



MONITORING REPORT 2021

European Declaration on Paper Recycling 2021-2030



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PAPER RECYCLING IS CONTINUOUSLY GROWING IN EUROPE

1

Since 2000, the European paper value chain has been committed to the two-fold aim of improving recycling and increasing efforts to remove obstacles hampering paper recycling in Europe. In 2021, the signatories of the European Declaration on Paper Recycling declared their commitment to reach a 76% paper recycling rate by 2030. The new European Declaration on Paper Recycling 2021-2030 was published on 29 June 2022.

In 2021, 71.4% of all paper and board consumed in Europe was recycled. Both consumption of new paper and board and collection of Paper for Recycling (PfR) have increased. The consumption of paper and board has strongly recovered after the lifting of many pandemic-related restrictions. It reached a level higher than in 2019, before the Covid-19 pandemic.

With regard to the collection of PfR, there has also been growth, but collection levels recovered more slowly. As a result, the recycling rate slightly decreased in 2021 compared to 2020. The full effect of this high increase in paper and board consumption

on collection levels may only become visible in the 2022 figures. Nevertheless, the use of PfR continued growing thanks to important investments in new recycling capacities in Europe, indicating an overall continuous increase in paper recycling in Europe.

For the commitment period of 2021-2030 the recycling rate calculations will be independently verified by Deloitte.

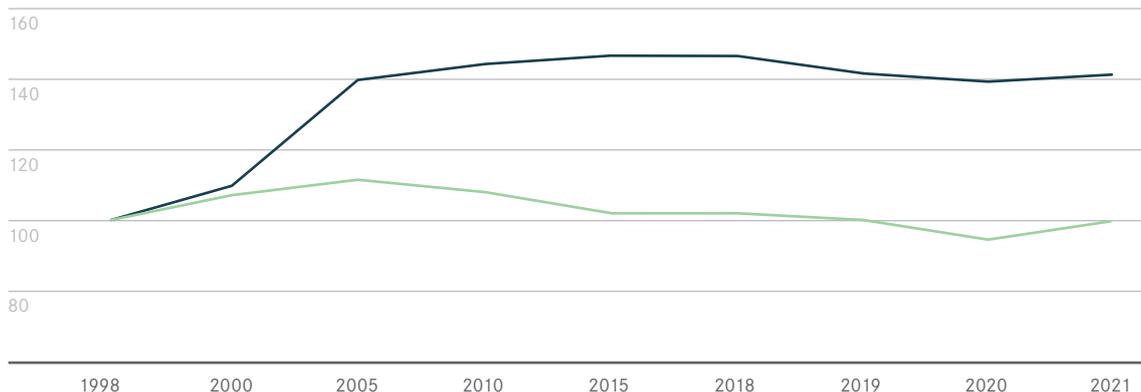
At regional level, the number of countries with a recycling rate below 60% was 10 in 2021, up from 8 in 2020. In 2021, the number of countries exceeding recycling rates of 70% was 13, down from 15 in 2020. Looking at the developments in the different paper and board grades, for the first time in several years, the consumption of all graphic papers increased in 2021 (by 2.7%) The consumption of case materials increased by 9.9%, while tissue papers saw a small decline.

At international level, Europe continues to be the world champion in paper recycling followed by North America. The paper recycling rates of other world regions are improving, but from lower levels. In Europe, paper fibres were used 3.5 times on average in 2021, while the world average was 2.5 times. The EU has increased its targets for the recycling of municipal and packaging waste; it is clear that the well-functioning paper

PAPER RECYCLING VS PAPER CONSUMPTION

— Paper Recycling — Paper Consumption

INDEX (1998 = 100)



recycling chain is a key driver for meeting these targets. Paper recycling is a “Made in Europe” industry. It prolongs value creation and job opportunities in Europe from a renewable and predominantly European resource: wood.

Making recycling easy and simple, year after year, requires a huge effort by the paper value chain. We explain these efforts in our annual monitoring reports and are proud of the progress made.

2

RECYCLING RATE 2021: 71.4%

In a year to year comparison, the total amount of paper and board collected and recycled in the paper sector in 2021 increased by 2% to 57.1 million tonnes, while consumption of paper and board increased by 4.8% to 80 million tonnes. The recycling rate is defined as the ratio between the recycling of used paper, including net trade of PfR, and paper and board consumption. The net trade of PfR is included in the European paper recycling rate (71.4% in 2021). As consumption of paper and board grew more than the recycling of paper and board within and outside Europe, the recycling rate decreased from 73.3% in 2020 to 71.4% in 2021.

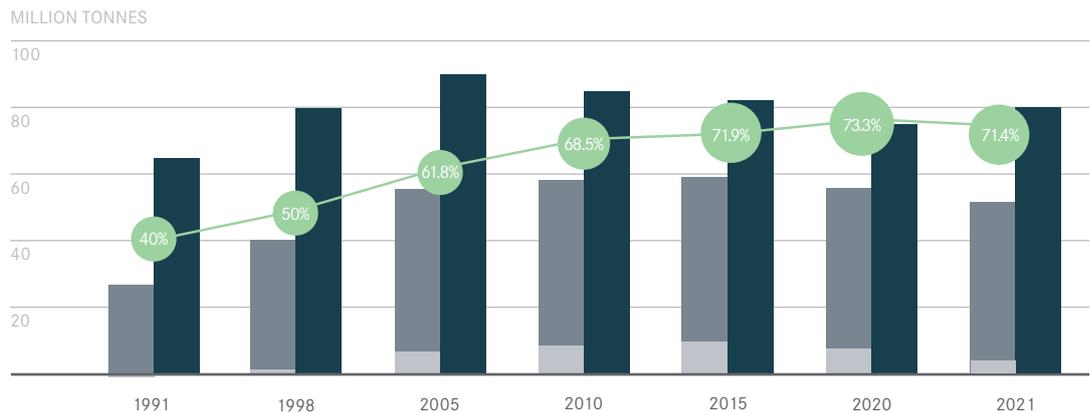
Looking back at the progress made since 1998 – the base year for the first voluntary commitment set in the European Declaration on Paper Recycling – recycling has increased by 43% (17.1 million tonnes). In strong contrast, consumption since 1998 increased up until 2007 and dropped back below the initial level in the following years.

In the European paper industry, the use of PfR increased in 2021 to 52.4 million tonnes, an increase of 5.7%. This is mainly due to important investments in new recycling capacities. A net volume of 4.9 million tonnes (8.5% of the total 57.1 million tonnes) was bought by third countries, outside the commitment region (EU-27, the United Kingdom, Norway and Switzerland). The formerly high Chinese demand for European PfR has decreased to levels close to zero. This is in line with the Chinese government’s decision to reduce its dependency on secondary raw materials originating from third countries by 2020. Today, the main export destinations of European PfR are India, Turkey and Indonesia. Other countries, such as Vietnam and Thailand, have increased imports of European PfR too, but overall net exports of PfR outside Europe have diminished by -24.7% compared to 2020.

EUROPEAN RECYCLING 1991-2021

Source: Cepi 2021

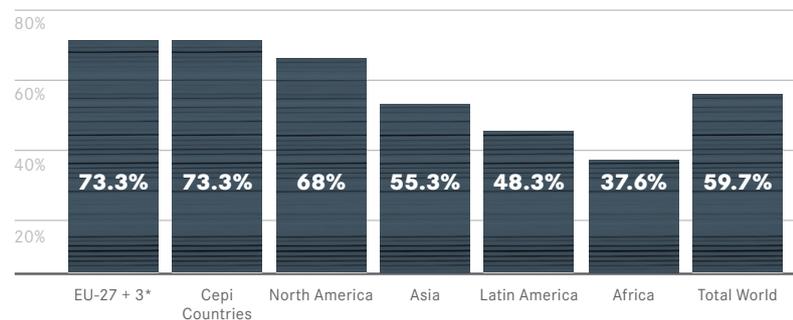
- Recycling outside Europe
- Recycling inside Europe
- Paper and Board consumption in Europe
- Recycling Rate



RECYCLING RATE IN WORLD REGIONS IN 2020

Cepi, Fastmarkets RISI – 2020

*EU-27 + 3: EU-27 + Norway, Switzerland and the United Kingdom



Europe is the paper recycling champion!

Report on domestic recycling rate:

The new European Declaration on Paper Recycling 2021-2030 introduces a more consistent monitoring of the domestic recycling rate excluding net trade. The reporting will only take into consideration PfR utilisation in European paper mills divided by paper and board consumption, excluding the net trade. The domestic recycling rate in 2021 was 65.5% and has been consistently increasing for several years.



NATIONAL RECYCLING RATES IN EUROPE

13 European countries exceeded the 70% recycling rate (15 in 2020).

10 European countries were below 60% (8 in 2020).

Source: Cepi 2021

PROGRESS IN QUALITATIVE TARGETS

3

The EPRC members, representing 14 sectors along the European paper recycling value chain, have committed to improving the paper recycling rate by 2030. By joining the European Declaration on Paper Recycling, they demonstrate their commitment to achieving qualitative targets. EPRC members are involved in initiatives to facilitate the recycling process and increase recycling activity. These notably include collection, sorting, handling Paper for Recycling, and applying ecodesign to paper products.

COLLECTION

Separate collection of paper and board is the most effective way to increase the circularity of the product and its recyclability potential by keeping the materials clean. Separate collection significantly increases the volume of high-quality secondary raw materials available for recycling, by creating a more predictable, high-quality waste stream and hence a strong incentive for investment and innovation in sorting and recycling technologies, creating green economic growth.

The European Commission is conducting a study on separate collection of municipal waste to explore the possible harmonisation of waste collection and improve the performance of waste management systems. This work comes within the scope of the next revision of the Waste Framework Directive (envisaged for 2023) in order to attain the ambitious targets for the recycling of waste materials. The preparatory work started in early 2021 and will run until the end of 2022. Policy recommendations on separate collection of waste may be produced as an outcome of the study that will be a basis for the upcoming revision of the Waste Framework Directive.

In 2021, the Confederation of European Paper Industries (Cepi) was committed to promoting the “Guidance on how to implement separate collection of paper for recycling¹” in meetings with institutional and non-institutional stakeholders. Furthermore, the guidance was referenced in several advocacy materials within the scope of the revision of the Packaging and Packaging Waste Directive and the preparatory work for the next revision of the Waste Framework Directive. The guidance underlines that paper and board should not only be collected separately from residual waste but also from other recyclables, such as metal and plastic packaging. Separate collection is required by European legislation, optimises cost in the recycling value chain and is simple and easy for consumers. As well as examples of recycling routes for specific products, the guidance contains action points for municipalities. In addition, Cepi has published the Cepi vision on paper collection and sorting in Europe² which was also used as input in consultation processes with the European Commission, in particular in the preparatory work for the next revision of the Waste Framework Directive and the study on further harmonisation of separate collection of municipal waste. Cepi’s vision on paper collection and sorting explains a two-bin system for discarding paper-based packaging.

In March 2021, the Alliance for Beverage Cartons and the Environment (ACE) members adopted their 2030 Roadmap setting out an ambitious vision aspiring to deliver the most sustainable packaging for resilient food supply systems which is renewable, climate-positive and circular. To reach this vision, ACE members adopted 10 commitments from sourcing and forestry to recycling. Within this scope, ACE committed to

having 90% of beverage cartons collected and a minimum of 70% of beverage cartons recycled by 2030. The Beverage Carton industry will have its recycling rates verified by an external third party. Furthermore, ACE has actively advocated at EU and national level in favour of a mandatory collection target for beverage cartons. In countries where the collection rate is insufficient, a deposit return scheme should be installed covering all beverage cartons. A collection target provides the performance target, supporting transparency about collected/recycled materials and accurate reporting on collection and/or recycling rates. This would also meet consumer’s expectations.

The European association for self-adhesive labels and related products (FINAT) continued working on the CELAB project³. The project is now working together with collectors and recyclers to enhance the collection and recycling of used release liner from self-adhesive labels. Release liner is collected at the point of application of the labels (e.g. brand owners, e-commerce warehouses, logistic companies) and transported to recyclers able to use the siliconised glassine as secondary raw material. The CELAB project provides a list of available European solution providers⁴.

The International Association of the Deinking Industry (INGEDE), together with co-sponsors from Germany, launched a project on the quality of PFR coming from sorting plants. The scope of the work also includes the assessment of technical measurements and the exchange of quality data. INGEDE runs a Working Group on Paper for Recycling with sub-groups dealing with availability, sorting plants and alternative sources. In this context, INGEDE also supports and monitors the project EnEWA⁵ which will look into sources of PFR which are not used at all or are used in a restricted way.

Cepi and INGEDE have continued to contribute to a CEN technical specification on the application of the term “prohibited materials” in the EN 643 – European list of grades of paper and board for recycling. The CEN Technical Specification CEN/TS 17830 guides users on how to handle used food contact paper articles. These can contain stains or traces of food that cannot be avoided in the collection of post-consumer material and are not removable mechanically. The guidance clarifies that such stains and traces should only be tolerated if certain conditions are fulfilled. CEN/TS 17830 also gives guidance on specific types of tissue products such as selectively collected hand towels, kitchen towels, mats and napkins. Its publication is planned for autumn 2022.

¹ https://www.cepi.org/wp-content/uploads/2020/10/19-2905_Industry-position-paper-on-separate-collection_A4_20190903.pdf

² <https://www.cepi.org/wp-content/uploads/2022/01/Cepi-vision-on-paper-collection-and-sorting.pdf>

³ Winner of the 2021 EPRC Paper Recycling Awards. Information and Education Category

⁴ <https://celabglobal.org/resources/interactive-tools/european-map/>

⁵ Winner of the 2021 EPRC Paper Recycling Awards: Innovative Technologies and R&D Category

In further standardisation related work, INGEDE contributed to the technical work on one revised and one new standard – the determination of dry matter content of pulp now includes Pfr (ISO 638-1) and the determination of the composition of Pfr was published in 2021 as EN 17545.

ECODESIGN

Cepi has revised the Cepi recyclability laboratory test method version 1. The test method emulates the most common phases of the industrial processes, to measure the main parameters of recyclability of paper and board-based materials and other cellulose fibre-based products based on current knowledge and technology.

The revised Cepi recyclability laboratory test method is used by 4evergreen as a basis to develop a standardised, publicly available, Recyclability Evaluation Protocol for fibre-based packaging. The protocol is used to specify which fibre-based materials can be recycled using which type of mill technology.

In addition, 4evergreen has published its Circularity by Design Guideline for Fibre-Based Packaging⁶. The document is intended for the evaluation of compatibility of materials and components with standard mill processes. A recommendation on the suitability of special recycling processes and recycling including deinking will be implemented in further versions in 2022.

ACE will release a Design for Recycling Guideline for beverage cartons by the end of 2022. It will provide producers of beverage cartons with technical guidance to:

- Evaluate the recyclability of beverage cartons on the market today
- Specifically focus on how the recyclability of beverage cartons can be optimised.

The guideline will be reviewed on a yearly basis to ensure it reflects technological developments.

ACE members have been instrumental in the development of recycling solutions for multi-layered materials. In addition to some initiatives by private companies, e.g. in Italy, the Netherlands and Czech Republic, the manufacturers of beverage cartons have invested in the recycling of plastic/aluminium in Germany and (soon to be operational) in Poland. The aim is to ensure that the fibre and non-fibre components of collected beverage cartons are fully recycled.

INGEDE is active on testing and assessing the recyclability of paper products. In the past, the focus was on graphic products and packaging products on white substrates. INGEDE co-sponsored projects to adapt test methods to fibre-based packaging and made a mill-scale test with metallised board. In the graphic sector, own and third party projects on the deinkability of flyers, UV printing and coldset products, printed with mineral oil free inks, were carried out.

In addition, INGEDE was involved in the definition of a new ecolabel in Germany for thermal papers, published in 2022 as Blue Angel DE-UZ 223. The focus was on the new, developer-free thermal papers with a black inside coating; their impact on the optical properties of deinked pulp had been assessed and the findings were considered in the criteria.

The European Printing Ink Association (EuPIA) and INGEDE provided expertise to the revision process of the criteria of the Blue Angel. The revised Blue Angel on printed matter was published in January 2021⁷. EuPIA provided expertise to the revised Nordic Ecolabelling criteria published in March 2021⁸.

RESEARCH AND DEVELOPMENT

Companies from the Pulp and Paper Industry (PPI), along with partners from academia, public authorities, waste generators and end users, created a consortium of 20 partners from 5 countries. The PAPERCHAIN project introduced an industrial symbiosis model focused on the use of different waste streams generated by the European PPI, as valuable feedstock for three resource-deficient industrial sectors: construction, mining and the chemical industry.

By turning waste into resources for other industries, the project made an important contribution to reducing landfills, protecting natural resources and cutting carbon emissions. The solutions are based on circular economy models designed to enable the sustainable reuse of waste and have been tested in large-scale trials in four EU countries (Spain, Portugal, Slovenia and Sweden).

INGEDE started two dedicated research activities on brightness. This work came as a result of several deinking mills reporting difficulties in reaching their brightness targets. INGEDE conducted a thorough investigation into the deinking processes and an assessment of a certain group of printed products – flyers with high ink coverage on low-weight paper. Both projects ran into 2022.

EDUCATION AND INFORMATION

EPRC signatories, Cepi and ACE, are members of Greensource. Greensource is a joint campaign founded by Cepi, boosting the image and visibility of the paper industry and educating about its goals and achievements. The paper industry's achievements in product circularity and high recycling rates are the focus of this information campaign. In addition, the platform is a space where the paper industry can communicate its commitment on recycling.

ACE members, via the national beverage cartons associations present in 7 Member States, the United Kingdom and Switzerland, via the regional directors in Iberia, Italy, central European countries, or as companies support awareness campaigns and the exchange of best practices on recycling technologies. In some cases, national associations support collection schemes.

INGEDE had the opportunity to present recyclability topics at 12 events during 2021. A further dozen were media activities such as articles, panel discussions, interviews and podcasts in addition to the regular INGEDE news and website. Due to the COVID-19 pandemic, many events were held online. The issue of problems with the deinkability of some print products in advertising was discussed. Particularly, the fact that environmental awareness requires ecolabels more and more often for printed products too. Ecolabels, and some design guidelines require proof of deinkability, and if applicable, proof of removability of adhesive applications. Many product developers are unaware of these requirements.

The European Adhesive Tape Association's (AFERA) German member IVK (Industrieverband Klebstoffe or German Adhesives Association), provided information in the "Technical Briefing Note 8 Behaviour of Hotmelt Applications in the Paper Recycling Process"⁹ to interested stakeholders relating to the correlation between some parameters of the application – cohesion and layer thickness of the adhesive application and the softening point of the hot melt adhesives – and their removability during the paper recycling process.

⁶ <https://4evergreenforum.eu/wp-content/uploads/4evergreen-Circularity-by-Design-2.pdf>

⁷ <https://www.blauer-engel.de/sites/default/files/2021-07/be-factsheet-printed-matter-en-2021-03-16-web.pdf>

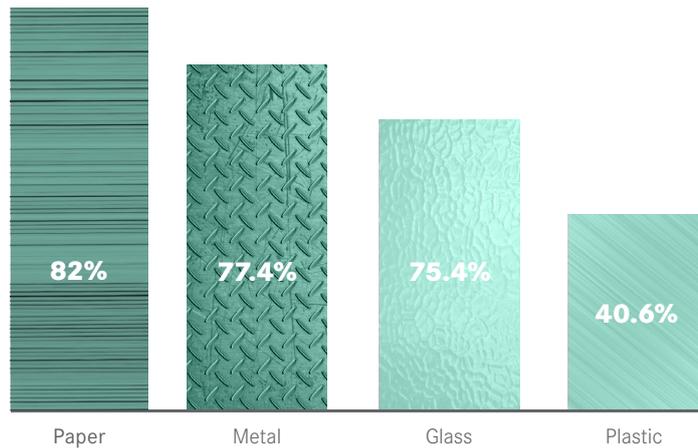
⁸ <https://www.nordic-ecolabel.org/product-groups/group/?productGroupCode=041>

⁹ https://www.klebstoffe.com/wp-content/uploads/2020/09/TKPV_MB_8_-Hotmelt_Applications_in_Paper_Recycling_Process.pdf

Paper and board is the most recycled packaging material in Europe

2019 PACKAGING RECYCLING RATES

Source: EUROSTAT



4EVERGREEN: THE NEW FORUM FOR THE FIBRE-BASED PACKAGING VALUE CHAIN

4



4evergreen (4EG) is an ambitious cross-value chain alliance initiated by Cepi in November 2019, and now counting almost 70 members across the fibre-based packaging value chain, from paper and board producers to packaging converters, brand owners and research institutes, technology and material suppliers, waste sorters and collectors. Its aim is

to look at recyclability and design for recycling, with a view to further boosting the contribution of fibre-based packaging in a circular and sustainable economy that minimises climate and environmental impact. It will deliver a holistic approach to optimise the sustainability and circularity of the fibre-based packaging's life cycle.

The ascent of environmental awareness has prompted companies to accelerate their demand for and development of alternative packaging materials, including fibre-based packaging, with a view to helping consumers make more environmentally and climate-friendly choices. The European Directive on Single Use Plastics (2019/904) was an additional catalyst for taking action on coatings and barriers used on paper and board packaging articles.

With these concerns at heart, and as a circular economy leader, the fibre-based packaging industry created 4evergreen to further improve circularity at every stage of the packaging's life cycle.

4EG seeks to innovate packaging performance and functionality as well as improve performance in recycling systems in order to reach the full potential of the circular economy. Fibre-based packaging is already a strong contributor to the European circular bio-based economy: 83% of paper and board packaging is recycled. This means that, in volume, we recycle more than all other packaging materials combined. The wide participation along the entire packaging life cycle allows us to identify and advance systemic improvements.

4EG has set a very ambitious recycling target, to reach a 90% recycling rate for fibre-based packaging by 2030.

To reach our shared goal, the Alliance has identified four intermediary targets to be met by 2025:

1. Industry adopts 4EG's Recyclability Evaluation Protocol and its Circularity by Design Guidelines for Fibre-based Packaging.
2. Separate collection streams are available for all fibre-based packaging types, including those used in household, out-of-home, and on-the-go consumption.
3. All PfR is sorted according to the different paper and board categories specified in the EN 643 standard.
4. All collected fibre-based packaging, specifically from household, out-of-home, and on-the-go consumption, is recycled.

DATA QUALITY: 2021 DATA

The data used to calculate recycling rates is collected by Cefi and comes from a questionnaire sent to its national member associations in 18 countries (Austria, Belgium, Czech Republic, Finland, France, Germany, Hungary, Italy, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom). Cefi's national associations supply the data, collected from their members' mills and companies, as well as official sources where appropriate.

The data in this report includes Pfr utilisation and trade plus paper and board production, trade and consumption for non-Cefi members of the EU-27 (Bulgaria, Croatia, Cyprus, Denmark, Estonia, Greece, Ireland, Latvia, Lithuania, Luxembourg and Malta), and Switzerland. The data is obtained from AFRY Management Consulting.

After submission to Cefi, the data may be adjusted by the source, in particular the trade data obtained from customs authorities. Cefi takes the adjustments into account, with the figures being considered as final and published in the subsequent report (e.g. 2021 figures in this report).

Following this rigorous process, the 2020 recycling rate was revised and updated at 73.3%.

For certain countries, the calculation of the mass of recycled paper and board based on Pfr utilisation and net trade has not produced a result considered to adequately reflect reality. Consequently, recycling in these cases has been based on actual paper and board collection for the specific purpose of recycling.

Other countries have adjusted paper and board consumption figures with the opposite impact.

All historical annual recycling rates have been recomputed based on the revised calculation methodology.

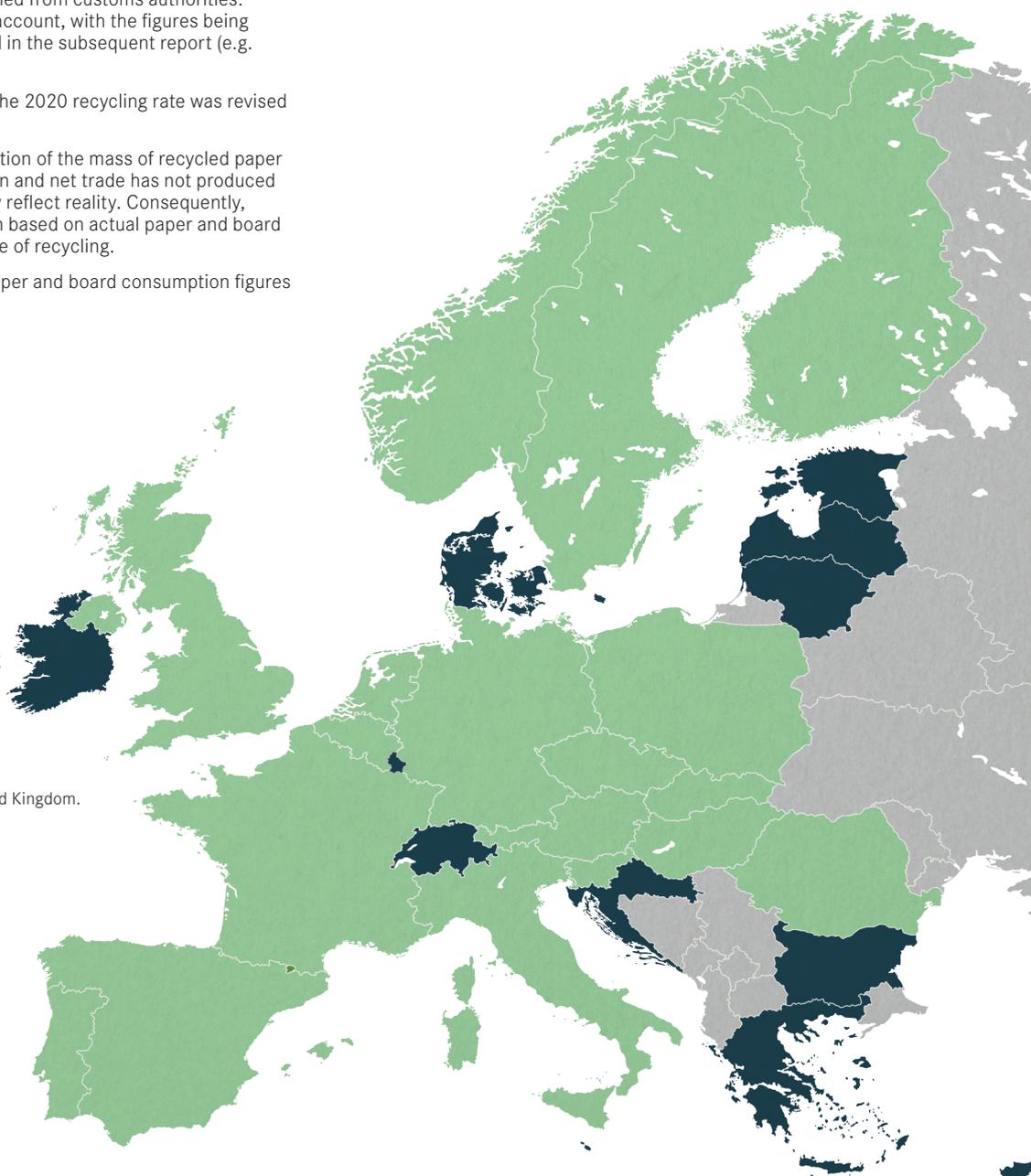
Cefi has commissioned an external verification of the recycling rate calculation since 2000 (see Assurance Reports 2011 – 2015 by EY, 2006 – 2010 by **PricewaterhouseCoopers** and 2000 – 2005 by **Pöyry** in the respective Annual Reports). Since 2015, external verification has been conducted by Deloitte and this contract has been extended for the ongoing period of the European Declaration.

As an annual exercise, data quality will be assessed using a method recently adopted by the European Commission for organisation and product environmental footprints. Specifically, this will cover geographical representativeness, time-related representativeness, completeness and the uncertainty parameter. Cefi will publish the assessment results on its website.

- Data collected by Cefi members
- Data obtained from AFRY Management Consulting

² Finland, France, Sweden.

³ Belgium, Finland, Sweden, the United Kingdom.



The European Paper Recycling Council (EPRC) was set up as an industry self-initiative in November 2000 to monitor progress towards meeting the paper recycling targets set out in the 2000 European Declaration on Paper Recycling. Since then, the commitments in the Declaration are renewed every five years.

The EPRC committed itself to meeting both a voluntary recycling rate target of 76% in the EU-27 plus the United Kingdom, Switzerland and Norway by 2030 as well as qualitative targets in areas such as waste prevention, ecodesign, and research and development.

Signatories



www.cepi.org



www.citpa-europe.org



www.emfa.eu



www.ingede.org



www.europeantissue.com



www.fepe.org



www.intergraf.eu



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