



MONITORING REPORT 2022

European Declaration on Paper Recycling 2021-2030



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PAPER RECYCLING IN EUROPE

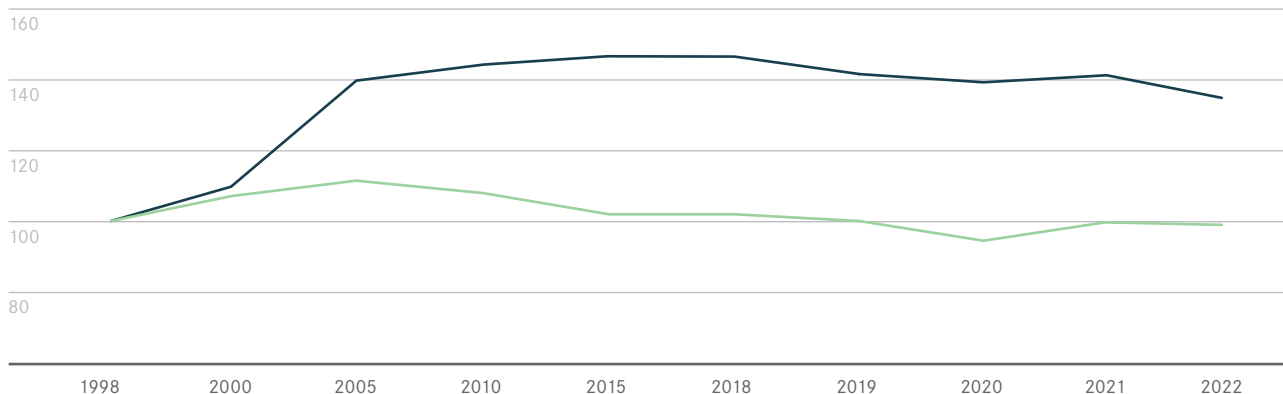
Since 2000, the European paper value chain has been committed to the two-fold aim of improving recycling and increasing efforts to remove obstacles hampering paper recycling in Europe. In 2021, the signatories of the European Declaration on Paper Recycling declared their commitment to reach a 76% paper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

Both consumption of new paper and board and collection of Paper for Recycling (PfR) decreased (-1.8% and -5.0% respectively). As a result, the recycling rate decreased in 2022 compared to 2021. In 2022, 70.5% of all paper and board consumed in Europe was recycled. The impact of the war in Ukraine and the energy crisis, as with many sectors, impacted the Paper for Recycling market. The high electricity and gas prices have had a disproportionate impact on the operation of paper mills consuming PfR. Mills consuming PfR are more dependent on gas supply for their energy consumption when compared to mills using virgin fibres as feedstock and thus energy crisis impacted more PfR utilization, resulting in a small decrease in the utilisation of PfR despite the significant investments made in new recycling capacities in Europe during the previous year.

PAPER RECYCLING VS PAPER CONSUMPTION

— Paper Recycling — Paper Consumption

INDEX (1998 = 100)



At regional level, the number of countries with a recycling rate below 60% was 7 in 2022, down from 9 in 2021. In 2022, the number of countries exceeding recycling rates of 70% was 14, down from 16 in 2021.

Consumption of all grades of paper and board decreased in 2022, except sanitary papers (+3.5%) and cartonboard (+6.5%).

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 2022, 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 recycling chain is a key driver for meeting these targets. Paper recycling is a “Made in Europe” industry. As collection, sorting and recycling take place in Europe, paper recycling 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. For the commitment period of 2021-2030 the recycling rate calculations are independently verified by Deloitte.

RECYCLING RATE 2022: 70.5%

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In a year to year comparison, the total amount of paper and board collected and recycled in the paper sector in 2022 decreased by 5.0% to 54.9 million tonnes, while consumption of paper and board decreased by 1.8% to 77.9 million tonnes. The recycling rate is defined as the ratio between the recycling of used paper, including net trade of PFR, and consumption of new paper and board. The net trade of PFR is included in the European paper recycling rate (70.5% in 2022). As consumption of paper and board decreased less than the recycling of paper and board within and outside Europe, the recycling rate decreased from 72.8% in 2021 to 70.5% in 2022.

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 37% (14.9 million tonnes). In strong contrast, consumption of new paper and board since 1998 increased up until 2007 and dropped back to the level of the late

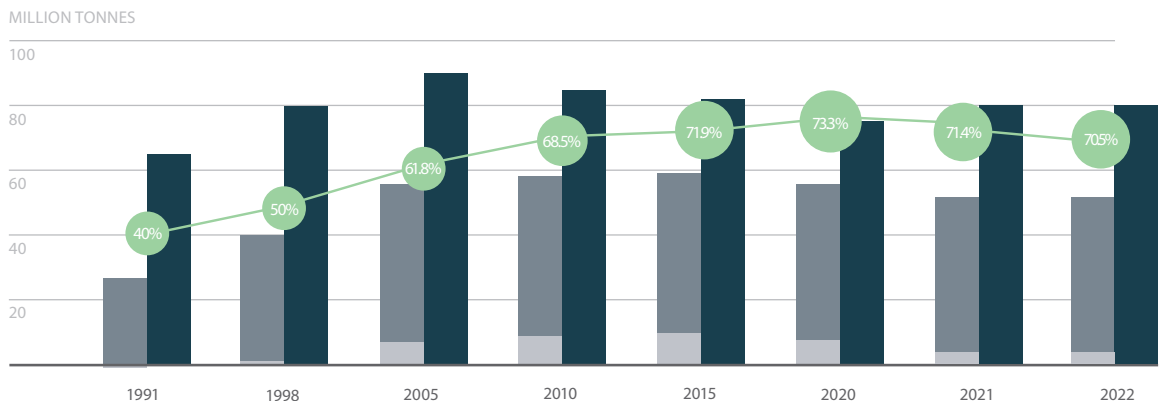
1990s in the following years.

In the European paper industry, the use of PFR decreased in 2022 to 49.1 million tonnes, a decrease of 6.2%. A net volume of 5.3 million tonnes (9.7% of the total collection of 54.9 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, Indonesia, Turkey and Vietnam. Other countries, such as Malaysia and Thailand, have increased imports of European PFR too. Overall, net exports of PFR outside Europe have increased by 8.0% compared to 2021.

EUROPEAN RECYCLING 1991-2022

Source: Cepi 2022

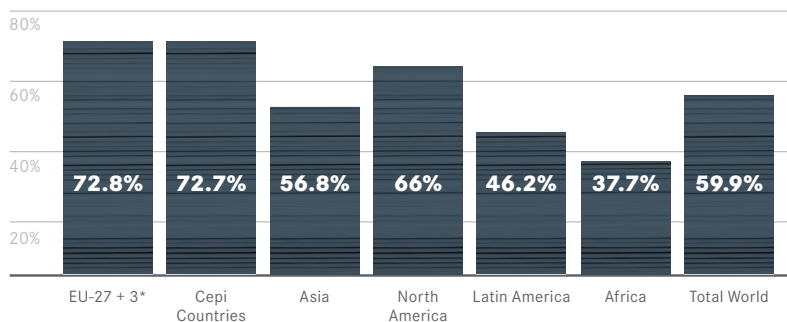
- Recycling outside Europe
- Recycling inside Europe
- Paper and Board consumption in Europe
- Recycling Rate



RECYCLING RATE IN WORLD REGIONS IN 2021

Cepi, Fastmarkets RISI – 2021

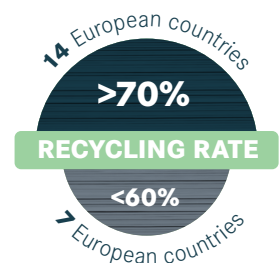
*EU-27 + 3: EU-27 + Norway, Switzerland and the United Kingdom



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 2022 was 63.1%.



NATIONAL RECYCLING RATES IN EUROPE

14 European countries exceeded the 70% recycling rate (16 in 2021).

7 European countries were below 60% (9 in 2021).

Source: Cepi 2022

PROGRESS IN QUALITATIVE TARGETS

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 PFR, and applying ecodesign to paper products.

COLLECTION

Separate collection of paper and board is the most effective way to increase the circularity of paper and board products and their 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 stream of paper for recycling and a strong incentive for investment and innovation in sorting and recycling technologies, creating green economic growth.

As in the previous year, in 2022 Cepi was committed to promoting the “Guidance on how to implement separate collection of paper for recycling” in meetings with institutional and non-institutional stakeholders. Furthermore, the guidance was referenced in several advocacy materials within the scope of the Commission proposal for a Packaging and Packaging Waste Regulation. The guidance underlines that paper and board should be collected not only separately from residual waste but also from other recyclables, such as metal and plastic packaging. Separate collection is required by European legislation, optimises costs 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 September 2022, the 4evergreen alliance published its guidance on the Improved Collection and Sorting of Fibre-based Packaging for Recycling². This guidance is based on a review of the institutional frameworks and different collection and sorting systems in European countries. It offers an overview of existing systems and practical recommendations for enhancing collection and sorting of different types of fibre-based packaging. Understanding these processes is a prerequisite for recycling and treating fibres in a way that does not compromise their quality. The document is primarily focused on household collection of fibre-based packaging.

INGEDE along with other associations in Germany sponsor the project “ZAPSA”, focusing on a higher quality sorting including a possible certification for sorting plants. Objectives are to dispense with entry inspection at the paper or board mill and to avoid returns for quality reasons.

ECODESIGN

In September 2022, Cepi published version 2 of Cepi’s harmonised recyclability laboratory test method³ and presented it during Cepi’s Paper and Beyond conference in November 2022. Version 1 of Cepi’s recyclability laboratory test method was published in January 2021. The test method defines a laboratory procedure emulating the most relevant phases (pulp, screening, sheet formation) of a typical paper mill dedicated to the

recycling of the most common grades of paper and board without deinking technology or other special features.

This method and the values it generates was used by 4evergreen workstream 1 as a basis for the development of a protocol to evaluate the recyclability of fibre-based packaging in standard recycling mills. During the development, a lot of tests based on this method were carried out. The test institutes gathered valuable information and experience enabling the method to be further developed and the finalisation of Cepi’s recyclability laboratory test method version 2.

Further to the development of the recyclability evaluation protocol within 4evergreen workstream 1, the revised method tackles the following elements:

1. Details of aging and differentiating between materials that contain wet strength agents (WSA) and materials that do not contain WSA (chapter 7).
2. Wording and criteria for the selection of a second pulping step (20 min) (chapter 8.1).
3. Modified procedure for the assessment of dissolved and colloidal substances by the determination of the evaporation residue and, as an option, the chemical oxygen demand (chapter 8.2).
4. A detailed description of the usage of the Somerville device, with a special focus on the sample amount, timing and handling of the fine screening accept (chapters 8.3 and 8.6).
5. The decision to make the macrostickies assessment according to ISO 15360-2 optional for now.
6. Assessment of visual impurities (Annex C).
7. Adding a detailed description of the method (Annex H).

In March 2022 4evergreen published its Circularity by Design Guideline for Fibre-Based Packaging. In the meantime, version 2 of the guideline is available⁴. The document is the first in a three-part series, intended for designers and manufacturers to evaluate the compatibility of materials and components with standard mill processes. It is applicable to fibre-based packaging design that is likely to be recycled in standard recycling mills, provided that product-specific regulations of the packaging are observed. Version 2 builds upon the first release, which focused on standard recycling mills. The second version increases the scope of the document as it incorporates packaging design recommendations for compatibility with specialised recycling processes, particularly for the recycling of used beverage cartons (UBC) and packaging of a similar composition.

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

² <https://4evergreenforum.eu/wp-content/uploads/4evergreens-Guidance-on-the-Improved-Collection-and-Sorting-of-Fibre-based-Packaging-for-Recycling.pdf>

³ <https://www.cepi.org/cepi-recyclability-test-method-version-2/>

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

ACE released specific Design for Recycling Guidelines for beverage cartons in June 2022. The guidelines are the first deliverable of ACE's 2030 Roadmap and provide producers of beverage cartons with technical guidance to identify the materials compatible with existing recycling processes and how the recyclability of beverage cartons can be optimised.

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

The guidelines will be reviewed on a yearly basis to ensure they reflect technological developments.

In January 2022, FEICA - The European voice of the adhesive and sealant industry published a paper to assist stakeholders in furthering a common understanding of adhesives and the requirements that are important for adhesives in recycling. A common language and technically sound definitions can ensure a better understanding amongst stakeholders and an easier exchange of expertise. The paper "Terminology and definitions to be used in the context of adhesives in the recycling of packaging" explains the classification and function of adhesives used in packaging.⁵ To support that work FEICA drafted a position paper explaining the state of play of adhesives in the context of paper and board recycling⁶. Last, FEICA also held a recorded and publicly available webinar on the same topic where adhesive technologies, their chemistry and other pertinent issues were discussed⁷.

RESEARCH AND DEVELOPMENT

There is an increasing interest in paper and paper products made out of non-wood fibres, sourced from the agricultural and textile sectors. Cepi commissioned a study to the nova-institute. The study "Non-wood Fibre Use in the European Pulp and Paper Industry"⁸ concludes that the use of materials such as straw, flax and hemp, but also textile waste, could help the industry to diversify and increase the availability of fibre. It would also be a driver for future innovation in processes, and products, by using the specific properties of agricultural crops and residues to develop novel biomaterials.

Cepi will continue to monitor the developments of non-wood fibres for the paper industry in the future and remains open to collaboration with other actors interested in the topic.

EDUCATION AND INFORMATION

EPRC signatories, Cepi and ACE, are members of Greensource. Greensource is a joint information campaign founded by Cepi, to boost the image and visibility of the paper industry and the wider forest-based sector and educate people on its goals and achievements, especially in product circularity and high recycling rates. In addition, the platform is a space where the paper industry can communicate its commitment to recycling.

EPRC members ACE, Cepi, EMFA, ETS, INGEDE and several Citpa members are involved in a project to revise the vocabulary of the pulp, paper and board sector which is defined in ISO 4046. The preparatory work started in 2022, the revision will be launched officially in 2023 and the activity is expected to last until 2026.

8TH EDITION OF THE EUROPEAN PAPER RECYCLING AWARDS

The Awards Ceremony of the 8th Edition of the European Paper Recycling Awards took place at the Renaissance Hotel in Brussels on 29 June 2022 and was hosted by Ms Anna-Michelle Asimakopoulou, Member of the European Parliament.

The European Paper Recycling Awards take place every two years to promote and reward European projects, initiatives or campaigns that change the way we recycle paper in Europe and help us achieve our ambitious goal to achieve a 76% paper recycling rate by 2030.

There are two categories: Innovative Technologies and R&D and Information & Education.

The winner of the "Innovative Technologies and R&D" category was EnEWA⁹, a research and development project financed by the German Federal Ministry for Climate Protection, focusing on the optimisation of sorting, cleaning and recycling paper even when it is mixed with other residual household or commercial waste. Awarded in the "Information and Education" category, the CELAB project¹⁰ is a cross-industry initiative to recycle self-adhesive labels.

Congratulating the two winners, jury member and EPRC chairperson Annick Carpentier stated: "The projects or campaigns competing for the awards are all game changers in the way we recycle paper in Europe. They will contribute to achieving our goal of a 76% paper recycling rate by 2030. This is an ambitious target and every piece of paper and board bringing us closer to it counts!". Cepi Raw Materials Director and EPRC Secretary Ulrich Leberle sees the paper and board sector as industry frontrunners thanks to the achieved recycling rates; "Both ongoing initiatives and planned steps will allow us to close the circular economy loop even further. The innovative projects presented at the EPRC Awards are timely examples of what it will take to get there."

Representatives of the European paper value chain were present and took the opportunity to pledge to a 76% recycling target for 2030. The commitment is laid out in the new European Declaration on Paper Recycling 2021-2030.

The host of the 8th Awards Ceremony, Member of the European Parliament Ms Anna-Michelle Asimakopoulou in her key-note speech acknowledged the success of paper recycling: "The EU is compiling the Battery Regulation and recycling targets will be set. Where other industries will be heading in terms of recycling targets, paper is already there! Once you've reached 71.4%, there is no more low-hanging fruit and you have to be highly innovative."

⁵ <https://www.feica.eu/information-center/all-information-centre/preview/1214/terminology-and-definitions-be-used-context-adhesives-recycling-packaging?id=5cb63412-c324-4035-8fca-afd440a70320&filename=POP-EX-K11-064+Terminology+and+definitions+to+be+used+in+the+context+of+adhesives+in+the+recycling+of+packaging.pdf>

⁶ <https://www.feica.eu/information-center/all-information-centre/preview/1214/adhesives-context-paper-and-board-recycling-state-play?id=0dad6ba5-c080-44b8-bcf0-fef18dd6b764&filename=RAM-IN-M06-039++FEICA+paper+recyclability+dossier+final.pdf>

⁷ <https://www.feica.eu/information-center/all-information-centre>

⁸ https://www.cepi.org/wp-content/uploads/2023/02/Cepi_Non-Wood-Fibre_Exec-Summary_130212022.pdf

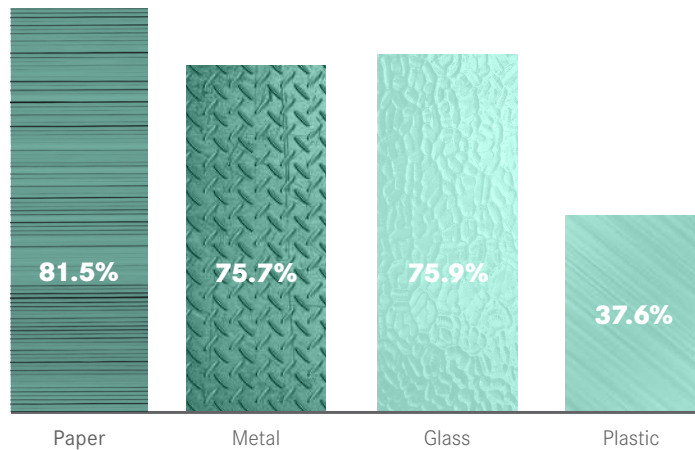
⁹ <https://enewa-forschung.de/>

¹⁰ <https://celabnorthamerica.org/>

Paper and board is the most recycled packaging material in Europe

2020 PACKAGING RECYCLING RATES

Source: EUROSTAT



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

4



4evergreen - Perfecting Circularity in Fibre-based Packaging

4evergreen is a cross-industry alliance of over 100 members representing the entire lifecycle of fibre-based packaging – from forests to designers, producers, brand owners and recyclers. Together, they want to contribute to a climate-neutral society

by perfecting the circularity and sustainability of fibre-based packaging.

Fibre-based packaging – ranging from paper cups to cardboard boxes – is already a crucial enabler of circular growth, with the highest recycling rate in Europe (81,6%) compared to other materials. 4evergreen members are willing to go the extra mile and further raise it to 90% by 2030!

Driving the sector towards circularity

To achieve a 90% recycling rate, four key areas have been given special emphasis: evaluating packaging recyclability, designing for circularity, advising effective collection and sorting, and exploring innovative recycling and sorting technologies and techniques.

For each area, a **toolbox of guidelines and protocols** is being developed, including:

- The **Recyclability Evaluation Protocol**, a landmark industry tool that enables a harmonised, objective assessment of different fibre-based packaging solutions' suitability for efficient recycling.
- The **Circularity by Design Guideline**, which tackles the optimisation of packaging to fit into the proper waste stream for best recycling by providing specific recommendations on packaging design.

- The Guidance on Improved Collection and Sorting,

which offers an overview of existing systems and practical recommendations for enhancing the collection and sorting of different types of fibre-based packaging.

These tools are a culmination of **cross-industry expert-led research, intense discussions and robust data derived from testing**. The first versions are already available and aim to tackle the largest chunk of fibre-based packaging. Ongoing and future versions will include recommendations for fibre-based packaging that require reprocessing in specialised recycling mills and floatation-deinking mills.

The crucial role of **innovation** in perfecting circularity is also recognised by the alliance, which has established a working group to accelerate the development of new technologies and processes that can raise the circularity of fibre-based packaging.

Sharing knowledge and driving impact in Europe with a holistic approach

By collaborating with relevant stakeholders such as consumer goods companies, retailers, recyclers and paper-producing and recycling factories in Europe, 4evergreen is committed to increasing consumer awareness and promoting the right incentives for boosting circularity.

With its toolbox of guidance and protocols, 4evergreen also ensures the industry **meets the demands of recent and future packaging-focused regulations** and plays a positive role in **shaping Europe's climate-neutral future**.

DATA QUALITY: 2022 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 2021 recycling rate was revised and updated at 72.8%.

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.

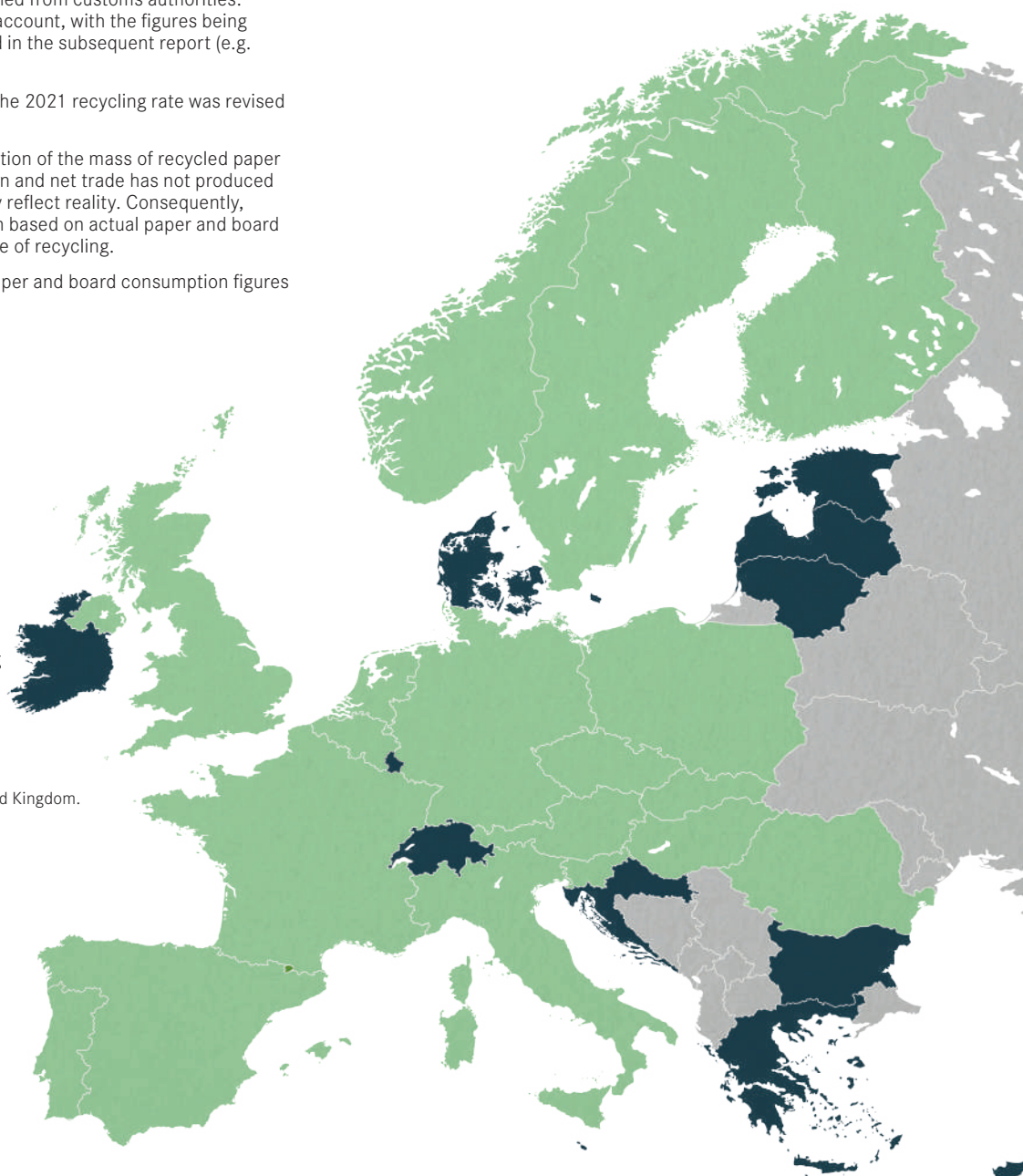
Cefi has commissioned an external verification of the recycling rate calculation since 2000 (see Assurance Reports 2011 - 2015 by EY, 2006 - 2010 by **PricewaterhouseCoopers** and 2000 - 2005 by **Pöyry** in the respective Annual Reports). Since 2015, external verification has been conducted by Deloitte 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 has 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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