

THE ECONOMIC VALUE OF THE UK PAPER-BASED INDUSTRIES 2019



CONTENTS

Foreword	3
Introduction	4
Highlights	6
Overview	8
Consumption	
Production	
Turnover	
Employment	
Investment & Productivity	
Sustainability	
Energy, Carbon and Water	
Health and Safety	
Trade	
Future UK Investment Opportunities	26
Future UK Demand Opportunities for the UK's Paper-based Industries	27
Current Situation and its Causes	
Opportunities for Growth in the UK	
Demand Scenarios	
Future Export Demand Opportunities for the UK's Paper-based Industries	
Key Barriers to Realising Opportunities	32
Capacity	
Competitiveness	
Supply chain coordination	
Collection of raw materials	
Cross-cutting Issues	33
Investment	
Skills	
Materials transformation	
Decarbonisation	
Digitisation and Internet of Things	
UK R&D	
Appendix 1	36
About CPI	
Optimism, Visibility, Community and Sustainability	
Appendix 2	37
References	
Appendix 3	38
Defining the Industry	
Scope of the Industry Today	
Customer Groups	

FOREWORD



I am delighted that the Confederation of Paper Industries (CPI) has produced this ground-breaking report into both the economic value of, and the investment opportunities in, the UK's Paper-based Industries.

This report is timely in many ways.

It again highlights the vital contribution that the UK's Paper-based Industries make to the UK economy, the jobs that it supports, and the role of the industry in creating growth across the UK.

The report also highlights opportunities for growth in the UK's Paper-based Industries, both in meeting domestic demand and in supplying export markets. Post Brexit, seizing these opportunities will be vital if the UK is to sustain manufacturing investment in hard-pressed communities.

The challenge for the UK Government is to ensure that the competitive conditions in the UK are such that it is an attractive location for long term investment in manufacturing, both of paper and its products. We need an overall industrial strategy that is focused on securing the UK's industrial base for generations to come. Within this there must be a more competitive energy market, which delivers lower prices to energy intensive users, within the context of decarbonisation.

Paper is a uniquely renewable and recyclable non-fossil resource and this report shows how the UK's Paper-based Industries can meet the challenge of the circular bio-economy and how they can contribute to the future development of the UK in sustainable materials.

I urge all policy makers to read this report carefully and to act on its conclusions. Now is the time for renewed investment in paper and its products to build future UK economic growth on its firm foundations and to move the UK towards a more sustainable future based on natural products, managed for the long term.

Richard Coward

CPI President
September 2019



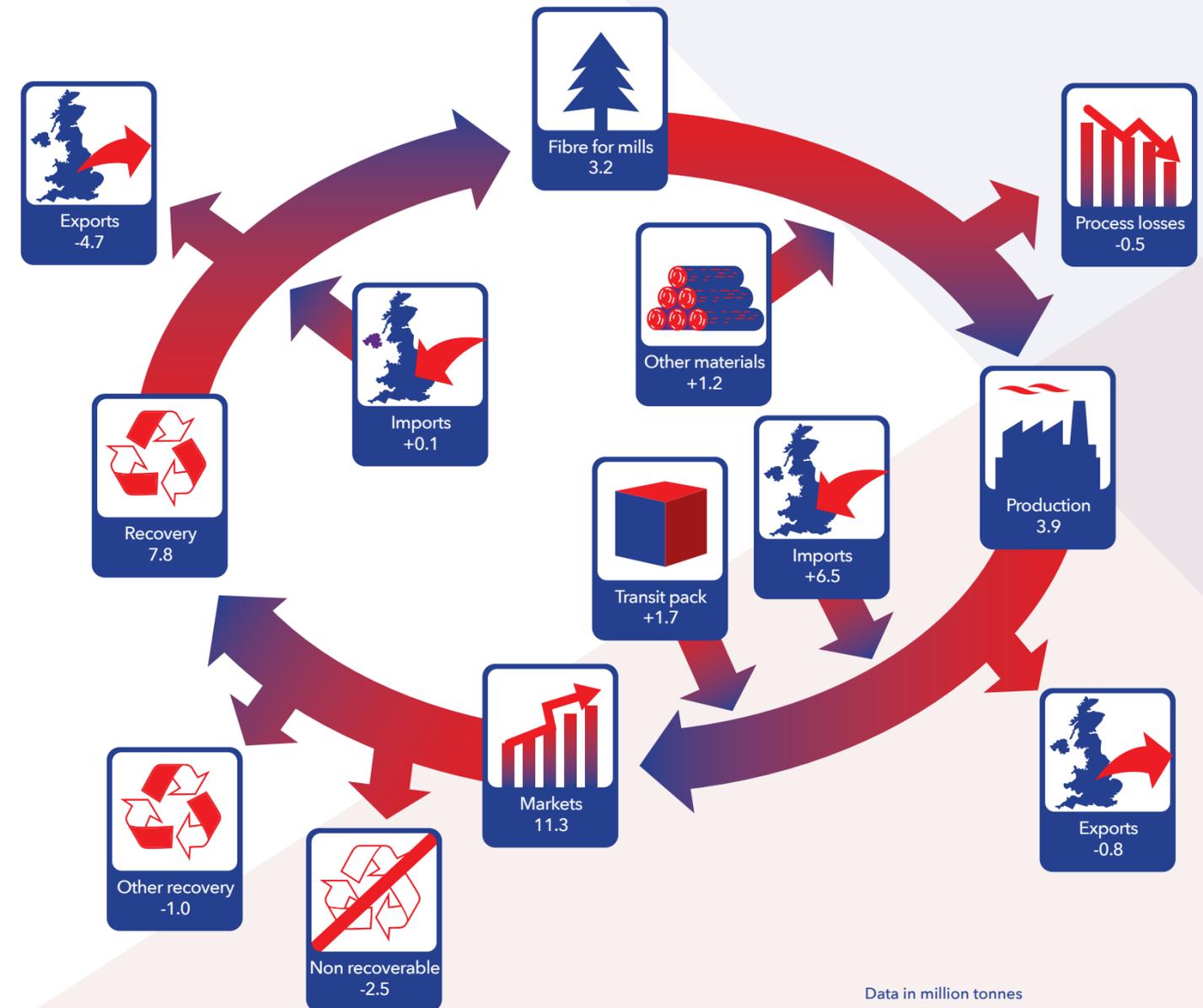
INTRODUCTION



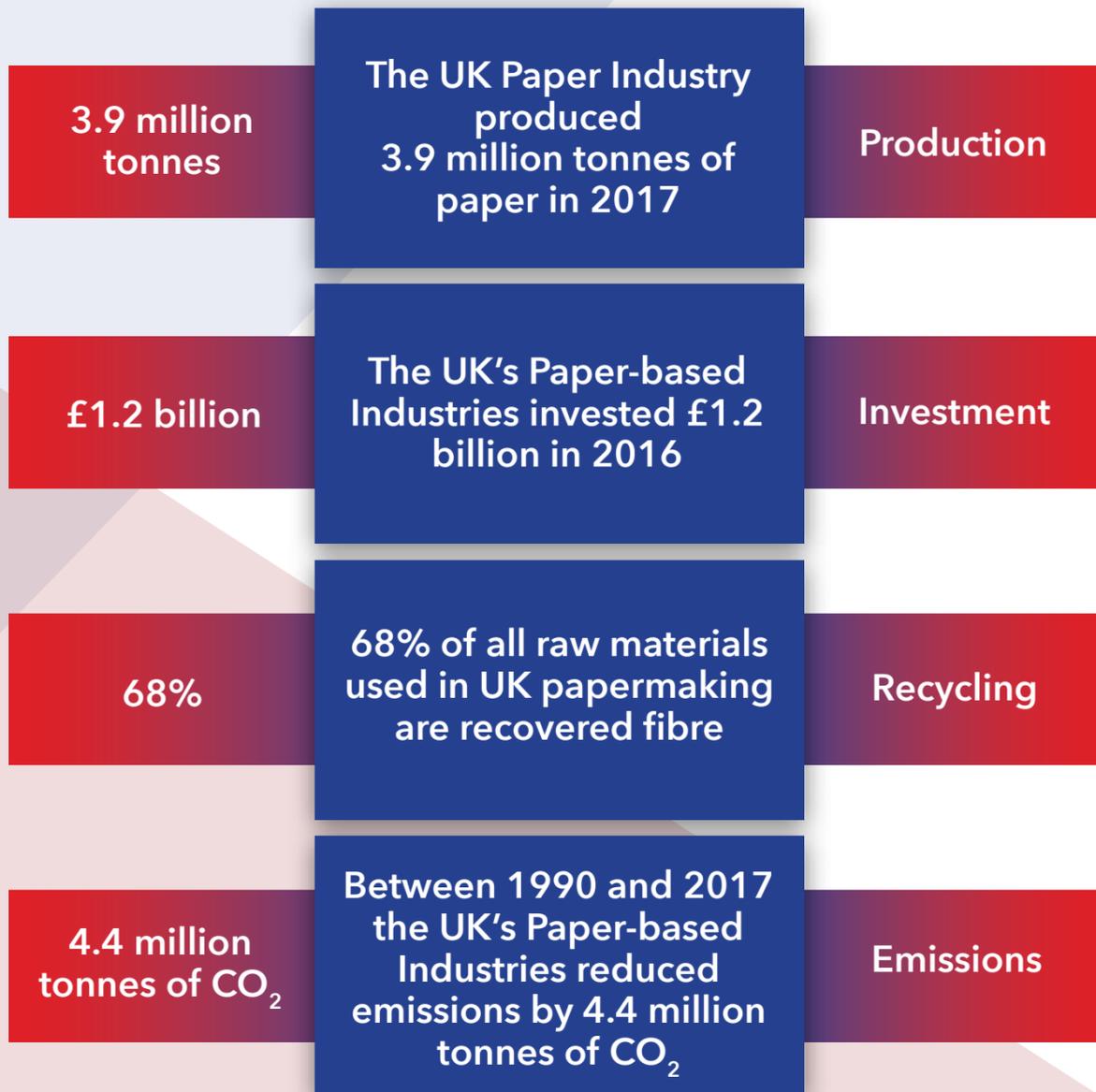
- 1 Last year, CPI published its first Economic Value Report. This work showed, for the very first time, the full extent of the contribution of the UK's Paper-based Industries to the UK economy. It highlighted the location of employment across all the regions and nations of the UK and demonstrated very clearly our progress on health and safety, environmental issues and carbon emissions reduction.
- 2 This year, as well as updating progress in all those areas, the report is expanded to include a comprehensive analysis of the investment opportunities in the UK for paper and paper products.
- 3 The UK is both the world's largest net importer of paper, and one of the world's largest exporters of paper for recycling. We import a high value-added product and we export a product to which others then add value. This is at the root of the UK investment opportunity.
- 4 The world view of materials is changing. The focus today is on materials that are both renewable and recyclable - the circular bio-economy. Paper and paper products fit that imperative perfectly. The Government's Resources and Waste Strategy makes it clear that the way we use materials will have to radically change in future, if our economy is to be placed on a sustainable footing. Paper, and products made of paper, should be in the vanguard of this materials revolution, and they will be if the appropriate investment can be found.
- 5 Moreover, paper has the potential to be a zero-carbon industry. We can contribute to carbon sequestration through nature's carbon capture and storage system, the forest. And, we are not obliged to use fossil carbon anywhere in our production processes, if renewable energy sources are available.
- 6 CPI has worked closely with the Government to understand the potential for a Sector Deal that would commit both Government and business to invest in our industry together.
- 7 The investment funds are there from both sides. What is needed to unlock that investment is both the clear vision for the future and the engagement to work for the long term.
- 8 This report provides that vision. It shows the demand growth that underpins the future investment case, and it sets that growth in the context of a materials and carbon revolution, where the renewability and recyclability of paper comes to the fore.
- 9 This report sets out the position for policy makers, to ensure that the policy landscape on key issues like energy costs, recycling and environment meet the needs of long-term industrial investment.
- 10 Today we set a challenge. A challenge for industry and Government to work together to secure the future of this most sustainable business in the UK. We look forward to the Government's response.

Andrew Large
Director General, CPI

The UK Paper Loop



HIGHLIGHTS



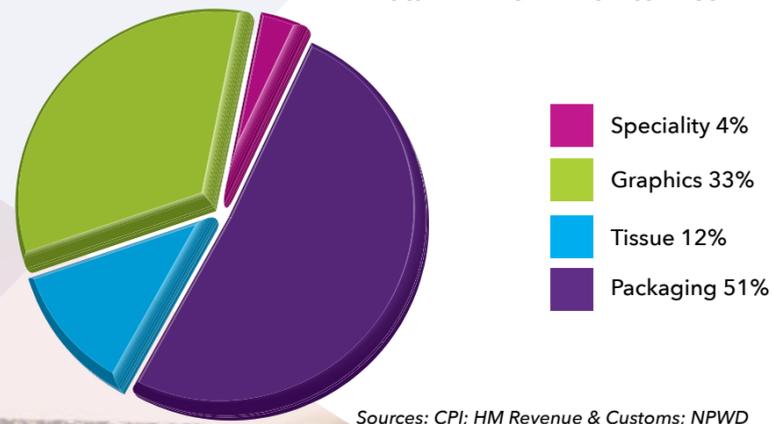
OVERVIEW

Consumption

- 11 In 2018, 11.3 million tonnes¹ of paper were placed on the UK market. At current consumption rates, that equates to the average UK household using some 486 Kg² of paper and board each year, or the weight of an average fully-grown horse.
- 12 Chart 1 below shows that just over half of all the paper and board placed on the UK market is for packaging, with exactly one third for the graphics sector, 12% for tissue and 4% for specialty paper products¹.

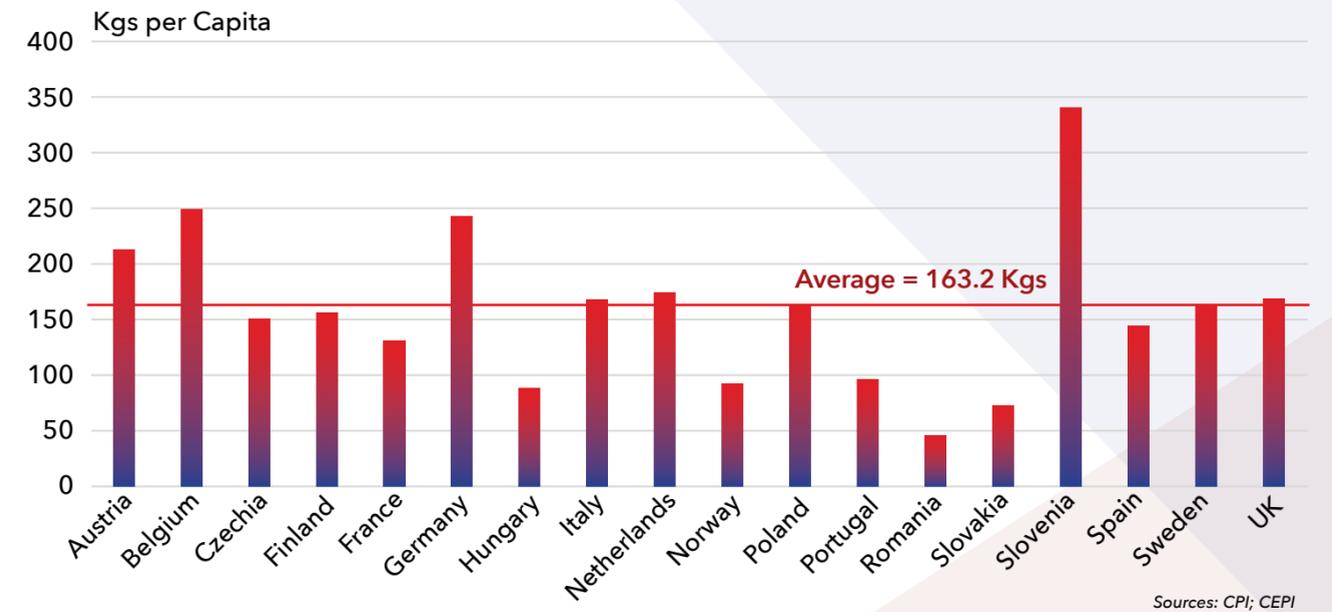
CHART 1. UK CONSUMPTION OF PAPER AND BOARDS

Total = 11.3 million tonnes



- 13 The UK remains in the top six European Countries in its per-capita consumption of paper¹, as chart 2 shows. UK consumption remains above the European average of 163.2 Kg per person per year.

CHART 2. EUROPEAN PER CAPITA CONSUMPTION OF PAPER AND BOARD



- 14 Chart 3 below shows that in 2016 the UK was the tenth largest global market for paper and board¹.

CHART 3. GLOBAL TOP 10 PAPER AND BOARD CONSUMERS

2016 (tonnes)		
	COUNTRY	CONSUMPTION*
1	China	106.7 million
2	USA	70.8 million
3	Japan	26.4 million
4	Germany	20.2 million
5	India	13.6 million
6	Italy	10.2 million
7	South Korea	9.9 million
8	Brazil	9.4 million
9	France	8.8 million
10	UK	8.6 million

* Excludes converted products and transit packaging

Source RISI

Production

15 The UK is a significant producer of paper and board. In 2018, the UK produced some 3.9 million tonnes¹ of material, of which half was for packaging, nearly a quarter was graphic paper, and the remainder divided between tissue and speciality papers. The charts below also show that global production in the same year was 410 million tonnes and that in 2016 the UK was the 22nd largest producer of paper globally^{2,3,4}.

CHART 4a. UK PRODUCTION OF PAPER AND BOARD

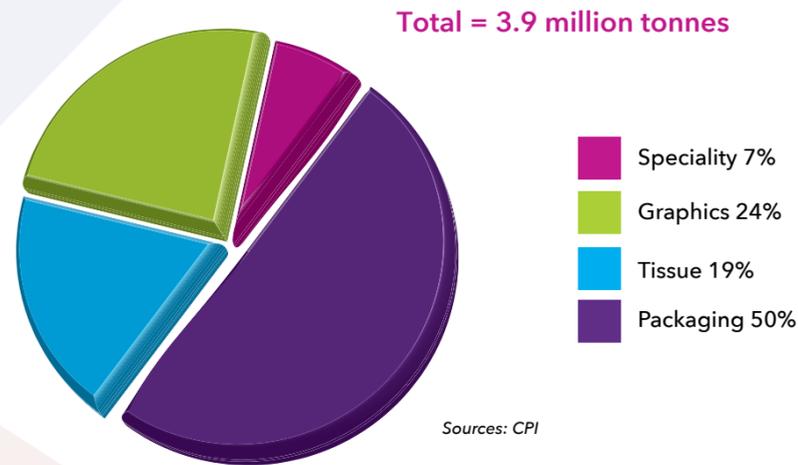


CHART 4b. GLOBAL PRODUCTION OF PAPER AND BOARD

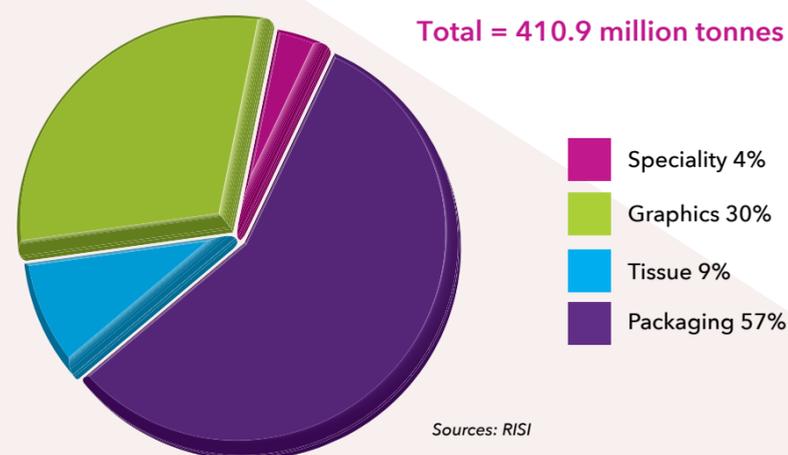


CHART 4c. GLOBAL TOP 10 PAPER AND BOARD PRODUCERS

2016 (tonnes)

	COUNTRY	PRODUCTION
1	China	111.3 million
2	USA	72.1 million
3	Japan	26.3 million
4	Germany	22.6 million
5	South Korea	11.7 million
6	India	11.3 million
7	Indonesia	10.9 million
8	Brazil	10.5 million
9	Finland	10.1 million
10	Canada	10.1 million

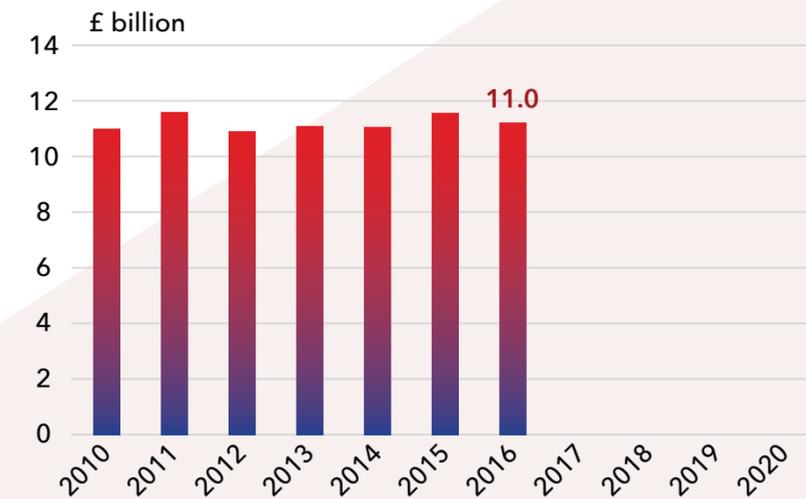
22	UK	3.7 million

Source RISI

Turnover

16 The turnover of the UK's Paper-based Industries has remained consistent over many years. In 2016, industry turnover was £11 billion¹, showing stable performance since 2010.

CHART 5. PAPER SECTOR TURNOVER



Sources: ONS, Annual Business Survey 2018

Employment

- 17 The UK's Paper-based Industries are a major employer in UK manufacturing. In 2018, total direct employment in the CPI membership was just over 20,000¹. This employment is sub-divided into 8,900 in paper and board manufacturing (including tissue), 10,500 employed in manufacturing corrugated board and boxes, and over 900 employed in the collection and processing of recovered paper for recycling.
- 18 In the industry overall, The Office of National Statistics reports that there are 56,000 jobs¹, and the direct supply chain for paper manufacturing and processing supports a further 86,000 jobs² in the wider UK economy.
- 19 As well as being significant employers, perhaps more important is the geographical location of where the jobs are in the UK's Paper-based Industries. The following chart shows that industry employment is spread widely across the UK, and in those countries and regions where manufacturing jobs and growth must play a key role in driving long-term economic growth.



CHART 6. INTEGRATED PAPER, PACKAGING, TISSUE AND RECYCLING IN THE UK



Source: CPI

Investment and Productivity

20 Sterling denominated investments in the UK's Paper-based Industries continue to rise, although this is slightly buoyed by exchange rate fluctuations as well as real investment growth. As chart 7b shows, the UK industry received amongst the largest investment of any in the EU¹.

CHART 7a. PAPER INDUSTRY INVESTMENTS

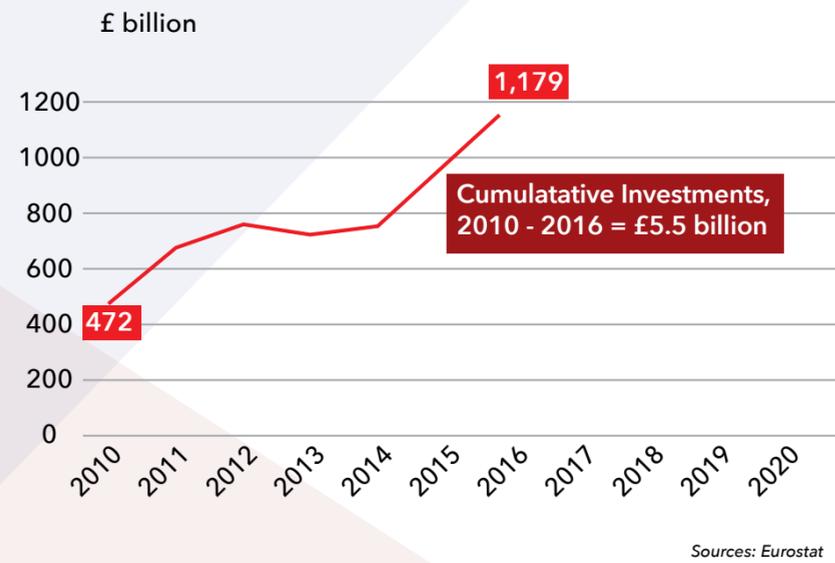
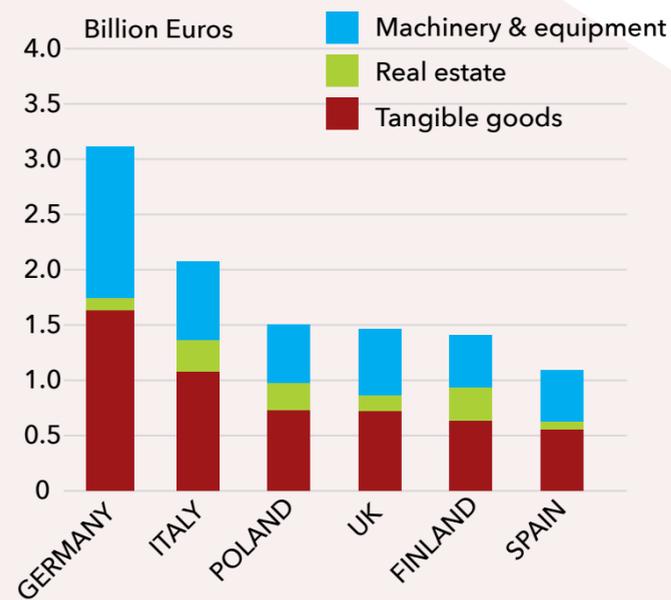


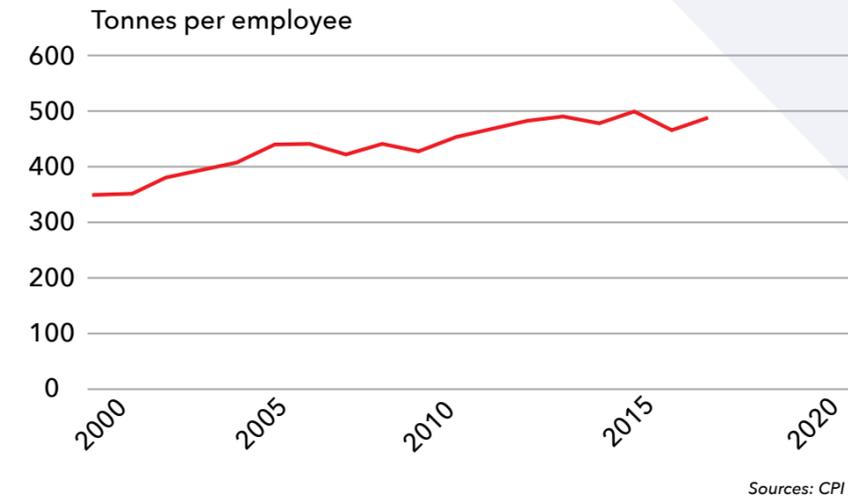
CHART 7b. INVESTMENT ACROSS EUROPE



21 Productivity improvement in the UK's Paper-based Industries continues to be a strong driver of growth and the result of targeted and sophisticated investments.

22 In 2017, as the chart below shows, productivity in papermaking was 491 tonnes per employee¹, an improvement of 40% over productivity in the year 2000.

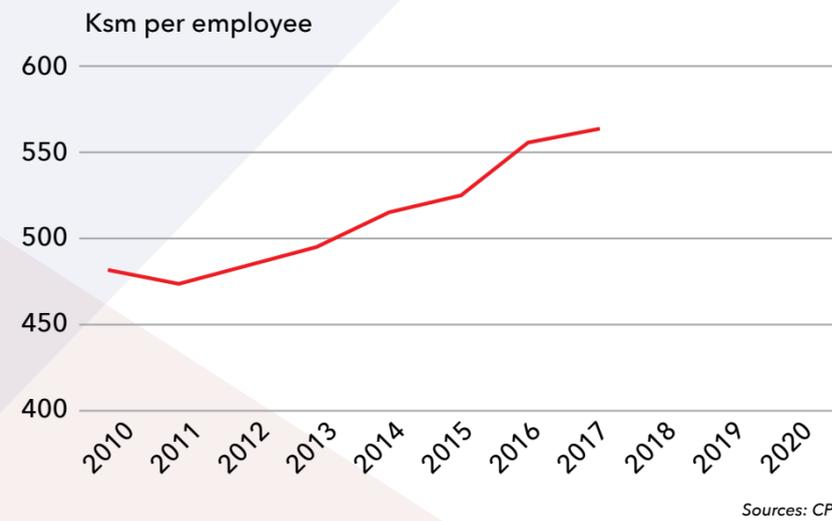
CHART 8. PAPERMAKING PRODUCTIVITY



23 There have also been marked improvements in the productivity of corrugated board manufacture. In 2011, each employee produced 473,000 square metres per year. By 2017, that had increased to 565,000 square metres per year¹.

24 In 2016, the Gross Value Added of the UK's Paper-based Industries was £3.5 billion¹, similar to the figure for 2010.

CHART 9. CORRUGATED BOARD PRODUCTIVITY



Sustainability

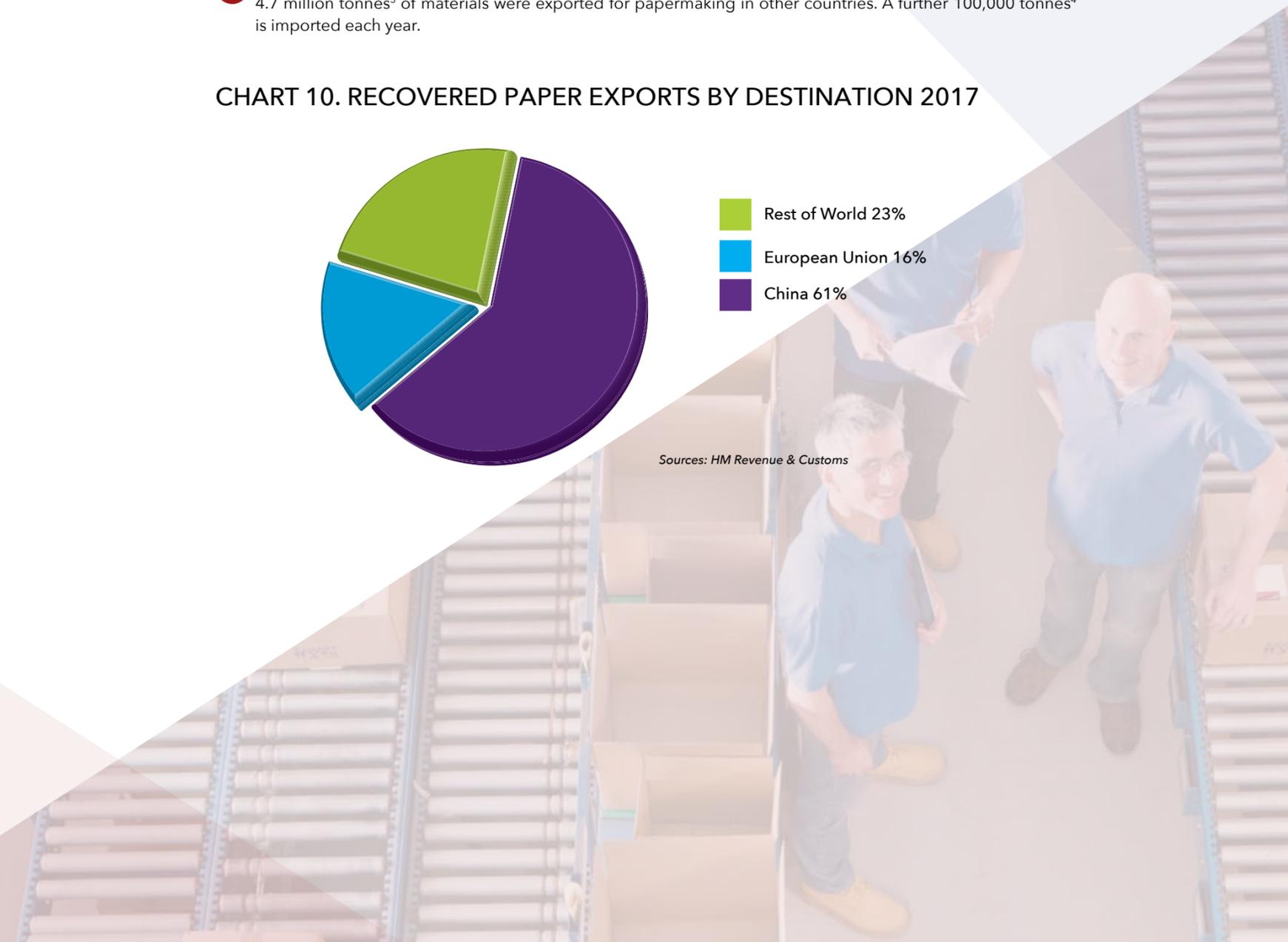
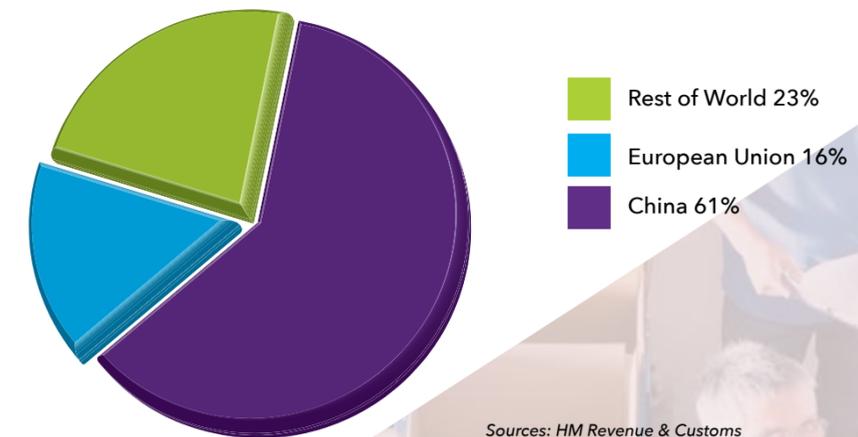
25 Paper and board are inherently renewable, recyclable and therefore sustainable materials. Recovered paper is globally traded and in the UK, the recycling of paper is a national success story stretching back over 100 years.

26 In 2017, the UK again recovered 69%¹ of all paper and board placed on the market. This remains an impressive performance as 22% of all paper is unrecoverable for recycling, either because it is used for hygiene products or because it is in long term use, such as in books.

27 An estimated 79%¹ of all packaging papers were recovered for recycling. This, coupled with other recovered papers, amounted to 7.8 million tonnes² of potential raw material for UK and other paper mills and a similar reduction in the volumes of waste destined for landfill.

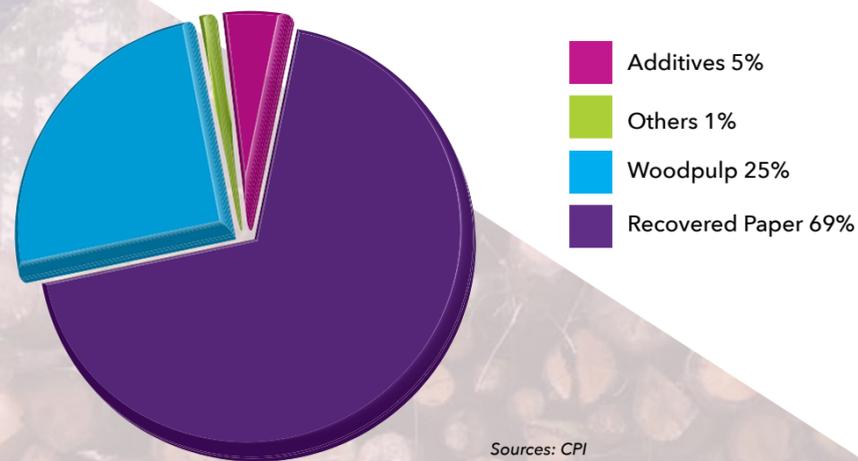
28 Of this material, 3.2 million tonnes¹ were consumed by UK mills with a value of close to £250 million². A further 4.7 million tonnes³ of materials were exported for papermaking in other countries. A further 100,000 tonnes⁴ is imported each year.

CHART 10. RECOVERED PAPER EXPORTS BY DESTINATION 2017



- 29** In recent years, the proliferation of a wide variety of local authority kerbside collection methods has led to public confusion about what to recycle. This has resulted in increased contamination of paper for recycling, with negative impact on the cost efficiency of UK mills. CPI estimates that each percentage point increase in feedstock contamination costs UK papermakers circa £8 million annually¹. Equally, inferior quality material is more difficult to sell in export markets. The long-term sustainability of recovered paper and its circularity in the economy is reliant upon it being of high quality. This is dependent upon consistent collection systems across the UK and close communication with the public. It is likely that changes proposed by Government to the Extended Producer Responsibility system and household collections will improve the consistency of collection and overall quality of material collected.
- 30** To promote the improvement in local authority kerbside collections, CPI has launched its Our Paper initiative. (www.ourpaper.org.uk). This campaign is supporting councils in improving the quality and quantity of paper and card collected for recycling; and is benefiting council taxpayers, British manufacturing and the environment.
- 31** Recent laboratory research suggests that it is possible for a paper fibre to be recycled up to 25 times¹ before it becomes too degraded to be reused. Virgin fibre is vital to maintain the integrity of the national fibre pool and will always be needed to ensure the quality and utility of finished products. Whilst the UK papermaking industry is heavily dependent upon recovered fibre, 25% is virgin fibre² sourced from sustainably managed forests.

CHART 11. PAPERMAKING RAW MATERIALS



Energy, Carbon and Water

- 32** As well as promoting the recyclability and renewability of paper and its products, CPI's work has also focused on the reduction of energy consumption and carbon emissions. Papermaking is an energy intensive process and energy costs are a key driver of competitiveness in global markets.
- 33** The data on both energy consumption and carbon emissions show significant reductions in both, in comparison with the 1990 baseline set by Government.
- 34** In 2017, specific energy consumption for papermaking had declined from 5.9 MWh per tonne in 1990 to 4 MWh per tonne¹. Emissions of fossil carbon dioxide due to papermaking have declined from 6.6 million tonnes in 1990 to 2.2 million tonnes in 2017².

CHART 12. SPECIFIC ENERGY CONSUMPTION FOR PAPERMAKING

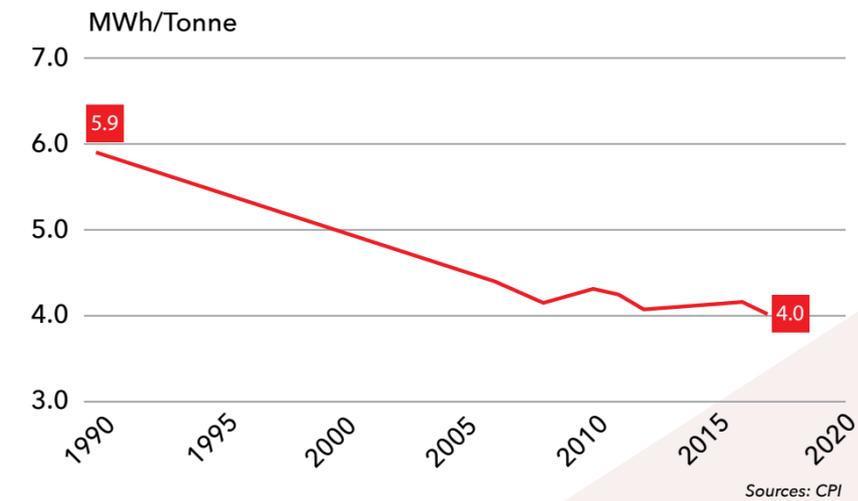
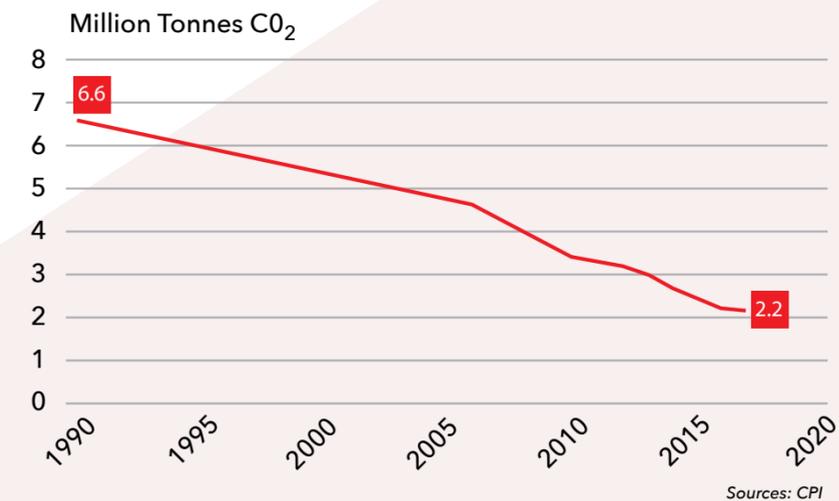
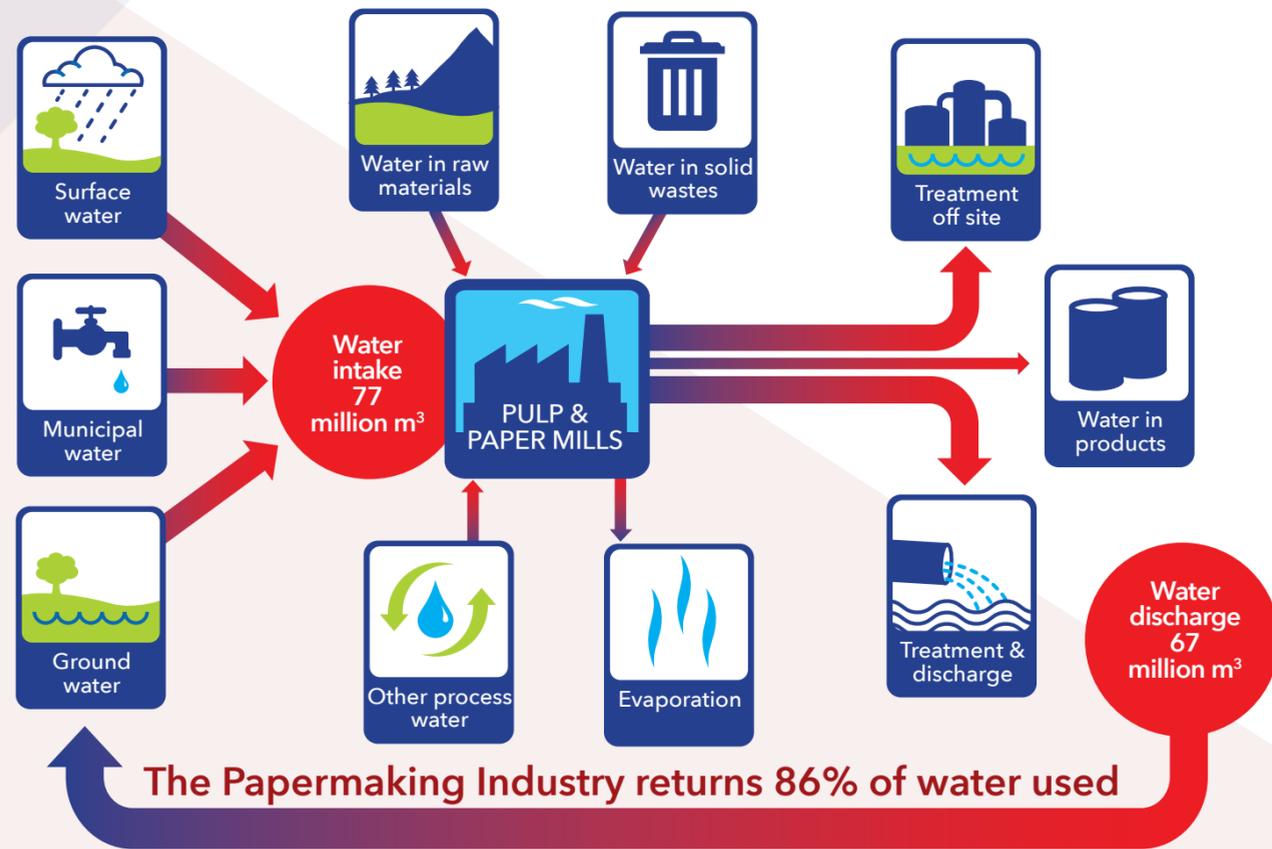


CHART 13. FOSSIL FUEL CARBON DIOXIDE EMISSIONS FOR PAPERMAKING



- 35 The UK's Paper-based Industries have developed a 2050 Roadmap with the Government to plan for further emissions reductions in the sector to play its part in delivering the national target. The Paris Agreement's central aim is to strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels, and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius. This is likely to mean an extension of the UK target for emissions reduction to a net-zero figure nationally, and for pulp and paper emissions to be tasked with a 90%+ reduction target. CPI is working closely with its European counterparts and the UK Government to build a credible plan for the delivery of such targets into the future.
- 36 The UK's Paper-based Industries are a major user of water in the production process. As an industry, we work with Regulators to ensure sustainable abstraction and best practice in efficient water use.
- 37 Annually, the UK industry takes in (or more accurately borrows) 77 million m³ of water. This water comes from a variety of sources, both abstraction from natural water sources as well as embedded water within raw materials. However, the industry does not consume all this water, as some 67 million m³ of water is discharged back to rivers and other water courses every year after treatment. In fact, the sector directly returns some 86% of all water used in our processes back into the environment¹, as the following chart shows.

CHART 14. WATER USE FOR PAPERMAKING

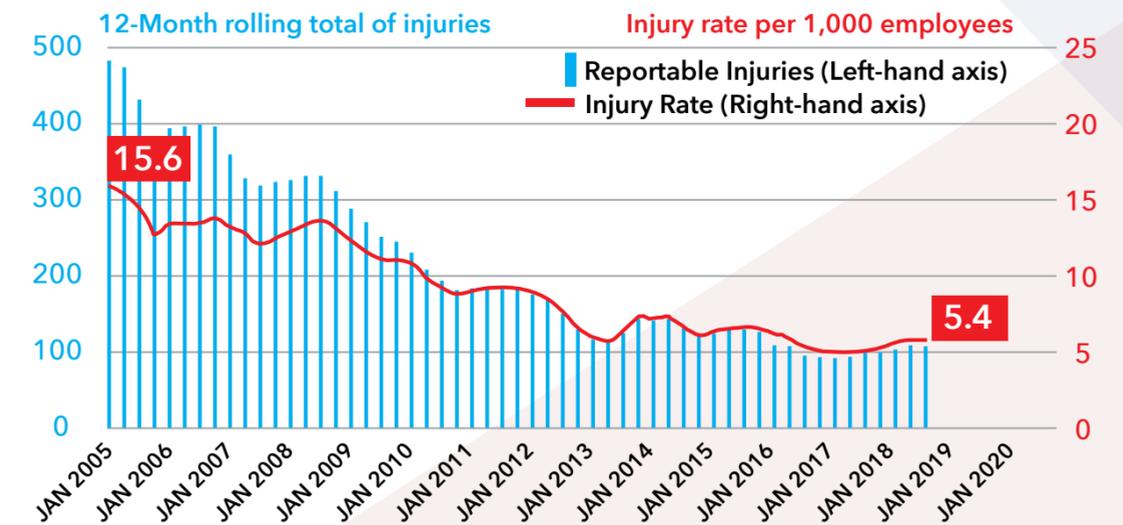


Source: CPI

Health and Safety

- 38 The health, safety and wellbeing of all employees and workers in the UK's Paper-based Industries continues to be the highest priority for the industry at large.
- 39 The Paper and Board Industry Advisory Committee (PABIAC), together with CPI, has played a pivotal role in the efforts to improve standards in the industry and reduce the levels of incidents and injuries. Over the last 15 years, there has been a massive improvement in performance, and the challenge for the industry is to work to ensure that this is sustained and enhanced. In July 2019, PABIAC launched its new 4-year strategy for industry health and safety, with the aim of driving further reductions in incidents and injuries across the industry.
- 40 The following chart shows the long-term success of the strategy that the UK's Paper-based Industries have adopted. Since 2005, the industry injury rate has dropped by almost 70%¹.

CHART 15. IMPROVING SAFETY IN THE UK'S PAPER-BASED INDUSTRIES



Sources: CPI

Trade

41 Chart 16 shows that the UK remains the largest net importer of paper and board in the world, compared with the trade balance of other significant world economies¹.

CHART 16. UK IS THE WORLD'S LARGEST NET IMPORTER OF PAPER AND BOARD

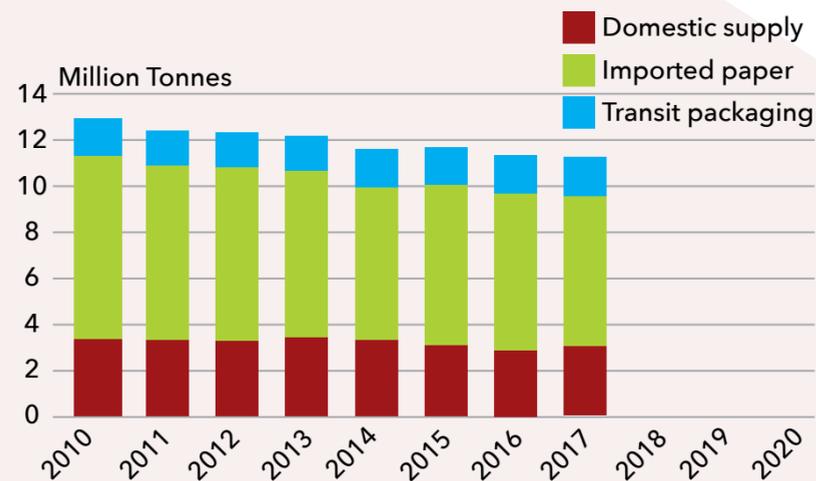
2016 (tonnes)

	COUNTRY	NET IMPORTS
1	UK	-5.0 million
2	Mexico	-2.9 million
3	India	-2.3 million
4	Turkey	-2.0 million
5	Vietnam	-1.7 million
6	Malaysia	-1.6 million
7	Belgium	-1.5 million
8	Philippines	-1.2 million
9	Italy	-1.2 million
10	Poland	-1.2 million

Source RISI

42 Chart 17 shows that of the 11.3 million tonnes¹ of paper and board consumed in the UK in 2017, just over 3 million tonnes was produced here in the UK (or just 26%)². Of the rest, 1.72 million was transit packaging around other imported goods³. However, the majority, again in excess of 6.5 million tonnes, was imported for direct use as paper or conversion into other paper products⁴.

CHART 17. SOURCES OF UK PAPER AND BOARD CONSUMPTION



Sources: CPI, HM Revenue & Customs : NPWD

- 43 2018 Trade data¹ shows that the UK continues to be a major importer of paper, with the balance of imports to exports now reaching 5.25 million tonnes. Most of those imports come from the EU, with significant volumes also coming from Asia and North America.
- 44 UK exports in 2018 were significantly lower than imports, and other EU countries were the largest customer.
- 45 UK imports are spread across all paper types, but with packaging papers and printings and writings being the largest volumes, both at over 2.5 million tonnes per year. UK exports are also evenly spread across all paper types.



CHART 17a. UK PAPER AND BOARD IMPORTS BY REGION

REGION	2016	2017	2018
Africa	67,458	58,995	51,958
Asia	626,546	596,157	562,065
Australasia	5,283	1,876	1,184
Other Eastern Europe	72,214	78,050	59,492
European Union	5,713,316	5,501,698	5,273,004
North America	521,645	490,985	481,830
South America	148,846	133,982	131,047
Other Western Europe	472,534	432,087	470,917
Total	7,627,840	7,293,831	7,031,496

Data in tonnes

Source: HM Revenue & Customs

CHART 17b. UK PAPER AND BOARD EXPORTS BY REGION

REGION	2016	2017	2018
Africa	33,383	35,140	38,761
Asia	192,072	208,787	191,078
Australasia	67,538	55,020	57,020
Other Eastern Europe	19,402	16,580	15,672
European Union	1,324,823	1,348,712	1,270,578
North America	109,740	109,835	122,750
South America	19,130	22,841	33,815
Other Western Europe	49,786	51,088	49,649
Total	1,815,873	1,848,004	1,779,323

Data in tonnes

Source: HM Revenue & Customs

CHART 17c. UK PAPER AND BOARD IMPORTS BY SECTOR

SECTOR	2016	2017	2018
Newsprint and Newspapers	761,764	614,655	541,569
Other Papers and Boards	388,544	389,319	407,559
Packaging Papers and Boards	2,581,285	2,509,522	2,515,564
Printing and Writing Papers	3,112,894	2,979,205	2,770,201
Sanitary and Household Papers	783,353	801,129	796,604
Total	7,627,840	7,293,831	7,031,496

Data in tonnes

Source: HM Revenue & Customs

CHART 17d. UK PAPER AND BOARD EXPORTS BY SECTOR

SECTOR	2016	2017	2018
Newsprint and Newspapers	271,155	294,615	295,065
Other Papers and Boards	229,780	224,984	216,682
Packaging Papers and Boards	661,883	696,846	637,909
Printing and Writing Papers	524,529	501,386	477,688
Sanitary and Household Papers	128,527	130,173	151,979
Total	1,815,873	1,848,004	1,779,323

Data in tonnes

Source: HM Revenue & Customs

46 The four charts above set out the trade position of the UK in the last three years in more detail. The long-term imbalance of the UK's trade position, and the continued preponderance of imports can be seen as ongoing trends.

FUTURE UK INVESTMENT OPPORTUNITIES

47 In recent years, the market forces of the global Paper-based Industries have changed substantially, and these changes have placed the UK's Paper-based Industries under increasing pressure. The Confederation of Paper Industries (CPI), the trade association for the UK's Paper-based Industries, has responded to this pressure through the development of Industrial Strategy proposals to the Government, which continue to be in discussion. As part of that work, CPI considered that the future investment opportunities within the industry should be highlighted and the challenges to those investments understood.

48 This report, building on the Economic Value Reports of the CPI and on a wide range of consultations with Members, considers the following issues related to investment in the UK's Paper-based Industries.

- What is the current supply and demand position of the UK's Paper-based Industries?
- What are the future opportunities for paper and its products in new and existing sectors and markets? and
- How do the UK's Paper-based Industries overcome potential challenges or barriers preventing them from meeting this demand?

FUTURE UK DEMAND OPPORTUNITIES FOR THE UK'S PAPER-BASED INDUSTRIES

Current Situation and its Causes

49 In 2017, total UK demand for paper was 11.3 million tonnes¹. This was made up of 3.9 million tonnes of UK production, and net import balance of 5.7 million tonnes, and 1.7 million tonnes of transit packaging around imported goods. Overall, the UK market for paper has seen significant decline in recent years. As recently as 2010, overall market demand was c.13 million tonnes². Demand for newsprint has fallen from 2.6 million tonnes to just over 1 million tonnes between 2000 and 2017³. Similarly, demand for printing and writing papers has fallen from 4.8 million tonnes in 2000 to 2.4 million tonnes in 2017⁴. Conversely, volume demand for packaging papers and tissue products has been largely stable over the same timeframe. That said, innovation in lighter weight papers means that more finished products can be produced for the same tonnage.

50 There are several reasons for these changes in demand:

- UK prices for industrial electricity for very large users are the highest in Europe. This is driven by Government policy choices to place the cost burden of decarbonisation more on business and less on domestic consumers. As a result, papermaking in the UK has declined in competitiveness, whereas Germany, for example, which has decided to spread the burden of decarbonisation more evenly, has seen its papermaking capacity grow. Historically, the German Paper Industry was three times the size of the UK industry. It is now seven times as large.
- The UK's Paper-based Industries have significantly consolidated in recent years. Of the top ten UK papermakers in 2019, only one is headquartered in the UK, with one headquartered in the US and the rest headquartered in other EU countries. This consolidation of ownership brings a regional and global view of capacities rather than a national one. Papermaking capacity is located in the most competitive country and exported, rather than located within each country.
- The UK customer base for paper has also contracted significantly. The decline of manufacturing industry from 25% of GDP in the 1970s to 11% of GDP today has impacted on the manufacturing customer base for paper products.
- Chief amongst that decline has been in newsprint and printing and writing customers. The proliferation of digital and social media news outlets since the emergence of the internet has hit print sales of both newspapers and magazines hard. For example, The Sun's circulation in 2019 is on average 1.4 million copies per day. In 2001, it was 3.6 million copies per day. For the Guardian, in 2001 average circulation was 410,000. In 2019 that has declined to 141,000.

51 There have however been some positives for the UK's Paper-based Industries in recent years.

- The growth of online shopping in the UK, from zero to nearly 20% of all shopping in 20 years has increased demand for corrugated and other fibre-based packaging products to protect goods for shipment to domestic customers.
- Overall, the retail sector remains strong in the UK, despite recent worrying store closures and retrenchment on the high street. Although the short-term picture shows volatility, UK retail continues to grow, which in turn increases demand for UK paper-based packaging.
- Hygiene products, made of tissue papers, have also seen an increase in demand over recent years. Some of this is driven by the growth in the UK population in that time, and other demand is driven by the ageing population, which has different needs.

- 52 Globally, the demand picture has some similarities to that for the UK industry.
 - Between 2013 and 2018, global newsprint demand fell from 28.4 million tonnes per year to 21.3 million tonnes. Similarly, for printings and writings demand fell from 107 million tonnes per year to 99 million tonnes¹.
 - Conversely, paper-based packaging demand increased at a global level from 219 million tonnes in 2013 to 247 million tonnes in 2018. Tissue papers demand increased from 32.4 million tonnes per year on 2013 to 37.7 million tonnes in 2018².
- 53 While the demand picture in the UK mirrors the global picture, unfortunately, that demand in the UK has not been met by UK production, but rather by imports.
- 54 The UK is the world's largest net importer of paper. In net terms, the UK imports 5.7 million tonnes¹ of paper per year, almost twice as much as the next largest net importer.
- 55 Across the EU there have been reductions in production of paper in the last 10 years, but none as severe as in the UK, as the following table shows.

UK			FRANCE			GERMANY		
2007 mt	2017mt	% change	2007 mt	2017mt	% change	2007 mt	2017mt	% change
5.2	3.9	-25%	9.9	8	-19%	23.2	22.9	-1%

- 56 UK production in 2017 is 45% of demand. In comparison with France, where it is 90% and in Germany, where it is 113%¹.
- 57 The recent changes in UK production has not been even. The following table shows the production track for the main products in recent years¹:

PRODUCT	DATE RANGE	PRODUCTION CHANGE	% CHANGE
Pulp	1997 - 2017	-400,000 tonnes	-64%
Newsprint	2008 - 2017	-469,000 tonnes	-44%
Printing and Writings	2013 - 2017	-88,000 tonnes	-22%
Packaging	1997 - 2017	-682,000 tonnes	-26%
Corrugated Case Material	2008 - 2017	+256,000 tonnes	+20%
Tissue	2013 - 2017	-68,000 tonnes	-8%
Speciality	1997 - 2017	-171,000 tonnes	-39%

Date ranges vary due to changes in statistical series. Date ranges have been chosen to ensure that data is comparable

- 58 The evidence above shows that UK paper demand has contracted markedly in the graphics and media sector but has been much more stable in the packaging and tissue sectors with potential for future growth. However, UK demand has been increasingly satisfied by imports, as the UK paper manufacturing industry has been out-competed by other countries, leading to a fall in UK production relative to those other countries.
- 59 The UK's Paper-based Industries are facing great competition from imported materials and also great competition to export their products. To improve the industry's competitiveness, and seize the potential growth opportunities, there are a number of steps which the industry and Government need to take, which are described in more detail below.

Opportunities for Growth in the UK

- 60 While the recent history of UK paper production has been challenging, there are real opportunities for future growth in the UK manufacturing of paper. Seizing these opportunities will require a new business model that uses high quality UK recovered paper as a valuable raw material for UK manufacturing, rather than an export commodity for world markets.
- 61 It will also require a supportive policy mix from Government, that sees the value in growing UK manufacturing and the opportunities for paper-based products to build a circular bioeconomy and meet to the carbon and recycling challenges ahead.
- 62 The biggest market driver for this growth comes from demand for sustainable packaging materials (such as corrugated cardboard with its excellent environmental performance) and increased demand for hygiene products.
- 63 Even in sectors such as printings and writings, where competition from digital media has led to a reduction in demand, the level of imports is such that there are good opportunities for UK growth to satisfy a greater proportion of UK demand.
- 64 Across all sectors therefore, there is a very significant opportunity for increases in UK production to displace material that is currently imported and drive growth in UK manufacturing.
- 65 The scale of this opportunity can be seen in the following table (all figures are in tonnes). The forecast figures have been prepared by CPI for this report.

PRODUCT	MEDIUM TERM DEMAND FORECAST	2017 PRODUCTION	MEDIUM TERM OPPORTUNITY FOR UK PRODUCTION GROWTH
Pulp	881,000	223,000	658,000
Newsprint	639,000	469,000	169,000
Printing and Writings	1,702,000	150,000	1,552,000
Packaging	4,326,000	1,583,000	2,743,000
<i>Of which Corrugated Case Materials</i>	<i>2,960,000</i>	<i>1,368,000</i>	<i>1,592,000</i>
Tissue	1,292,000	724,000	568,000
Speciality Papers	222,000	148,000	74,000
Total			5,764,000

- 66 The challenge, for both Government and industry is to adjust investment and policy plans to meet these opportunities and kick start renewed growth in UK manufacturing of both paper and its products.

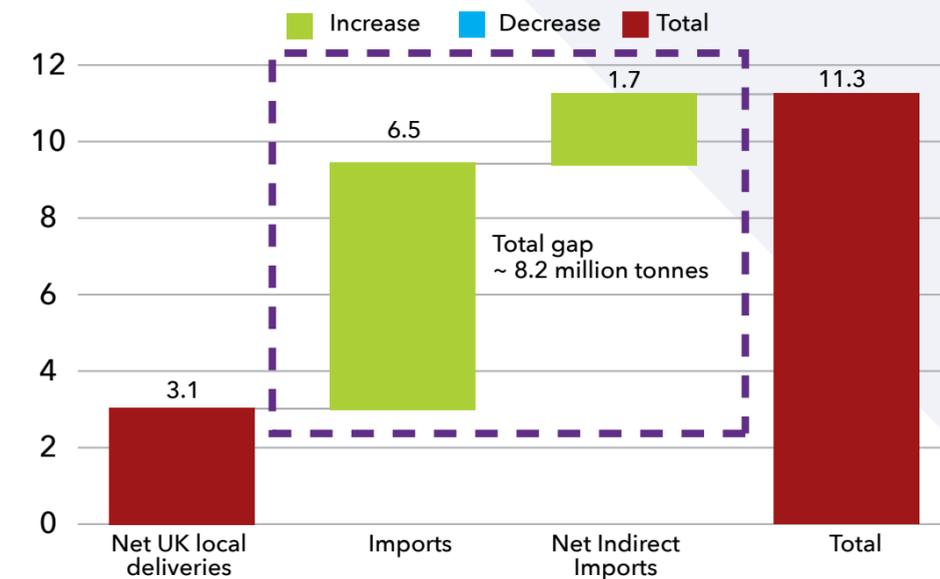
Demand Scenarios

- 67 The above forecasts represent a base case extrapolation of current UK market trends, and they make no assumptions as to UK production growth. However, there is significant volatility around that base case, and as set out below, several potential events might lead to a high or low case being appropriate.
- 68 In the high case, greater growth might be expected in demand for packaging and tissue products, with decline in the other products being less marked. In the low case, the graphics products would likely see accelerated decline, with growth in the packaging and tissue products being muted.
- 69 As already noted, the industry in the UK produced 3.9 million tonnes of paper. The local deliveries of the industry to meet the demand in the UK was 3.1 million tonnes and 0.8 million tonnes was exported. In addition, the UK imported 6.5 million tonnes of paper and paper products. Over and above this, the UK imported a further 1.7 million tonnes of paper in the form of transit packaging around imported goods.

HIGH CASE	LOW CASE
UK exits EU with an agreement and a soft landing to a new relationship	No deal Brexit
Lifting of Brexit uncertainty releases investment	Global trade tensions
Substitution of plastic products for fibre-based products increases	Tariffs on UK to EU exports weakens manufacturing
Industrial Strategy leads to greater UK competitiveness in manufacturing	Food industry exports to EU drop

- 70 Considering the net trade position, the gap between true demand (11.3 million tonnes) and what UK paper producers supplied to the domestic market (3.1 million tonnes) is 8.2 million tonnes. Of this, 6.5 million tonnes represents a good opportunity for UK producers. With the bulk of that gap being met by imported paper for further processing or sale in the UK, the key challenge is to encourage the re-shoring of UK manufacturing to supply both end customers and paper converters.

Gaps between UK net local deliveries and true demand (million tonnes)



Future Export Demand Opportunities for the UK's Paper-based Industries

- 71 The opportunity for the UK's Paper-based Industries is significantly greater than that suggested by the import substitution process set out above. A comprehensive review of export potential is beyond the scope of this report, but there are several interesting prospects that the UK's Paper-based Industries should be in a position to exploit.
- 72 Currently, the UK is the world's largest net importer of paper, with a net trade balance of -5 million tonnes per year¹. The UK currently exports around 0.8 million tonnes² per year of paper, but more importantly, we currently export about 5 million tonnes³ per year of paper for recycling, largely to the Far East (China) but also to the EU.
- 73 As an exporter of recovered paper, there are two major ongoing challenges. The first is the progressive closure of the Chinese market to recovered paper from overseas, and the second is the potential effect of Brexit, particularly the prospect of non-tariff barriers to the hitherto free trade in recovered paper between the UK and EU27.
- 74 Overall, the UK is long in recovered fibre, but short in forestry. The UK imports significant volumes of recycled paper, as well as the expected imports of Kraft pulp and paper.
- 75 There are therefore opportunities to invest in UK manufacturing to valorise the UK arisings of paper for recycling and to add value to them here rather than exporting the recovered paper for others to add value to overseas. In the UK we have demand for recycled paper and products that we cannot meet from current UK capacity, and we export the raw materials for those products. We hope that the Industrial Strategy will be able to encourage those investments.

KEY BARRIERS TO REALISING OPPORTUNITIES

- 76** While the opportunities are clear, there are also barriers to realising those investments that need to be addressed if the Industrial Strategy is to lead to a significant increase in UK paper manufacturing.

Capacity

- 77** While UK capability is not an issue, investment in new capacity is required to meet the new opportunities for UK supply of paper and its products. In the year 2000, the UK produced 6.6 million tonnes¹ of paper, and had a greater capacity than that, but successive closures have seen capacity reduced and definitively taken out of production. The UK has very little mothballed capacity to bring back online. This means that a c.£400m investment would be required for each new large-scale paper mill in UK, producing perhaps, 400,00 tonnes per annum, although incremental change to existing facilities and smaller mills would require a lower level of investment.

Competitiveness

- 78** The cost of industrial electricity is a major barrier to UK competitiveness for the pulp and paper industries. Pulp and papermaking is energy intensive, and the UK has the highest prices for industrial electricity for very large users in the EU27. This is a significant disincentive to invest in the UK, and a significant incentive to invest in EU27 countries and export to the UK.
- 79** Part of this challenge is the policy mix that the UK Government has chosen in pursuit of decarbonisation. In the UK, domestic users have been largely shielded from the costs of decarbonisation, while industrial users have faced the full weight of those costs, despite the welcome reliefs that the Government has made available. It is vital that the UK continues to reduce its use of fossil fuels and emissions of fossil carbon, but the current policy approach is open to the criticism of “decarbonisation by de-industrialisation” and the consequent carbon leakage that sees UK industry sacrificed to meet UK targets, but the embedded carbon in imported materials goes up and the planet is no better off.

Supply chain coordination

- 80** One characteristic of the UK's Paper-based Industries is the preponderance of non-UK owners of capital assets in the UK. For example, of the ten largest UK papermakers, nine are headquartered outside the UK. This is not a concern in principle, but it raises questions about the coordination of supply chains, especially where European or global customers are agreeing geographically wide-ranging supply contracts with European papermakers.
- 81** The challenge for the UK industry is to ensure that UK facilities are among the most competitive, efficient and profitable in the portfolio of their owners, such that they are in the first row, when investment decisions are being made. The industry, the Government and CPI all have a role to play in supporting this long-term competitiveness.

Collection of raw materials

- 82** The UK's Paper-based Industries are predominantly based on the manufacture of recycled paper. In 2018, UK paper mills converted some 3.2 million tonnes¹ of recovered paper into new paper. The productivity of this production is dependent on the quality of the raw materials that are collected by local authorities from households and small businesses.

- 83** CPI's research shows that over 60%¹ of paper is recovered by commingled collection, where paper is recovered alongside glass, plastics and metals. This leads to the paper being contaminated with moisture, food debris, and other materials, especially fine glass particles that can both damage machinery and compromise the quality of the finished paper. CPI estimates that each percentage point of contamination in the recovered paper supply chain costs the UK's Paper-based Industries £8 million².
- 84** CPI has published a set of Recyclability Guidelines (available at www.paper.org.uk) and launched a project entitled Our Paper (www.ourpaper.org.uk), both initiatives being aimed at improving the quality of recovered paper available for recycling in the UK. CPI hopes that the Government's Resources and Waste Strategy will result in meaningful policy change that will drive both separate collections and the redesign of paper products to minimise inherent contamination challenges.

CROSS-CUTTING ISSUES

- 85** As well as the issues that are specific to the Paper Industry, there are also several cross-cutting issues that have implications for paper, but which also concern other sectors and Government.

Investment

- 86** In the context of a Paper Industry that is largely owned outside the UK, a key challenge is in securing and retaining the levels of investment required. New investment is vital for this industry if it is to break its dependency on long lived investments and embrace the opportunities offered by transformational change.
- 87** A wider pool of investors is required, adding to the current fibre-based investors, new sources of capital seeking the returns that the circular bio-economy may offer. In each case, both the UK as a location, and the UK-based industry must show themselves to be competitive and at the head of the queue when it comes to investment decision making, much of which takes place outside the UK.

Skills

- 88** One of the key cross cutting issues for the UK's Paper-based Industries is the challenge of ensuring that the right skills are available at the right time for the economy. CPI has piloted the development of an Apprenticeship Framework for papermaking, but more work is needed to ensure that the right people, with the right skills for 21st Century manufacturing are available within the UK labour market, both from the UK and from overseas. The UK currently sources much of its training from Gernsbach in Germany, and it is not clear if that training route will be open after Brexit.
- 89** It is noteworthy that there are no undergraduate courses in paper science in the UK, although there are post-graduate courses available.

Materials transformation

- 90 The UK has started on a path of withdrawing from the use of fossil carbon-based products, such as plastics, and a focus on renewable materials such as paper and other fibre-based products.
- 91 This is a transformation at the society level. It is backed both by legislation (current and forthcoming), by campaigning organisations, and by individual purchasing decisions. This substitution of materials affects all products, especially packaging, and presents an opportunity for fibre-based product manufacturers to innovate to ensure that their products meet customer needs in a more sustainable way.

Decarbonisation

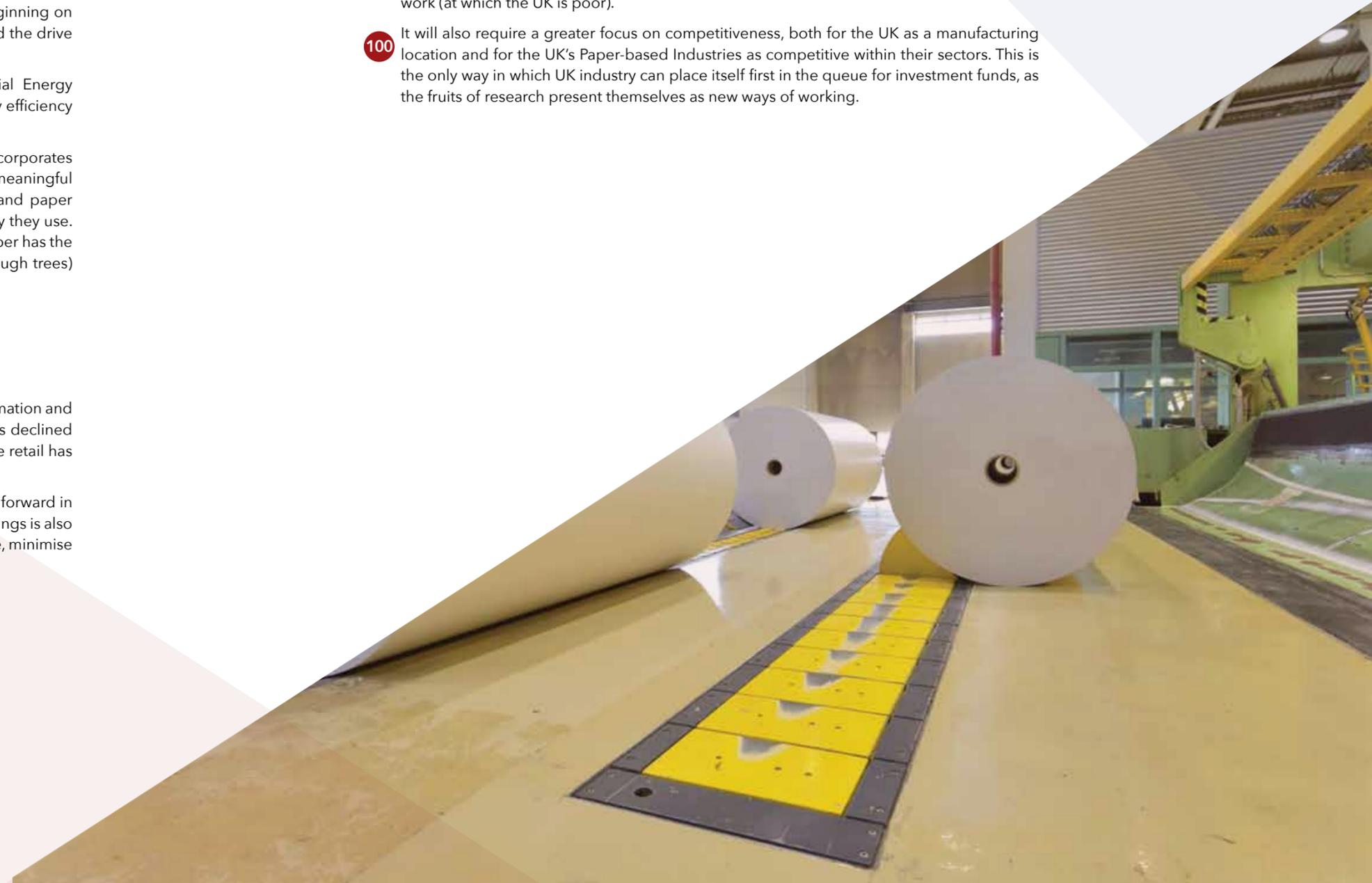
- 92 In common with all energy intensive industries, the UK's Paper-based Industries have a 2050 Decarbonisation Roadmap and Action Plan, agreed between Government and Industry. Implementation work is beginning on the Action Plan, and further work is underway to understand the impact of the Paris Agreement and the drive to zero-carbon by 2050.
- 93 Government is making further support available for the industry in the form of the Industrial Energy Transformation Fund, that should start work in 2020 and will distribute up to £315 million for energy efficiency projects.
- 94 The Paper-based Industries have two key carbon advantages. Firstly, by its very nature, the industry incorporates carbon capture and storage in trees. Managed forests, with sustainable harvesting, should make a meaningful contribution to the reduction of levels of atmospheric carbon dioxide. Secondly, papermaking and paper conversion do not cause process emissions of carbon; their only emissions coming from the energy they use. As low and zero carbon energy sources and storage become more available and cheaper to use, paper has the potential to play a key role as a carbon negative industry, that removes more carbon dioxide (through trees) from the atmosphere than it emits.

Digitisation and Internet of Things

- 95 For the UK's Paper-based Industries, digitisation is both opportunity and threat.
- 96 The initial impact of new information technologies has been to reduce demand for paper as an information and communications mechanism. Therefore, demand for newsprint and printing and writing papers has declined markedly in recent years. It has also led to an increased demand for corrugated packaging as online retail has grown.
- 97 However, digitisation also offers the opportunity for manufacturing industries to take a step change forward in productivity, by incorporating Artificial Intelligence into their operational practices. The internet of things is also an opportunity for smart packaging, that can monitor the location and condition of things in real time, minimise damage and maximise coordination efficiency as a result.

UK R&D

- 98 All the above will require a step change improvement in the ability of the UK manufacturing ecosystem to undertake research and development and successfully commercialise the results. The Industrial Strategy Challenge Fund is a welcome first step and the UK's Paper-based Industries look forward to participating in the Foundation Industries Wave Three project, which is expected to start in the second half of 2019.
- 99 A successful UK R&D ecosystem will require a cultural change in the UK, that prizes the organic development of companies through innovation, over the buy and sell mentality that has seen so many firms and innovations placed in overseas hands. It will also require a change in focus from incremental innovation aimed at customers (at which the UK is very good) towards fundamental research aimed at changing the way in which whole industries work (at which the UK is poor).
- 100 It will also require a greater focus on competitiveness, both for the UK as a manufacturing location and for the UK's Paper-based Industries as competitive within their sectors. This is the only way in which UK industry can place itself first in the queue for investment funds, as the fruits of research present themselves as new ways of working.



APPENDIX 1

About CPI

- 101** The Confederation of Paper Industries (CPI) is the leading trade association for the UK's Paper-based Industries. CPI was formed in 2000 as a confederation of the individual trade associations for the steps in the paper supply chain.
- 102** CPI represents 81 companies in that supply chain. These include paper and board manufacturers and converters, corrugated packaging producers, makers of soft tissue papers and collectors and processors of paper for recycling.
- 103** CPI is working to promote:
- a positive image for paper
 - secure energy supplies at competitive prices
 - resource efficiency within a coherent waste strategy
 - the benefits of packaging
 - a sustainable UK Paper Industry
 - manufacturing as a vital part of a balanced economy
 - a competitive, level playing field for the UK's Paper-based Industries

Optimism, Visibility, Community and Sustainability

- 104** CPI has four core values. We must be optimistic about the future of the Paper-based Industries in the UK. The Paper-based Industries in the UK have much to be proud about. They have cut carbon emissions by 63% relative to 1990 levels, they innovate in the development of new and exciting packaging and they lead the UK in recovery and recycling.
- 105** Our optimism needs to go hand in hand with greater visibility in and engagement with Westminster, Whitehall and Brussels. We need to shout louder, more often and in the right ears if we are to successfully influence UK Industrial Strategy and secure any opportunities arising from Brexit.
- 106** CPI will also help its Members develop roots in their local communities. Our industry is often one of the larger employers in a town, and our "licence to practice" depends on good relations locally and a positive perception of the benefits our industry brings to the community.
- 107** The fourth value is that of sustainability. CPI must retain attention on the fact that paper is a uniquely renewable and recyclable material and that these qualities make it the sustainable choice for a wide range of applications, today and long into the future.

APPENDIX 2

REFERENCES:

- 11.1 Sources: CPI; HM Revenue and Customs; Environment Agency's 'National Packaging Waste Database', <https://npwd.environment-agency.gov.uk/> Paper and board consumption calculated as: [Domestic production of papers and boards] + [Net imports of paper and board products] + [Net imports of paper-based transit packaging around imported commodities]
- 11.2 Sources: as 11.1 plus ONS population estimates <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates> and ONS average family size (2015 data) <https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/families/adhocs/006257averagefamilysizeukandconstituentcountries2015> UK average family size was 2.84 persons in 2015
- 12.1 Sources as 11.1
- 13.1 Sources: CPI, as 11.1 and 11.2; Confederation of European Paper Industries, Annual Statistics 2016
- 14.1 Source: RISI Annual Review 2017
- 15.1 Source: CPI data collected from members
- 15.2 Chart 4a, Source as 15.1
- 15.3 Chart 4b, Source: RISI Annual Review 2017
- 15.4 Chart 4c, Source: RISI Annual Review 2017
- 16.1 Source: ONS Annual Business Survey <https://www.ons.gov.uk/businessindustryandtrade/business/businessservices/bulletins/uknonfinancialbusinesseconomy/previousReleases>
- 17.1 Source: CPI member surveys
- 18.1 Source: ONS Annual Business Survey, as 16.1. Total employment average during the year, 2016
- 18.2 Source: As 18.1 with 'Employment multiplier' for SIC 17 = 1.531 from ONS UK Input-output Analytical Tables 2013 <https://www.ons.gov.uk/economy/nationalaccounts/supplyandusetables/datasets/ukinputoutputanalyticaltables-detailed>
- 20.1 Charts 7a and 7b, Source: Eurostat RAMON Metadata Server http://ec.europa.eu/eurostat/ramon/index.cfm?TargetUrl=DSP_PUB_WELC
- 22.1 Source: CPI data collected from members
- 23.1 Source: CPI data collected from members
- 24.1 Source: ONS Annual Business Survey, as 16.1
- 26.1 Sources: CPI; HM Revenue and Customs and Environment Agency's 'National Packaging Waste Database'. Recycling rate calculated as [Collection of papers and boards] / [Consumption of papers and boards (as defined in 11.1)] where collection of papers and boards is defined as [Domestic recycling of papers and boards] + [Net exports of papers and boards]
- 27.1 Sources: Environment Agency's 'National Packaging Waste Database' recycling of paper and board by accredited companies (3.754 million tonnes) and WRAP/Valpak 'Packaging placed on the market' figure, 2014-2020 = 4.749 million tonnes
- 27.2 Sources: CPI; HM Revenue and Customs
- 28.1 Source: CPI data collected from members
- 28.2 Source: CPI estimate
- 28.3 Source: HM Revenue & Customs
- 28.4 Source: HM Revenue & Customs
- 29.1 Source: CPI contamination costs analysis
- 31.1 Source: FEFCO
- 31.2 Source: CPI analysis of data collected from members
- 34.1 Source: CPI data collected from members
- 34.2 Source: CPI data collected from members
- 37.1 Source: CPI survey of member environmental data, 2015
- 40.1 Source: CPI sectoral accident and injury surveys
- 41.1 Source as 14.1
- 42.1 Source as 11.1
- 42.2 Source: CPI data collected from members
- 42.3 Source: Environment Agency's 'National Packaging Waste Database' as 11.1
- 42.4 Source: CPI analysis of HM Revenue & Customs data
- 43.1 Charts 17a/b/c/d, Source: HM Revenue & Customs
- 49.1 Source as 11.1
- 49.2 Source: CPI annual calculations of apparent consumption as 11.1
- 49.3 Source as 49.2
- 49.4 Source as 49.2
- 52.1 Source: RISI Annual Review 2017
- 52.2 Source: RISI Annual Review 2017
- 54.1 Source: RISI Annual Review 2017
- 56.1 Source: CPI analysis of CEPI annual data
- 57.1 Source: CPI
- 60.1 Source: CPI internal forecasting
- 61.1 Source as 60.1
- 64.1 Source as 60.1
- 72.1 Source: RISI Annual Review 2017
- 72.2 Source: CPI
- 72.3 Source: HM Revenue & Customs
- 77.1 Source: CPI
- 82.1 Source: CPI data collected from members
- 83.1 Source: CPI analysis
- 83.2 Source as 29.1

APPENDIX 3

Defining the Industry

- 108** Papermaking in the UK has been in existence for hundreds of years, dating back to the 15th century, and the principles of making paper and some of the skills that were used back then are still evident today.
- 109** In a fiercely competitive global market, innovation, quality, design and service levels are critical to maintaining market share. The level of skills and techniques required to maintain, not only the traditional skills of papermaking, but also the knowledge and essential skills to operate in all other aspects of modern hi-tech industry are crucial to sustaining the UK's Paper based Industry.

Scope of the Industry Today

- 110** The scope of this report covers the following areas of the UK's Paper-based Industries.
- The manufacturing of paper
 - The conversion of paper into corrugated packaging
 - The conversion of paper into tissue for hygiene products
 - The recovery and recycling of paper from both business and consumers

Customer Groups

- 111** Paper is a ubiquitous product. Products made of paper and board are sought after by a wide variety of customer groups. Some customers, such as printers, use paper as an intrinsic part of their final product. For others, paper-based packaging is essential in ensuring that their own products get to market with the highest quality.
- 112** The following list is a small sample of the key customer groups for paper products and the products that they use:

- The NHS
 - a. Surgical masks
 - b. Surgical clothing
 - c. Disposable sanitary products
- Food manufacturers
 - d. Transit and shelf-ready packaging for food products
 - e. Cereal boxes, egg boxes
 - f. Tea bag papers
 - g. Greaseproof papers
- Industrial manufacturers
 - h. Electrical insulation
 - i. Battery separators
 - j. Plasterboard liner for construction
 - k. Engine filter papers
 - l. Industrial hygiene products
- Online retailers
 - m. Corrugated boxes for delivery shipments
- Supermarkets
 - n. Point of sale packaging and promotional materials
- Printers and publishers
 - o. Newsprint for newspapers and magazines
 - p. Graphic papers for posters and promotional materials
 - q. Papers for book and document printing
- Fast Moving Consumer Goods (FMCG)
 - r. Packaging for high-end consumer goods
- Domestic consumers
 - s. Toilet tissue
 - t. Kitchen paper
 - u. Nappies
 - v. Hygiene products
 - w. Stationery and books
 - x. Passports and currency

Paper - the sustainable, renewable choice

Confederation of Paper Industries Ltd,
1 Rivenhall Road,
Swindon,
Wiltshire SN5 7BD
Tel: +44(0)1793 889600
Email: cpi@paper.org.uk
Web: www.paper.org.uk



facebook.com/Confedofpaper



twitter.com/@Confedofpaper



linkedin.com/company/confederation-of-paper-industries

Confederation of Paper Industries Ltd
A company limited by guarantee. Registered Number 3886916
Registered in England and Wales
Registered Office: 1 Rivenhall Road, Swindon, Wiltshire SN5 7BD

- Designed and produced by Bob Child - www.peartreestudios.co.uk
- Printed by Park Lane Press Ltd - www.parklanepress.co.uk
- Printed on:
 - Novatech and James Cropper PLC - Porcelain