PAPER AND BOARD RECYCLING IN 2020

Overview of world statistics

Bureau of
International Recycling
Paper Division

This report was prepared by the Bureau of International Recycling with data input from RISI, CEPI, EuRIC and the BIR Paper Division.

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INTRODUCTION

The third edition of our annual analysis of key recovered fibre data covers a year that will live long in the global memory for one specific reason: the COVID pandemic. As a result, this report provides a useful snapshot of the true impact of the virus on the paper/board and recovered paper industries.

It should be remembered that global paper and board production was already on a downtrend even before the pandemic emerged: the growth seen in the packaging and tissue segments was being more than outweighed by the inexorable decline in demand for newsprint and printing & writing.

For the recovered paper industry too, 2020 was already set to be a challenging year even before COVID commanded centre stage for us all. The Chinese government's decision to tighten import controls had resulted in an incremental decline in shipments to a country that was once pre-eminent in purchasing recovered fibre on the global markets. Already overtaken by India in 2019 as the leading Asian buyer of Europe's recovered fibre exports, this latest BIR report confirms that, in 2020, China slipped to fifth place behind India, Indonesia, Turkey and Vietnam.

In response to these import controls, many of us have invested significant effort and resources over recent years in finding new international outlets for our specification secondary raw materials that would previously have been destined for China. And yet even as I write these words, the European Commission is pushing for severe limitations on exports of recovered fibre beyond the EU. Without the pressure valve of international exports to cope with major surpluses within Europe, the future for the recovered paper industry will look very bleak indeed.

Amid all the challenges facing our industry, the 2020 data contained in this report also give grounds for optimism. In particular, our experts have made reasoned calculations to quantify the fundamental role of recycled fibre as an environmentally-beneficial component of global paper and board production. Indeed, they have discovered that 2020 brought yet another increase in the proportion of the world's paper and board made from recovered fibre – from 50.3% in 2018 and 51.2% in 2019 to 52.2% in 2020.

As with previous reports, this latest document provides an insightful analysis of key developments and the emerging trends around which we can base our present-day business decisions. BIR has applied its unmatched pool of expertise to the available statistics to arrive at conclusions that will help inform our members and the wider industry in their business activities. At the same time, it offers clear and well-researched messages that we can convey to legislators and policy-makers when discussing our industry's enormous environmental and economic contribution.

And the one message standing out above all others is that, even during a global pandemic, the recovered paper industry continued to play its essential role in supplying the world paper and board industry with specification raw material.

This is a must-read publication not only for those with a direct involvement in recovered fibre but also for those who hold the future of our industry in their hands, including policy-makers and legislators. For those wanting to arrive at a better understanding of what our industry routinely achieves on behalf of the environment and the Circular Economy, then they could do no better than start with this report.

I would like to extend my sincerest thanks to BIR, RISI, EuRIC and CEPI for all of their assistance in creating this invaluable information resource for the benefit of BIR members and all other interested parties.

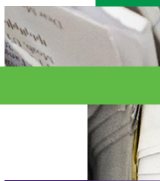
Francisco Donoso
DOLAF Servicios Verdes SL, Spain
President of BIR's Paper Division

EXECUTIVE SUMMARY

- Global production of recovered fibre fell from approaching 244 million tonnes in 2019 to a shade under 240 million tonnes the following year.
- Asia accounted for 43.8% of world recovered paper production, Europe 27% and the USA/Canada just under 20%.
- Asia remained a key outlet for the recovered fibre surpluses in Europe and the USA but there was an overall fall in international flows in 2020.
- China remained the world's leading recovered fibre importer in 2020 but the total fell to little more than 7 million tonnes, with well over half provided by the USA.
- Having been Europe's pre-eminent export outlet for many years, China slipped to fifth place on the list of Asian recipients in 2020.
- Global pulp production fell short of 170 million tonnes in 2020.
- Global paper and board production fell around 14 million tonnes to less than 399 million tonnes in 2020.
- Asia produced some 46% of the world's paper and board in 2019, with packaging accounting for approaching 65% of the continent's output.

BIR's Paper Division has calculated the following for 2020:

- More than half of all paper and board produced globally had a recycled content.
- Asia produced approaching 46% of all the paper and board using recovered fibres.
- Asia incorporated more than 71% of recycled content into its paper and board production owing to its leading role as a cardboard producer.
- Europe achieved an incorporation rate average of more than 56%.



HEADLINE ANALYSIS

Global paper and board production fell 3.4% in 2020 whereas production of recovered paper declined by a significantly smaller 1.6% to a shade under 240 million tonnes. Of all the paper and board produced in that COVID-hit year, more than 52.2% used recovered fibres (compared to 51.2% in the previous year) while the remainder was made exclusively from virgin fibres, according to input from various expert sources and the BIR Paper Division's own calculations.

RECOVERED FIBRE: PRODUCTION

Having slid 2.6% to 243.6 million tonnes in 2019, global recovered paper production suffered a further fall of 1.6% to 239.8 million tonnes the following year. Most regions of the world contributed to this overall reduction, with the steepest year-on-year declines recorded by the USA/Canada (-4.4% to 46.6 million tonnes) and Oceania (-6% to 3.1 million tonnes).

The general downward trend was also reflected in the 2020 figures for the world's largest recovered paper producer Asia (-0.8% to 104.9 million tonnes), for Europe (-1.1% to 64.9 million tonnes) and for Latin America (-2.2% to 13.1 million tonnes) whereas significant year-on-year increases were registered by the Middle East (+7% to 3.7 million tonnes) and Africa (+4.4% to 3.4 million tonnes).

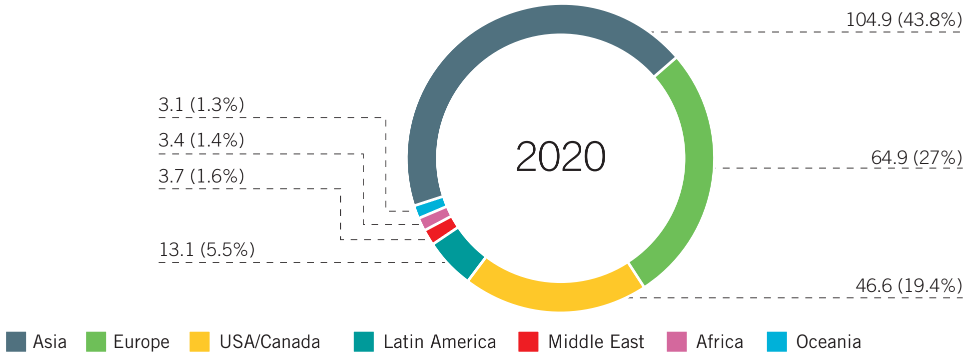
Despite its lower total, Asia still increased its recovered fibre production as a percentage of the global total from 43.5% in 2019 to 43.8% the following year. Lagging some way behind was Europe with 27% of the global production total while third-placed USA/Canada saw its share edge just below 20%.

Having stood at 37.4 million tonnes as recently as 2017, Asian imports of recovered paper continued on their steep decline: from 28.8 million tonnes in 2019, incoming volumes tumbled a further 11.7% the following year to 25.5 million tonnes owing to a combination of factors, including stricter import controls as well as disruption to production and shipping schedules.

As regards Europe's leading five producers of recovered paper, Germany once again produced more than twice as much as any other European country and yet its 2020 total of 14.5 million tonnes represented a year-on-year drop of almost 2%. Italy took over second position as its production climbed more than 3% to 6.8 million tonnes, relegating the UK to third place following a year-on-year production slide of approaching 10% to 6.6 million tonnes. Production in France was more than 6% lower in 2020 at 6.3 million tonnes while Spain registered a year-on-year decrease of around 0.7% to 4.4 million tonnes.

Recovered paper utilisation for the same five countries was as follows: Germany on 16.9 million tonnes (-1.5% year on year); Italy on 5.2 million tonnes (+3%); Spain on 5.1 million tonnes (-0.4%); France on 4.9 million tonnes (-5.4%); and the UK on just under 3 million tonnes (-4.8%).

RECOVERED FIBRE PRODUCTION BY REGION (MILLION TONNES) AND AS PERCENTAGE OF GLOBAL TOTAL



Source: BIR, RISI, EuRIC and CEPI

RECOVERED FIBRE: TRADE

International trade has long been essential to the efficient worldwide usage of paper for recycling because fibre is not necessarily recovered where it is most needed. In other words, structural surpluses in one part of the world can be used to feed production processes elsewhere – in developing countries, for example, where recovery/production rates are currently insufficient to meet often rapidly increasing local and regional demand. Without free international trade, recovered paper usage will not achieve its full potential and the economics of paper and board recycling will be seriously compromised.

Given its substantial recovered paper surplus resulting from a high collection rate of more than 70%, Europe has established itself as a major exporter. The UK led the way in 2020 with overseas shipments of 3.8 million tonnes, although this represented a decline from the 4.3 million tonnes of 2019. The other European countries to export seven-figure tonnages in 2020 were: the Netherlands on 2.5 million tonnes; France on 2.3 million tonnes; Germany on 2.2 million tonnes; Italy on 1.8 million tonnes; and Poland on 1.1 million tonnes. Among these countries, Poland was alone in upping its exports in 2020 (from 1 million tonnes in 2019). These figures incorporate export shipments to destinations both within and beyond Europe.

Germany was Europe's leading recovered fibre importer in 2020 with a total of almost 4.6 million tonnes.

MAJOR EU EXPORTS OF RECOVERED FIBRE (MILLION TONNES)

	2019	2020	% change
India	2.3	1.6	-30.3
Indonesia	1.3	1.2	-7.7
Turkey	1.1	0.9	-18.2
Vietnam	0.8	0.5	-37.5
China	2.2	0.3	-86.4
Thailand	0.7	0.3	-57.1
Latin America	0.01	0.04	+400

Source: BIR, RISI, EuRIC and CEPI

MAJOR EU IMPORTS OF RECOVERED FIBRE (MILLION TONNES)

	2019	2020	% change
USA/Canada	0.5	0.3	-40
Latin America	0.01	0.01	0

Source: BIR, RISI, EuRIC and CEPI

Asia has long represented a key destination for Europe's recovered fibre exporters but tighter import controls as well as other factors relating partly to COVID have led to a sharp decline in recent years. For example, China's gradual move towards a solid waste import ban brought about a gathering reduction in the country's imports of EU recovered paper – from 7.5 million tonnes in 2017, 4.3 million tonnes in 2018 and 2.2 million tonnes in 2019 to just 0.3 million tonnes in 2020.

MAJOR US EXPORTS OF RECOVERED FIBRE (MILLION TONNES)

	2019	2020	% change
China	5.4	4.5	-16.6
India	3.0	2.1	-30
Mexico	1.3	1.4	+7.7
Vietnam	1.1	1.3	+18.2
Canada	0.9	0.8	-11.1
South Korea	1.0	0.8	-20
Indonesia	0.9	0.5	-44.4

Source: BIR, RISI, EuRIC and CEPI

While US shipments to China have also fallen over recent years, the steepness of the decline has been significantly less acute than for European exporters: from 6.4 million tonnes in 2018 to 5.4 million tonnes in 2019 and then 4.5 million tonnes in 2020. It has been a similar story for Japan's exporters to China, with 2018 shipments of 2.8 million tonnes dropping to 1.6 million tonnes in 2019 and 1.3 million tonnes in 2020.

From all overseas countries combined, China imported just over 7 million tonnes of recovered fibre in 2020 versus 10.7 million tonnes in 2019. As recently as the middle of the previous decade, China had been importing more than 30 million tonnes of recovered fibre annually; even in 2017, its import tally was approximately 25 million tonnes. In addition to the aforementioned reductions in imports from Europe, the USA and Japan in 2020, China cut its purchases from Australia and Canada to 0.2 million tonnes in both cases.

MAJOR CHINESE IMPORTS OF RECOVERED FIBRE (MILLION TONNES)

	2019	2020	% change
USA	5.4	4.5	-16.6
Japan	1.6	1.3	-18.8
Hong Kong	0.6	0.6	0
Europe	2.2	0.3	-86.4
Canada	0.3	0.2	-33.3
Australia	0.4	0.2	-50

Source: BIR, RISI, EuRIC and CEPI

Europe and the USA have also been key suppliers to Asia's other leading recovered fibre importing nations. In 2020, India remained Europe's leading recovered paper outlet in receiving 1.6 million tonnes as compared to 2.3 million tonnes in 2019. When comparing the same years, shipments from the USA to India slipped from 3 million tonnes to 2.1 million tonnes.

EU exports to Indonesia – another country in the midst of tightening its import controls – dipped from 1.3 million tonnes in 2019 to 1.2 million tonnes the following year, while US exports to the same destination slid from 0.9 million tonnes to 0.5 million tonnes. US exports to Vietnam climbed from 1.1 million tonnes in 2019 to 1.3 million tonnes in 2020 whereas EU deliveries to the same country dropped from 0.8 million tonnes to 0.5 million tonnes.

Other significant buyers of EU exports also reduced their purchases in 2020, including Thailand (-57.1 to 0.3 million tonnes) and Turkey (-18.2% to 0.9 million tonnes).

MAJOR INDIAN IMPORTS OF RECOVERED FIBRE (MILLION TONNES)

	2019	2020	% change
Europe	2.3	1.6	-30.3
USA	3	2.1	-30

MAJOR INDONESIAN IMPORTS OF RECOVERED FIBRE (MILLION TONNES)

	2019	2020	% change
Europe	1.3	1.2	-7.7
USA	0.9	0.5	-44.4

MAJOR VIETNAMESE IMPORTS OF RECOVERED FIBRE (MILLION TONNES)

	2019	2020	% change
Europe	0.8	0.5	-37.5
USA	1.1	1.3	+18.2

While the above data illustrate the key flows of recovered paper, other movements of this global commodity can also be noted. Taking the EU as an example, it imported 0.3 million tonnes from the USA/Canada in 2020 (versus 0.5 million tonnes in 2019) while exporting 0.04 million tonnes to Latin America. And in one of the few increases in international business in 2020, the USA upped its Mexico-bound shipments to 1.4 million tonnes from 1.3 million tonnes in 2019. US shipments to Canada dipped from 0.9 million tonnes to 0.8 million tonnes when comparing the same years.

Among some of the traditional exporting countries, more limited opportunities to ship recovered paper overseas – as a result of stricter import controls or other factors – have helped to encourage capacity expansions at home.

PULP

Having reached 187.2 million tonnes in 2018 before sliding back to a shade over 183 million tonnes in 2019, global pulp production took a far bigger hit the following year in falling just short of 170 million tonnes.

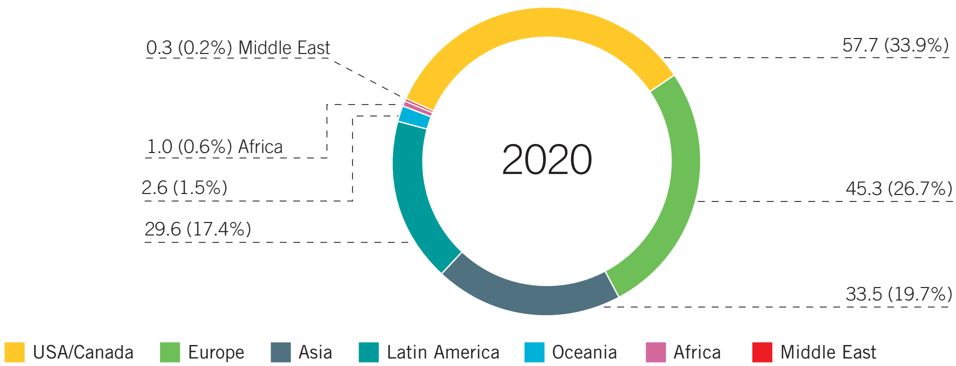
The USA/Canada continued as the leading producer but its total of 57.7 million tonnes was 5.1% short of the 60.8 million tonnes recorded in 2019. Europe's total of 45.3 million tonnes was 3.4% shy of the 46.9 million tonnes produced in the previous year whereas Asia suffered a huge decline of 19.5% from 41.6 million tonnes to 33.5 million tonnes.

As ever, Latin America was a significant player in the pulp market and the only major producing region to record an increase in its production – from 29.2 million tonnes in 2019 to 29.6 million tonnes the following year. Brazil was the leading contributor to this latter total on slightly less than 21 million tonnes.

Elsewhere, production of pulp amounted to 2.6 million tonnes in Oceania, just short of 1 million tonnes in Africa and approaching 330,000 tonnes in the Middle East.

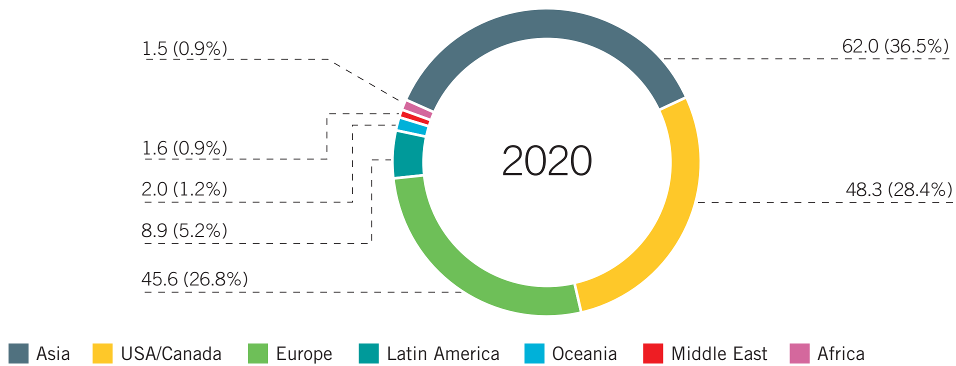
Worldwide, apparent consumption of pulp slid from just above 183 million tonnes in 2019 to around 170 million tonnes the following year, comprising 62 million tonnes for Asia (68.8 million tonnes in 2019), 48.3 million tonnes for the USA/Canada (51 million tonnes in 2019) and 45.6 million tonnes for Europe (48.8 million tonnes for 2019). To complete the picture for 2020, apparent consumption of pulp amounted to 8.9 million tonnes in Latin America, 2 million tonnes in Oceania, 1.6 million tonnes in the Middle East and 1.5 million tonnes in Africa.

GLOBAL PULP PRODUCTION BY REGION (MILLION TONNES)



Source: BIR, RISI, EuRIC and CEPI

GLOBAL APPARENT CONSUMPTION OF PULP BY REGION (MILLION TONNES)



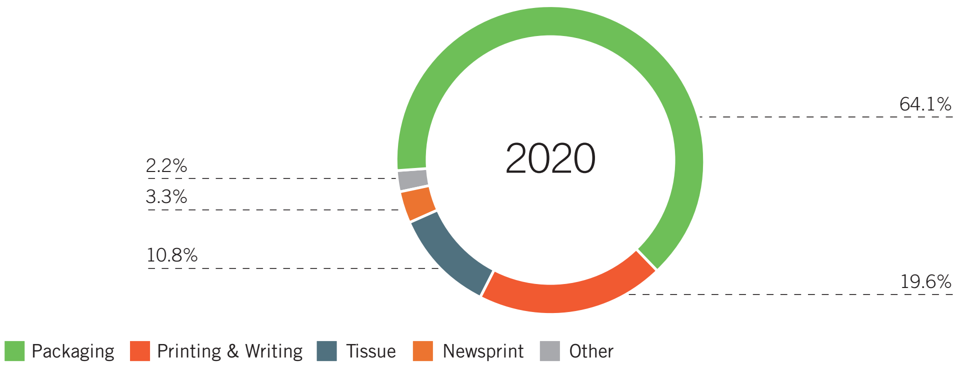
Source: BIR, RISI, EuRIC and CEPI

PAPER AND BOARD: PRODUCTION

Global production of paper and board had been on a downtrend even before the disruptive conditions applying in 2020, largely as a result of the COVID pandemic. Whereas production had fallen by 0.4% in 2018 and then by a further 1.7% in 2019 to 412.5 million tonnes, the decrease in 2020 was a somewhat steeper 3.4% to 398.5 million tonnes.

There were increases in the global production of packaging (+0.6% to more than 255 million tonnes following a 1% dip in 2019) and tissue (more than +6% to some 43 million tonnes), but these were more than counterbalanced by substantial declines for: newsprint, which suffered a thumping 23% drop from 17.3 million tonnes to not much more than 13 million tonnes; printing & writing, which recorded a decline of over 14% to just over 78 million tonnes; and the catch-all "other" grades of paper and board, which posted a production loss of more than 6% to 8.6 million tonnes.

PRODUCTION OF PAPER AND BOARD BY SEGMENT AS PERCENTAGE OF GLOBAL TOTAL



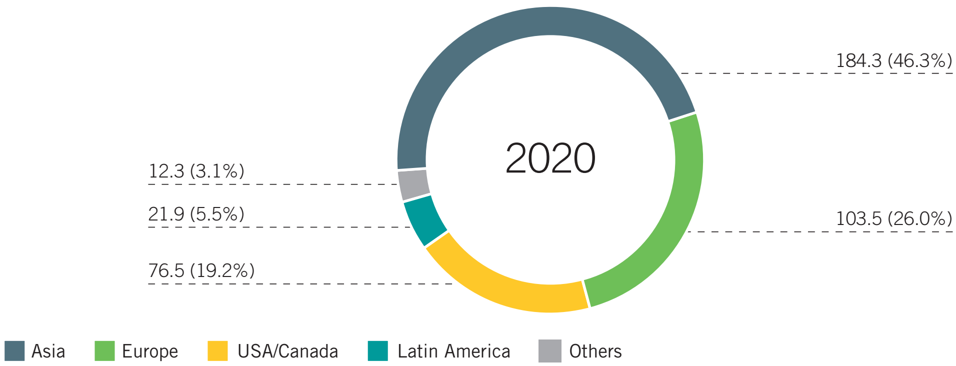
Source: BIR, RISI, EuRIC and CEPI

The end result of all these shifts was a jump in packaging's share of the global paper and board production total from 61.6% in 2019 to 64.1% the following year. This is despite the fact that Asia, the world's largest source of packaging, actually cut its output by 1.4% in 2020 to a shade over 119 million tonnes. Packaging production gained momentum across the other major producing regions of the world, including Europe (+3.6% to 61.8 million tonnes) and the USA/Canada (+1.8% to 52.2 million tonnes). For tissue, the increases were across the board, including Asia (+7% to 16.3 million tonnes), Europe (+3.6% to 10.3 million tonnes) and the USA/Canada (+6.4% to 9.7 million tonnes).

Newsprint production losses were substantial across all the major regions of the world, including Europe (-19.9% to 5.6 million tonnes), Asia (-22.6% to 4.6 million tonnes) and the USA/Canada (-26.7% to 2.5 million tonnes). For printing & writing too, none of the top producing regions escaped without precipitous declines: Asia saw its production total tumble 11.6% to a shade under 42 million tonnes, Europe dropped 17.4% to 21.6 million tonnes and the USA/Canada slid 19.9% to 10.4 million tonnes.

Looking at the production of all types of paper and board by region, Asia's grand total fell by almost 8 million tonnes in 2020 to 184.3 million tonnes. Decreases were also recorded in the other major producing regions of the world, with Europe totalling 103.5 million tonnes (-3.4% year on year), the USA/Canada 76.5 million tonnes (-2.8%) and Latin America 21.9 million tonnes (-1.5%).

PRODUCTION OF PAPER AND BOARD BY REGION (MILLION TONNES)



Source: BIR, RISI, EuRIC and CEPI

BIR CALCULATIONS

Combining available data with its own recycling knowledge and insight, the BIR Paper Division has calculated that:

- Of the 398.5 million tonnes of paper and board produced globally in 2020, more than 208 million tonnes – or 52.2% – were produced using recovered fibres whereas less than 191 million tonnes were made exclusively from virgin fibres. The recovered fibre share is around a percentage point higher than that reported in 2019.

- Asia produced around 46% of all the paper and board using recovered fibres, while Europe and USA/Canada accounted for, respectively, 25% and 20%.

- During the course of 2020, Asia incorporated the most recovered fibre into new product, with almost 84.9 million tonnes of the total 95.5 million tonnes used by the continent's packaging industry. Across all the paper and board segments, Europe incorporated 52.8 million tonnes of recovered fibre while the totals for the USA/Canada and for Latin America were, respectively, 42 million tonnes and 11.2 million tonnes.

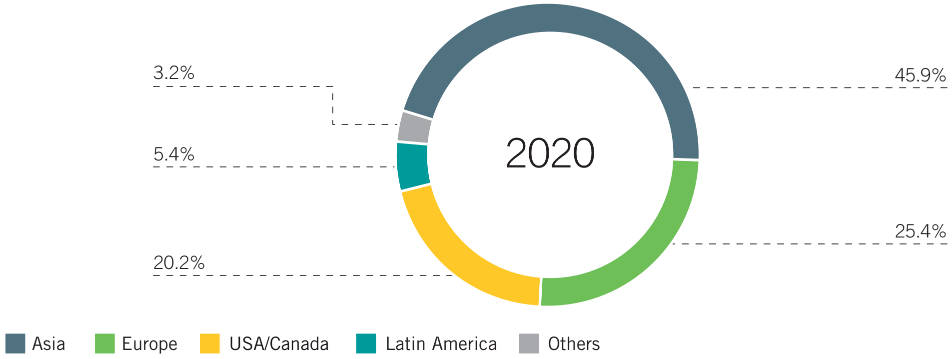
- Europe achieved an incorporation rate average of almost 56.5% in 2020 although the numbers differed widely from country to country. The Netherlands led the way on approaching 91%, followed by Spain and the UK with figures just below 82%. Germany, Romania and France recorded rates of, respectively, 79%, 77% and 72%. In contrast, Finland and Sweden only incorporated, respectively, below 7% and 10%.

- The incorporation rates for the USA/Canada and Latin America in 2020 were, respectively, just over 40% and approaching 67%.

- Of the 208 million tonnes of paper and board produced using recovered fibres in 2019, some 87% were packaging materials, whereas newsprint, printing/writing and tissue each accounted for 4%.

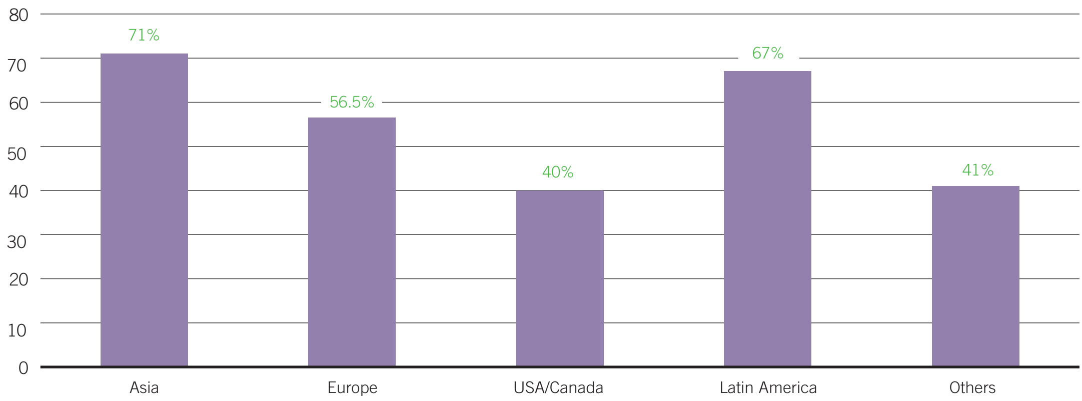
- Around 70% of all packaging and 64% of newsprint used recycled fibres. For tissue and printing/writing, respective recycled fibre use was 17% and just under 10%.

PRODUCTION BY REGION OF PAPER AND BOARD USING RECOVERED FIBRES OUT OF GLOBAL TOTAL OF 208 MILLION TONNES



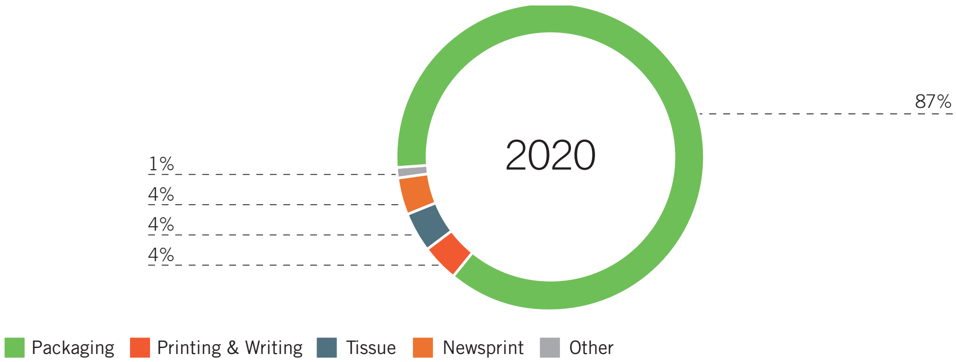
Source: BIR, RISI, EuRIC and CEPI

RECOVERED FIBRE INCORPORATION RATES FOR PAPER AND BOARD PRODUCTION (2020)



Source: BIR, RISI, EuRIC and CEPI

TYPES OF PAPER AND BOARD INCORPORATING RECOVERED FIBRES OUT OF GLOBAL TOTAL OF 208 MILLION TONNES



Source: BIR, RISI, EuRIC and CEPI

CONCLUSIONS

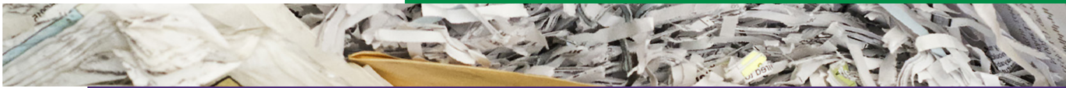
Data contained in this third edition illustrate **the importance of recovered fibre in the production of paper and board** around the world, particularly in **the growing packaging segment**. Indeed, its significance in the global production mix intensified in 2020, with the proportion of recovered fibre used in packaging **rising from 86% in 2019 to 87% in the following year**.

Nevertheless, there remains **scope for significant increases in the use of recovered fibres**, including in the printing & writing segment and in some emerging regions of the world, especially when taking into account strong population and middle-class growth projections for many developing countries. (Worldwide, the middle class increased from 1.8 billion people in 2009 to around 3.5 billion in 2017, and is projected to reach 5.3 billion by 2030.)

Growing environmental pressures on some uses of plastics are likely to benefit other forms of packaging – including paper and board, which demonstrated relatively strong demand resilience in 2020 despite the global COVID pandemic.

Growth in recovered fibre consumption would bring a huge environmental benefit as accepted scientific research suggests that **recycling one tonne of paper saves more than 4000 kWh of energy as well as vast quantities of water**.

The paper recycling industry enshrines the principles of a Circular Economy given that we are clearly heading in the direction of a world in which **recycling content will become an ever-increasing component of the final paper and board product mix**. To ensure that recovered fibre achieves its full consumption potential, **international free trade in this vital raw material must be safeguarded**.



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With the cooperation of

EuRIC

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