 746 | 1 141 341 | 1 203 028 | 1 212 292 | 88.6 | 0.8 |
| Net Bought Electricity | 205 852 | 246 864 | 202 945 | 167 381 | 162 352 | 155 372 | 11.4 | -4.3 |
| Total Primary Energy Consumption | 1 135 715 | 1 388 096 | 1 484 691 | 1 308 722 | 1 365 380 | 1 367 664 | 100.0 | 0.2 |
| Fraction of Biomass in Total Fuels Consumption | 44.4% | 49.3% | 52.9% | 57.7% | 61.8% | 62.2% | | 0.4 |

| Electricity Consumption GWh | 1991 | 2000 | 2010 | 2015 | 2018 | 2019 | % Share of Total | % Change 2019/2018 |
|--|---------------|----------------|----------------|---------------|---------------|----------------|------------------|--------------------|
| Total Electricity Produced at Site | 29 416 | 41 930 | 56 780 | 51 748 | 50 617 | 51 195 | 54.3 | 1.1 |
| Purchased Electricity | 59 045 | 72 255 | 67 567 | 57 838 | 56 908 | 54 922 | 58.2 | -3.5 |
| Sold Electricity | -1 864 | -3 681 | -11 193 | -11 343 | -11 810 | -11 763 | 12.5 | -0.4 |
| Total Electricity Consumption | 86 527 | 110 424 | 113 137 | 98 243 | 95 715 | 94 354 | 100.0 | -1.4 |
| % of Electricity produced through CHP² | 88.0% | 90.4% | 95.4% | 96.2% | 95.7% | 96.0% | | 0.3 |

 In 2019, 62% of fuels used in the pulp and paper industry came from biomass; large amount of that is process residues.

Fuels Consumption in 2019¹

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

²2020 data will be available end-2021.

³CHP: combined heat and power (compared to total on-site electricity generation).

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

Key Figures on Energy and Environment¹

| | 1991 | 2000 | 2010 | 2015 | 2018 | 2019 | % Change 2019/2018 | % Change 2019/1991 |
|---|--------|--------|---------|---------|---------|----------------|-----------------------|-----------------------|
| Energy Consumption | | | | | | | | |
| Production of Market Pulp and Paper and Board ('000 Tonnes) | 71 971 | 98 691 | 106 084 | 102 047 | 104 644 | 102 168 | -2.4 | 42.0 |
| Specific Primary Energy Consumption (Tj/kt) | 15.78 | 14.07 | 14.00 | 12.82 | 13.05 | 13.39 | 2.6 | -15.2 |
| Specific Electricity Consumption (MWh/kt) | 1.20 | 1.12 | 1.07 | 0.96 | 0.91 | 0.92 | 1.0 | -23.2 |
| Direct CO₂ Emissions² | | | | | | | | |
| Absolute (Mega Tonnes) | 39.05 | 41.94 | 37.83 | 32.39 | 31.86 | 31.14 | -2.3 | -20.3 |
| Specific (kt CO ₂ / kt of product) | 0.54 | 0.42 | 0.35 | 0.31 | 0.30 | 0.30 | -0.4 | -45.3 |
| Indirect CO₂ Emissions³ | | | | | | | | |
| Absolute (Mega Tonnes) | 13.88 | 14.33 | 11.59 | 10.30 | 9.61 | 9.09 | -5.4 | -34.6 |
| Specific (kt CO ₂ / kt of product) | 0.19 | 0.15 | 0.11 | 0.10 | 0.09 | 0.09 | -3.2 | -53.9 |
| Water Specific Emissions | | | | | | | | |
| COD (kg / T of product) | 23.36 | 9.08 | 6.32 | 5.61 | 5.20 | 5.23 | 0.6 | -77.6 |
| AOX (kg / T of product) | 0.433 | 0.049 | 0.030 | 0.022 | 0.022 | 0.023 | 1.2 | -94.8 |
| Air Specific Emissions | | | | | | | | |
| SO ₂ (kg S / T of product) | 1.32 | 0.40 | 0.24 | 0.16 | 0.09 | 0.08 | -13.5 | -93.8 |
| NOx (kg NOx / T of product) | 1.31 | 0.90 | 0.85 | 0.73 | 0.69 | 0.69 | -0.3 | -47.2 |

¹Excluding Hungary, Romania & Slovenia – excluding Poland before 2003
2020 data will be available end-2021.

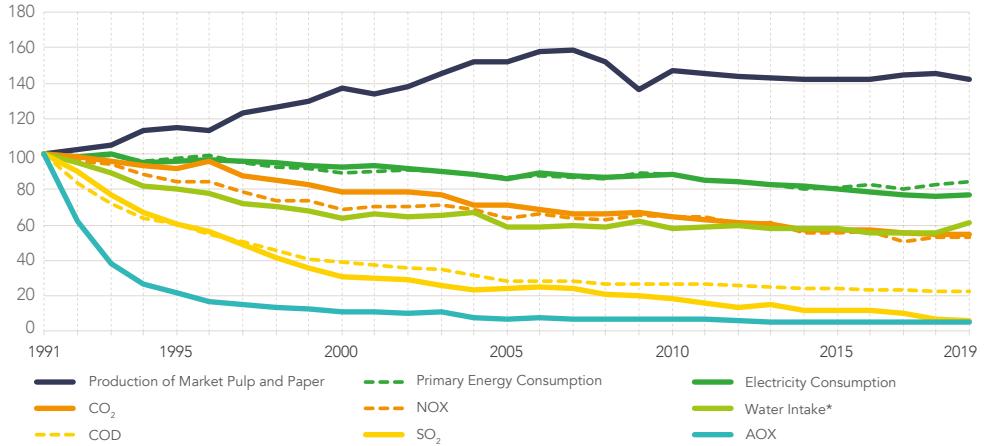
²Including all Cepi countries from 2005. See Key Figures for the 2020 data.

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

³Indirect 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

Index of Specific Values (1991 = 100)

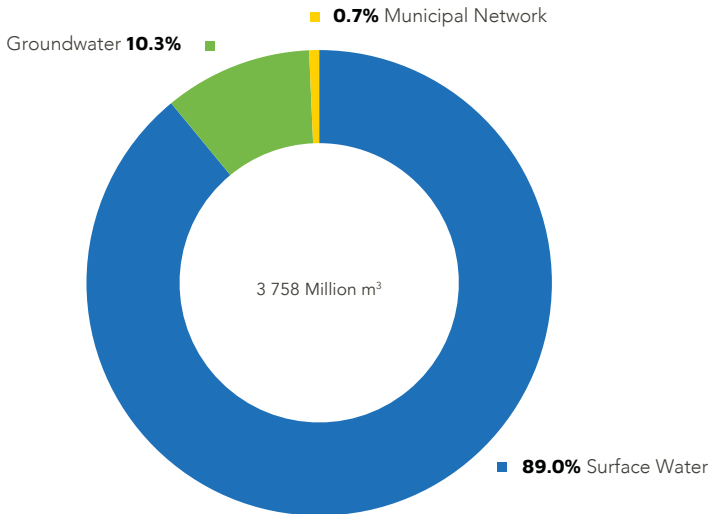


Water Emissions: COD (Chemical Oxygen Demand) - AOX

Air Emissions: CO₂ - NOX (Azote Oxides) - 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 2019¹

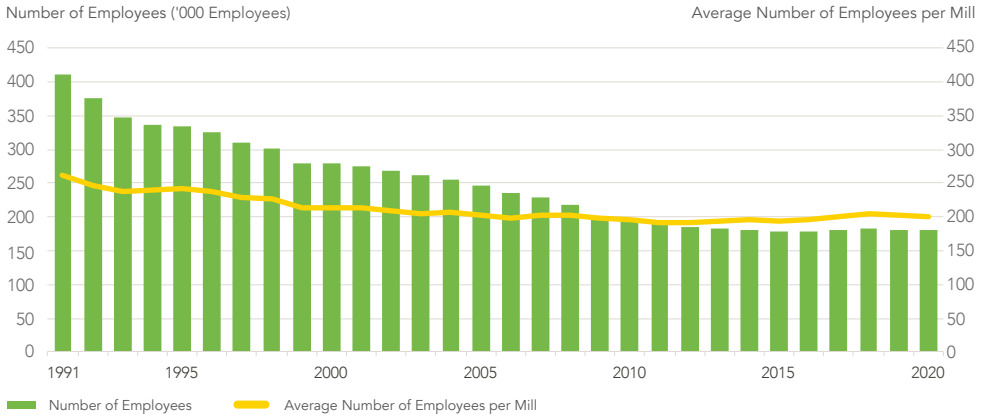


¹Excluding Hungary, Romania & Slovenia - excluding Poland before 2003

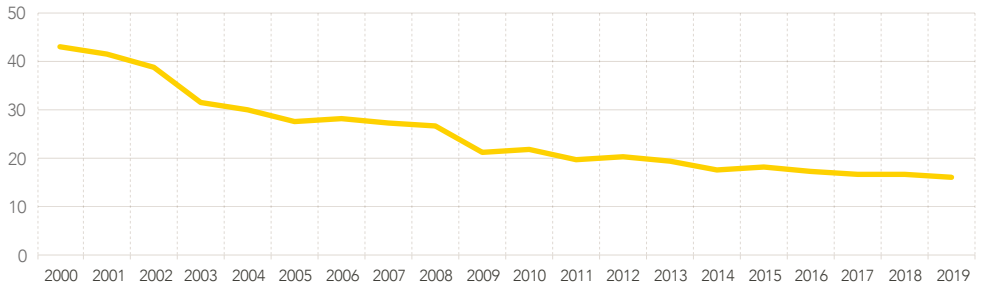


In 2019, around 90% of water abstracted to produce paper and board has been returned to its source after treatment.

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
 2020 data will be available end-2021.

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.

Case materials: 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 containerboard, 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.

