

# THE GREEN BOOK

Facts and figures about paper bags  
From quality standard to EU legislation and branding issues



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## PAPER BAGS ARE A VITAL PART OF A SUSTAINABLE PAPER CIRCLE

After seeing this headline many readers will wonder **what's behind a simple paper bag?**

The answers are so extensive that at least two chapters of this Green Book are required to explain the different aspects that make up the world of paper bags. Paper bags work to create a more sustainable world, naturally contributing to slowing climate change.



- The raw material, wood, is a renewable and ever-growing resource.
- Due to their natural compostable characteristics, paper bags do not harm any sea life.
- They are a key factor in developing the brand image of shops.
- They are appreciated by consumers who now have a better understanding of the benefits of using paper.
- They comply with all laws by respecting all the requirements proposed in new EU legislation on the use of shopping bags.

In this Green Book, you will discover the sustainable circle of paper bags and why they are so popular.

# THE BAG THAT PLAYS A ROLE IN SUSTAINABILITY

## Paper bags are natural

Wood is the raw material used in papermaking and the major source for paper bags. This natural source is renewable and ever-growing.

More than a third of Europe is covered by forests. Forest areas amount to 215 million hectares in Europe.<sup>1</sup> This provides a wealth of natural resources and an enormous potential to mitigate climate change.

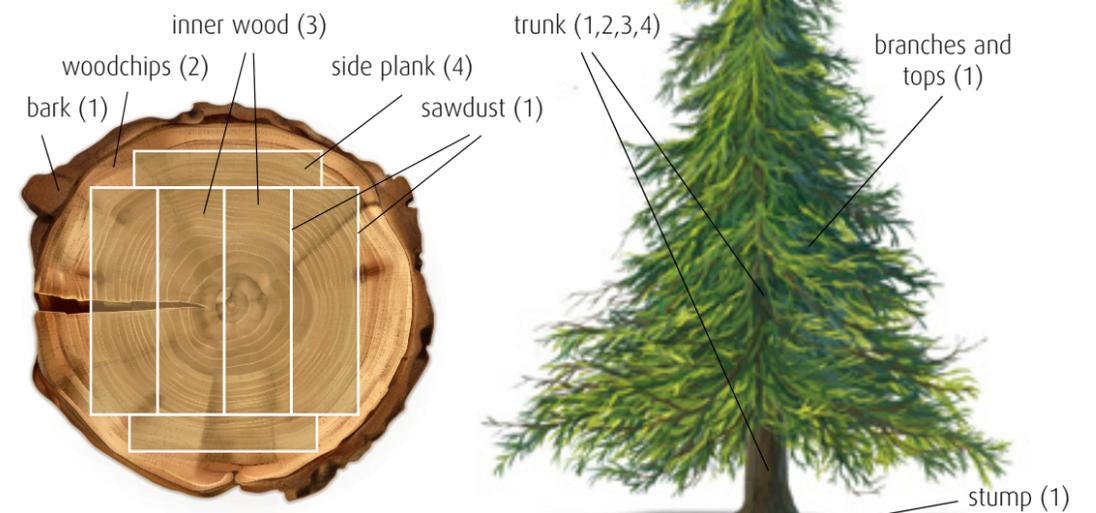
Forest cover in Europe is growing by 1.4% per year.<sup>1</sup> This is thanks to the continuous replantation of trees during harvesting. For each tree harvested, two more are planted. Sustainable forest management protects water courses, increases research in new species, protects biodiversity and looks after the welfare of forest industry workers.

All constituents from a tree are fully utilised when a tree is harvested – there is no waste. The trunk is typically used for sawn timber and pulpwood. The stump, branches and tops of the tree are used for bioenergy. The fibres for pulp production are withdrawn from tree thinnings and from process waste from the sawn timber industry. They are 100% natural, renewable and biodegradable.

## Usage of tree Consistents



1= bioenergy 2= pulpwood 3= planks 4= furniture



<sup>1</sup> "State of Europe's Forests 2015", FOREST EUROPE, 2015

## Paper bags store CO<sub>2</sub>

Paper is based on wood, a natural and renewable material. As young trees grow, they absorb carbon dioxide (CO<sub>2</sub>) from the atmosphere. Furthermore, as a wood product, paper also continues to store carbon throughout its lifetime.

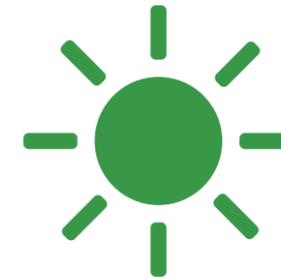
1 m<sup>3</sup> of wood captures 1 tonne of CO<sub>2</sub> while emitting 0.7 tonnes of oxygen. The average annual sequestration of carbon in European forest biomass reaches 719 million tonnes of CO<sub>2</sub>.<sup>1</sup> This offsets the fossil CO<sub>2</sub> emissions generated annually by Germany (including by the energy industries, manufacturing industries and construction, transport, households, agriculture and waste)<sup>2</sup> or by 209 coal-fired power plants.<sup>3</sup>

The carbon stored is not released when the tree is cut, but rather remains in the forest's products, such as wooden products and paper bags. One kilo of paper stores 1.3 kilos of CO<sub>2</sub> equivalents and this carbon sequestration time is extended when we recycle the paper.



<sup>1</sup> "State of Europe's Forests 2015", FOREST EUROPE, 2015  
<sup>2</sup> According to Clean Energy Wire's fact sheet "Germany's greenhouse gas emissions and climate targets, 2016", Germany produces 9.2 tonnes of CO<sub>2</sub> emissions per person per year. With 80 million inhabitants, the annual CO<sub>2</sub> emissions amount to 736 million tonnes.  
<sup>3</sup> Greenhouse Gas Equivalencies Calculator, United States Environmental Protection Agency

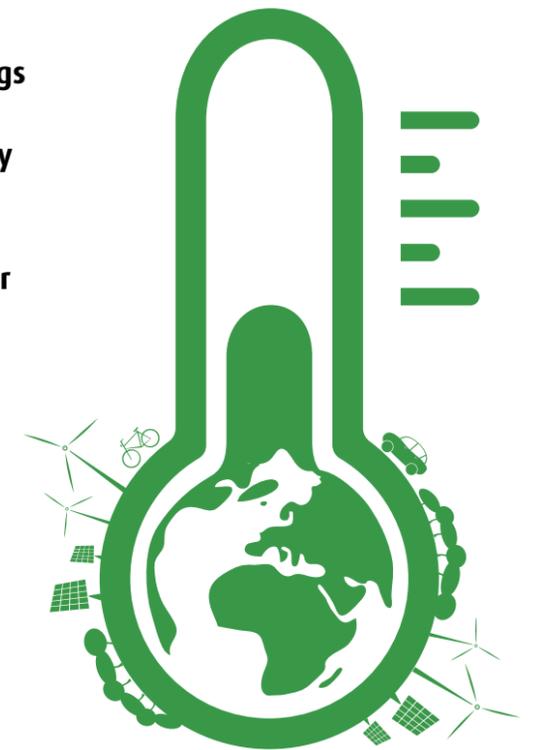
## Paper bags have a low climate impact



All industrial activity impacts the environment. A Life Cycle Assessment (LCA) can work as a tool for measuring the environmental performance of different products and processes. One of the environmental impact categories is Global Warming Potential (GWP). It describes how much global warming a given type and amount of greenhouse gas may cause, using the functionally equivalent amount or concentration of CO<sub>2</sub> as a benchmark.

IVL Swedish Environmental Research Institute has conducted a study on the greenhouse gas emissions caused by the production of different paper and plastic bags.<sup>1</sup>

**The conclusion was that paper bags (produced with virgin fibres or recycled fibres) have a remarkably low impact on GWP compared to Low Density Polyethylene (LDPE) bags (produced with renewable or recycled LDPE).**



<sup>1</sup> "A comparative LCA study of various concepts for shopping bags and cement sacks", IVL Swedish Environmental Research Institute, 2016

# Paper bags are recyclable and biodegradable

Europe is the world leader in recycling paper. The paper recycling rate in Europe is 71.5%, which means that 59 million tonnes of paper are recycled each year<sup>1</sup> – that's 2 tonnes of paper every second.<sup>2</sup> Paper bags are part of this loop, as the fibres within a paper bag are reused on average 3.5 times in Europe.<sup>2</sup>

However, a cellulose fibre from a paper product can be recycled up to six times<sup>3</sup> before it is turned into bioenergy or being composted at the end of its life cycle. Recycling paper means reducing polluting emissions produced by landfills.

Recovered paper cannot be efficiently used in all paper grades, nor can it be used indefinitely. Paper recycling needs to continuously incorporate a certain amount of fresh fibres for three main reasons:

- **Strength** – cellulose fibre deteriorates each time it is recycled.
- **Quality** – certain properties (as high-grade artwork or technical characteristics) for the paper product can only be achieved with fresh cellulose fibres.
- **Availability** – some paper products are not sent for recycling, such as books, photographs, or paper products that are destroyed when used (sanitary paper or cigarette paper).

The major paper recycling mills operate certified Environmental Management Systems (EMS) to high environmental standards.<sup>2</sup>

On occasions where strength is required, a paper bag made of natural kraft paper has major benefits:



- Due to the natural kraft paper's long and strong virgin fibres, it has a high level of mechanical strength.
- Lower weights of paper can be used while maintaining the same strength.
- It can be reused several times thanks to its good quality and design.

And if a paper bag were to mistakenly end up in nature, it would not harm the land or the oceans. As a natural product, it is biodegradable within two to five months without harming the environment, unlike other shopping bags that can take more than 400 years to decompose.

Eight million tonnes of plastic waste are deposited into the sea each year. This corresponds to 16 plastic bags per metre of the world's total coastline.<sup>4</sup> Littering of plastic bags leads to a widespread problem of rubbish in water bodies, threatening aquatic ecosystems worldwide. Plastic litter does not degrade, but instead breaks down into smaller pieces, microplastics, and is eaten by marine animals by mistake.<sup>5</sup>



<sup>1</sup> "Paper Recycling: Monitoring Report 2015", European Recovered Paper Council (ERPC)  
<sup>2</sup> [www.paperrecovery.org](http://www.paperrecovery.org)  
<sup>3</sup> "The Fiber Cycle Technical Document, Summary Report 2006", Metafore  
<sup>4</sup> BillerudKorsnäs cooperation with Tara Expeditions, a French research organisation  
<sup>5</sup> [http://ec.europa.eu/environment/waste/packaging/pdf/report\\_options.pdf](http://ec.europa.eu/environment/waste/packaging/pdf/report_options.pdf)

## Paper bags are reusable

Experience shows that consumers reuse paper bags for different purposes or use them for their next shopping trips.

The concept of reuse is defined in Directive 94/62/EC of 20 December 1994 on packaging and packaging waste:



*“{A}ny operation by which packaging, which has been conceived and designed to accomplish within its life cycle a minimum number of trips or rotations, is refilled or used for the same purpose for which it was conceived, with or without the support of auxiliary products present on the market enabling the packaging to be refilled; such reused packaging will become packaging waste when no longer subject to reuse.”*

The ITENE Packaging, Transport & Logistics Research Center developed a method to assess the reusability of paper bags. The results of the validation show that, regardless of the type of handle, paper bags are reusable, both for textile and for other uses. They withstood several endurance tests which, depending on the paper bag reuse being validated, changed in terms of times and weight per bag.<sup>1</sup>

<sup>1</sup> "Evaluation of physico-mechanical properties of paper bags for use in transporting retail products", ITENE



## The eco-labelling of paper bags

It is increasingly common for paper products to be labelled with information on **the environmental aspects that have been considered in certain stages of their life cycle.**

With these labels, paper manufacturers and distributors communicate the environmental and sustainability aspects both of their products and the raw materials used, as well as their environmental performance. This provides useful information to help us **express to the market our decision to use certain materials rather than others.**



In general, the multitude of environmental labels may create confusion among consumers, and even among the retailers themselves. It is therefore desirable that you fully understand what these eco-labels represent, to make it clear to consumers what the message is and what the eco-labels certify. In this respect, the platform The Paper Bag, comprised of leading European paper manufacturers and producers of paper bags, has created **environmental symbols to help companies promote the sustainability credentials of their bags** and to share the values of paper bags with consumers, demonstrating their environmental responsibility.



**The symbols represent the paper bag's attributes, for example:**

**Renewable**, given that its raw material, cellulose fibre, is ever-growing, being specifically grown in forests that are managed responsibly.

**Biodegradable**, since paper bags are made from natural fibres, are printed with water-based inks and ecological glues and degrade in a short period of time without damaging the natural environment.

**Recyclable**, since the cellulose fibres from a paper bag can be recycled up to six times<sup>1</sup> before it is turned into bioenergy or being composted at the end of its life cycle.

**Reusable**, as it has been shown that paper bags can be reused at least five times for the transportation of the same type of product for which it was originally acquired.

It is also common for paper bags to have forest certification. Forest certification is a programme through which an independent entity guarantees that a forest product originates from wood from a sustainably managed forest. First, it certifies that the management of the forest area meets sustainability criteria, including the forest inventory, management planning, forestry, harvesting, as well as ecological, economic and social forest activity repercussions.



Then, when the certified timber enters the industrial process, the chain of custody is controlled and certified (it is tracked from the forest to the final consumer). Finally, consumers receive the product with a label that guarantees that it came from a sustainably managed forest.

The main programmes for forest certification and chain of custody are:

- The Forest Stewardship Council (FSC)
- Programme for the Endorsement of Forest Certification (PEFC)

In short, environmental labels help certify the commitment of businesses to a sustainable economy that is environmentally friendly.

<sup>1</sup> "The Fiber Cycle Technical Document, Summary Report 2006", Metafore

# THE BAG THAT HELPS YOU ENGAGE WITH CONSUMERS

## 21st century consumers prefer paper<sup>1</sup>



79%

believe that paper is more pleasant to handle and touch.



93%

agree that paper is sustainable and should be used more as packaging.



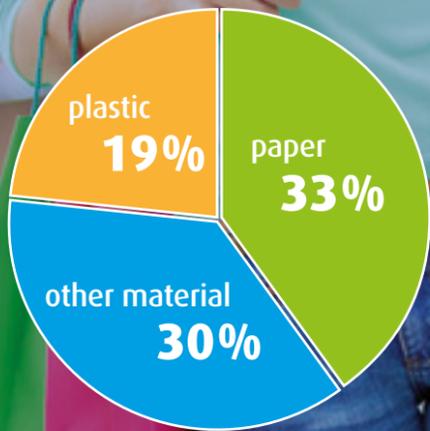
86%

agree that if they can choose between paper packaging or another material, they choose paper.

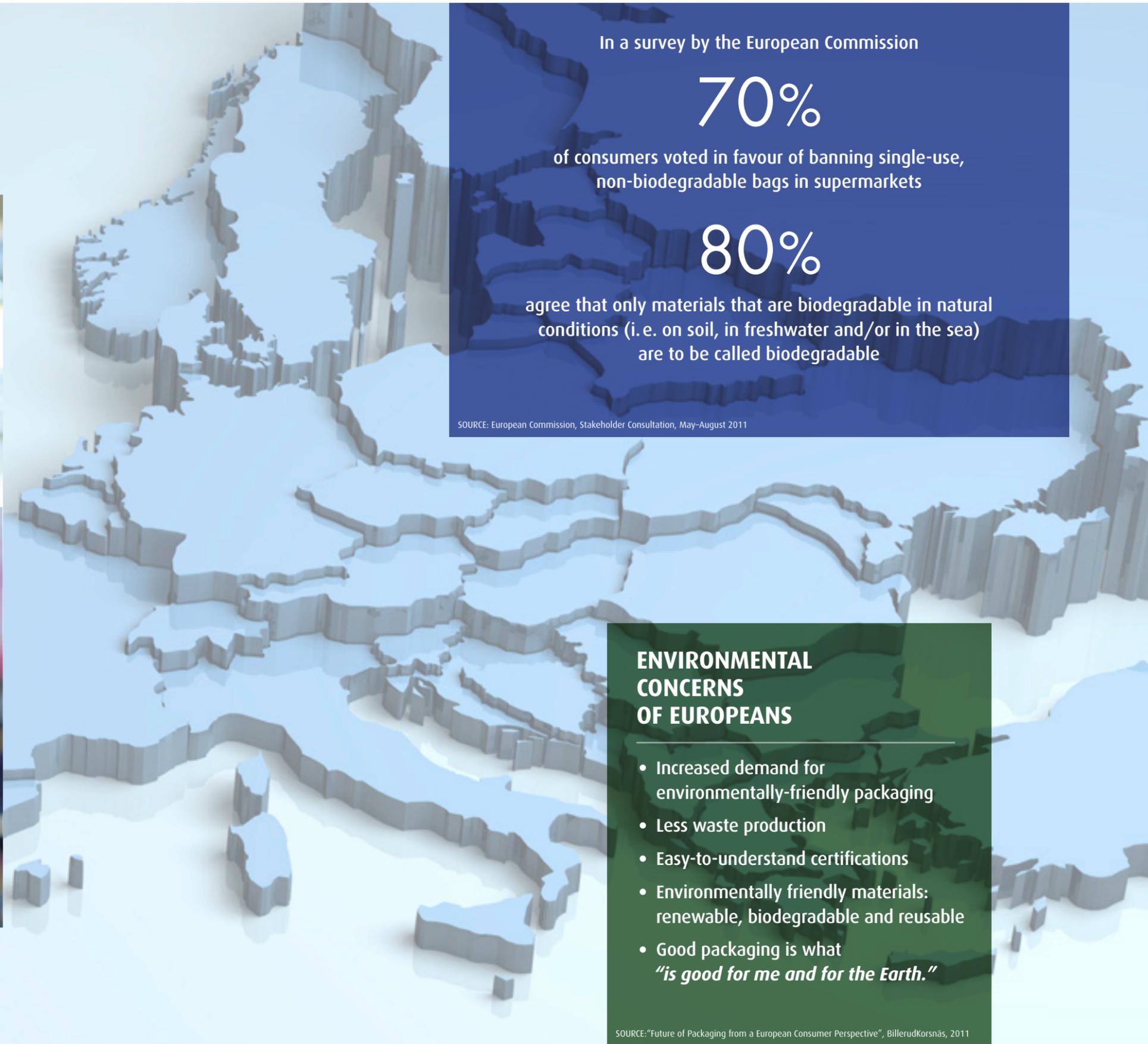
1 SOURCE: IPSOS survey for Spain and six more European countries



**CONSUMERS PREFER GROCERY BAGS THAT ARE...**



SOURCE: Paper survey in Spain. TECCEL ESTUDIOS-SIGMADOS for EL FORO DEL PAPEL, April 2012



In a survey by the European Commission

**70%**

of consumers voted in favour of banning single-use, non-biodegradable bags in supermarkets

**80%**

agree that only materials that are biodegradable in natural conditions (i.e. on soil, in freshwater and/or in the sea) are to be called biodegradable

SOURCE: European Commission, Stakeholder Consultation, May–August 2011

**ENVIRONMENTAL CONCERNS OF EUROPEANS**

- Increased demand for environmentally-friendly packaging
- Less waste production
- Easy-to-understand certifications
- Environmentally friendly materials: renewable, biodegradable and reusable
- Good packaging is what *“is good for me and for the Earth.”*

SOURCE: “Future of Packaging from a European Consumer Perspective”, BillerudKorsnäs, 2011

# THE BAG THAT ENHANCES YOUR BRAND IN RETAIL

Shopping bags are used by retailers to protect customer purchases and to make them easier to transport.

## Putting value in the hands of the customers

A bag must fulfil the following functions as packaging:

- Have adequate capacity to safely carry the volume of goods that have been purchased
- Be strong enough to support the weight of the goods inside whilst being able to withstand the rigours of transportation
- Be a good medium to support your brand equity. Paper has many favourable characteristics. Paper is very tactile and its stiff surface allows for excellent printability and colour reproduction
- Be well adapted to the social and legal values of the environment in which it will be used, given that it is a very visible part of the corporate social responsibility that a retail brand can develop

**These are the functions that are used when assessing the material used for bags, and this is where paper bags play a strategic role to help retailers achieve the following objectives:**

- Dispense truly sustainable bags
- Support a new consumer culture
- Improve delivery of purchases
- Advertise with imagination
- Remain in the minds of buyers
- Demonstrate social responsibility



Paper bags are an excellent vehicle to project the brand image of retailers, achieving maximum visibility within their environment and generating great appreciation from customers.

Offering paper bags says a lot about a business – it conveys a message of appreciation for the environment and improves the quality of life of consumers.

## The bag that is the centre of attention

## The bag full of emotions

Paper bags allow great creativity and development of the brand image due to their shape, texture and print quality.

Distribution is a clear example of values such as **commitment, personalisation and proximity** in order to efficiently satisfy your customers. Paper bags reaffirm those values because they present unique features and benefits for the consumer.

**Paper bags create emotional links between the retailer and their customers** since, when they reuse the bag, they often use it to carry their personal belongings.

Using paper bags also involves **giving a clear signal of commitment to the environment:** by using packaging made from renewable,

recyclable and biodegradable sources and collaborating effectively in reducing the use of non-biodegradable shopping bags and promoting greater environmental education.

**85%**  
*of passers-by notice the messages printed on paper bags they see on the street.<sup>1</sup>*

**80%**  
*of consumers think that a brand printed on paper is more pleasant and attractive.<sup>2</sup>*

The paper bag is an inexpensive advertising medium which is available to all businesses and is very effective in making an impact throughout the city.



<sup>1</sup> MediaAnalyzer Software & Research, 2007  
<sup>2</sup> IPSOS survey for seven European countries

# THE BAG THAT CARRIES ANYTHING



## Quality standard



A paper bag is the perfect packaging for a wide range of products – from luxury, fashion and decorative items to food, pharmaceuticals and electronics. To increase market penetration, the suitability of paper bags to withstand heavy weights and all kinds of products for purchase can be tested. Paper bag durability can be measured in accordance with the European test standard EN13590:2003. This standard is based on scientifically conducted studies and will help retailers to avoid poor-quality carrier bags.



## Quality certification system

The quality certification system for paper bags is based on the test standard EN13590:2003. This test method subjects the carrier bag to heavy weights while being lifted repeatedly. The size of the paper bag is taken into account in the tests because the larger its volume, the heavier the load it must be able to carry. As a result of the certification, the paper bag is marked with the weight and volume it may carry.

### Test method

1. The bag is filled with high-density polyethylene cylinders and then hung by its handles on the grip of the tester.
2. The test is started and the filled bag is first lifted and then lowered onto the table at a well-defined speed.
3. This lifting procedure continues until the bag breaks or has been lifted 20 times. For a quality to pass a certain weight, 19 out of 20 bags must withstand 20 lifts each.

## The impact of the right material

A strong and durable bag is a real asset to a retailer. It protects the goods, reduces waste and saves money. The key to performance lies in the material and the construction of the bag. It is wise to choose a tested and certified paper bag.

### Strong kraft papers

Kraft paper is an excellent choice for carrier bags that must withstand heavy loads. It is especially developed for demanding packaging and is made from slow-growing spruce and pine from sustainably managed forests. The long fibres of the trees result in papers with high strength and durability.

### Construction is important

The tests and analyses that have been carried out show that constructive elements affect the paper bag's performance. The choice of glue and a proficient construction of the handles add to the bag's strength and durability.



## European member states prefer bags that do not harm the environment

The European Parliament and the Council of the European Union have enacted Directive (EU) 2015/720 of 29 April 2015, which amends Directive 94/62/EC as regards reducing the consumption of lightweight plastic carrier bags.

The aim of this new legislation is to reduce plastic waste in our environment. Littering of plastic carrier bags leads to a widespread problem of rubbish in water bodies, threatening aquatic ecosystems worldwide. Furthermore, littering of plastic carrier bags is an inefficient use of resources.

In order to promote a sustained reduction in the average consumption level of lightweight plastic carrier bags, EU member states may take measures such as pricing, the use of taxes and fees or restrictions on placing such bags in the market.

However, it is mandatory for all EU member states to include at least one of the following:

- a) The adoption of measures ensuring that the annual consumption level does not exceed 90 lightweight plastic carrier bags per person by 31 December 2019 and 40 lightweight plastic carrier bags per person by 31 December 2025, or equivalent targets set in weight. Very lightweight plastic carrier bags may be excluded from national consumption objectives.
- b) The adoption of instruments ensuring that, by 31 December 2018, lightweight plastic carrier bags are not provided free of charge at the point of sale of goods or products, unless equally effective instruments are implemented. Very lightweight plastic carrier bags may be excluded from those measures.

## THE BAG THAT IS COMPLIANT

LEGISLATION

# THE BAG THAT IS PART OF A SUSTAINABLE FUTURE



Increased knowledge of environmental and social issues has led consumers to demand products that are produced in a more sustainable way. This is why bio-based products are becoming increasingly popular. Consumers are now far more interested in topics such as:

- The sustainability credentials of the raw materials used in manufacturing
- Sustainable consumption
- Recycling

The paper bag industry in Europe is among the most dynamic and innovative industries. With a modern processing industry, paper bag manufacturers and paper producers create jobs and drive new solutions to meet the multiple needs not only of all sectors of distribution and product manufacturers, but also of the consumers.

Paper bag manufacturers are part of the value chain of the macro paper sector. **This is the key sector of the new bioeconomy, based on the efficient use of renewable and recyclable resources to manufacture natural products with high added value.**





[www.thepaperbag.org](http://www.thepaperbag.org)