Too good to be true?

A study of green claims on plastic products

Illustration: Visual Thinkery

July 2021

ecos

RETHINK PLASTIC

#break free from plastic

About ECOS

ECOS - Environmental Coalition on Standards is an international NGO with a network of members and experts advocating for environmentally friendly technical standards, policies and laws. We ensure the environmental voice is heard when they are developed and drive change by providing expertise to policymakers and industry players, leading to the implementation of strong environmental principles.

About this report

This report edited by ECOS is based on research on products and claims conducted by SQ Consult.

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The work received feedback and support from the Rethink Plastic alliance and the Break Free From Plastic movement.

The results presented in this report are based on online research conducted between December 2020 and June 2021 on a selection of massively consumed products. We solely relied on publicly accessible information as this study aims to depict the average consumer's perspective. All the examples listed in this study are for purely illustrative purposes of the types of green claims commonly made.

For any inquiry concerning this report, readers may contact info@ecostandard.org.

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Executive summary

Green claims have become a commercial argument for an ever-growing market of 'eco-conscious' consumers wishing to be a part of the solution to reverse the plastic pollution crisis. However, in the absence of clear specific legislation on green claims, companies are free to use vague language that can be confusing and potentially mislead consumers. Worse still, green claims can even be used to circumvent legal product restrictions[1], thus delaying the implementation of solutions that make a real difference for our planet.

Claims in scope

Reusability & refillability, recyclability, recycled content, biodegradability & compostability, and bio-based content.

This report analyses the types of online green claims consumers are faced with on plastic products, and explains how they could be misunderstood or even counter environmental principles. We examined green claims on diverse types of products, focusing on those most commonly littered in nature, massively increasing the social and environmental costs of plastics. Based on our adaptation of the UNEP Fundamental Principles for providing product sustainability information, we assess the relevance, reliability, and clarity[2] of the analysed claims.

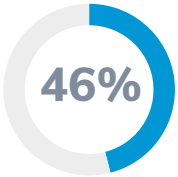
Products in scope

Plastic bottles and jugs, sachets and pouches, plastic film and bags, plastics in food service, clothing, and diapers & wet wipes.

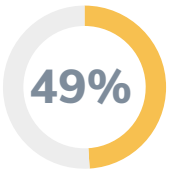
82 products were checked against the Fundamental Principles and the ECOS Ideal Claims Checklist developed in this publication. Nearly half of the presented claims were assessed to be potentially unclear to consumers and/or irrelevant to addressing plastic pollution issues; a quarter did not pass our assessment for reliability; and three-quarters seemed to be self-made claims not evidenced to be independently verified[3].

Companies wishing to boast about the environmental performance of products must do so by providing the consumer with full and frank information. Only this way will brands build consumer trust, enable fair comparison with competitors, and genuinely help protect the environment.

82
plastic items analysed



✕ do not meet relevance criterion



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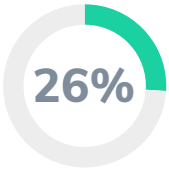
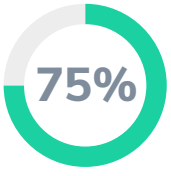


✕ do not meet reliability criterion



✕ appear not to be third-party verified

Our report proposes ways to improve consumer information tools to ensure their environmental ambition, transparency and trustworthiness. The report also provides recommendations, primarily for policymakers, but also to an extent for companies, standardisers and certification schemes to act collectively and empower consumers with information which can truly inspire conscious choices. Finally, the report offers a clear checklist for identifying 'ideal' claims, i.e. those which contribute towards protecting our environment.

A snapshot of our four key recommendations

1

Loose and stretchable definitions used in legislation and standards should be eliminated

Instead, green claims on reusability, refillability, recyclability, compostability, biodegradability, and recycled- and bio-based content of plastic products should be checked against a robust checklist, such as our ECOS Ideal Claims Checklist. A thorough use of such a checklist by policymakers (in legislation), companies (for product claims) and standardisers (to define technical specifications) will ensure that green claims are what they claim to be: relevant, reliable and clear.

2

Policymakers should set clear rules about what can and cannot be claimed

More clarity should be provided thanks to the development of a list of banned green claims, as well as one specifying the green claims allowed – including a harmonised method to substantiate these. This should be complemented by a pre-approval mechanism to verify any other green claim, not covered by the established lists. Finally, mandatory environmental information on plastic products should provide consumers with harmonised, recognisable, and comparable characteristics for each product type.

3

Enforcement of legislation and sanctions against greenwashing should be strengthened

Market surveillance should be more robust to make sure that only fair commercial practices take place. At the same time, consumers should be able to easily and systematically report potentially misleading claims on products. Finally, economic and reputational sanctions against non-compliant companies should be strengthened.

4

Make sustainable products the norm

Policymakers should use and further extend the combination of push-pull mechanisms by putting in place mandatory product environmental labelling alongside ecodesign requirements for plastic products. Ecodesign requirements should focus on the design phase of products and use a life cycle approach to identify and reduce the environmental impact of products by pushing the least performing products out of the market.

Jump straight to the recommendations section for more details ⟶

Did you know?

Between the 1950's and 2017, we produced some **9.2 billion tonnes of plastic**[4]. **More than half in the last 15 years**[5].

An estimated 150 million tonnes of plastics have accumulated in the world's oceans,

and the equivalent to **the load of more one million garbage trucks per day, or 3 trucks every minute**, is estimated to be added each year[6]. The annual flow of plastic waste into the ocean could almost triple by 2040 to 29 million metric tonnes per year[7] or 9 trucks every minute. If all this waste were displayed on the world's coastline, there would be 50 kg of plastic for every metre[8].

In 2018, plastic waste produced in Europe reached close to 30 million tonnes. **Only 32.5% of this amount was recycled** (mostly downcycled, i.e. mixed into a lower-quality product that can never be recycled again), and an additional **24.9% was sent to landfills**[9]. The remainder was burnt.

Claims awards

Here is a taste of what we found

Most frequent claims

Biodegradable, compostable, bio-based and plastic-free

We analysed these carefully

Products with the greatest number of vaguest claims

Diapers and wet wipes. **Featuring:** carbon balanced, eco-natural, green, vegan, earth friendly and protecting rainforests...

Green hygiene!

Most greenwashed products

Beverage and non-beverage bottles. **Featuring:** ocean plastic, biodegradable, plant-based...

How about we end single-use and reuse instead?

Most ridiculous claim

Biodegradable bottles...

To help turn beaches into landfills?

Most interesting claim

Edible sachets

Bon appetit!

Towards a policy solution to empower consumers

Introduction

The Plastic Crisis

Until recently, plastic was perceived only as a useful, versatile material, and nobody paid much heed to the rising pollution levels. However, in the past 5 years this status quo has been suddenly and unexpectedly broken. Consumers and decision makers became aware of the impacts of plastics, and particularly of single-use plastics, on marine ecosystems, and their contribution to the climate crisis. In the past few years, breakthrough policies, such as the EU Single-Use Plastic Directive[10], have banned certain single-use plastics and limited plastic waste imports, with massive popular support. In parallel with the progress made in Europe, a number of cities in the United States and in other countries worldwide[11] have also introduced single-use plastic bans.

At the same time, consumers are also becoming more conscious: in 2020, an EU study[12] found that almost 60% of EU consumers prefer to buy a product with an environmental label, although 61% find it difficult to understand which products are truly environmentally friendly.

This, and the change in attitude towards plastics specifically, has prompted industry strategies to promote certain characteristics of plastics – reusable, recyclable, recycled, biodegradable, compostable and bio-based – in an attempt to show that they are not as harmful for the environment as one might think. As a result, the use of green claims and environment-related labels on plastic products has become almost mainstream, opening the door to greenwashing on a massive scale.

The end of greenwashing?

The fight against greenwashing and false green claims is currently a policy priority in various countries and regions, notably in the European Union.

At the time of writing, a European legislative proposal is in drafting, aiming at ensuring the provision of more qualitative and credible information to consumers in support of the green transition. At the launch of the New Consumer Agenda in November 2020, the European Commission committed to enforcing transparency in order to empower consumers in the green transition by ensuring that 'sustainable products are available to consumers on the EU market and that consumers have better information to be able to make informed choices'[13]. The Commission is now preparing a proposal to meet these objectives.

In other parts of the world, efforts to fight false, vague or misleading green claims are also ramping up. For instance, in 2021 three American NGOs filed the first-ever greenwashing complaint against oil company Chevron to the US Federal Trade Commission (FTC) for allegedly violating the FTC's guidelines on green claims[14]. We are awaiting the court's decision on this case.

Despite the growing interest in providing more environmental credibility to consumers, enforcement of legislation against unfair commercial practices and for consumer protection guidelines remains timid. Earlier in 2021, the International Consumer Protection Enforcement Network (ICPEN) coordinated a global review of randomly selected websites and screened through online green claims. 40% of all the reviewed claims were found to be potentially misleading to consumers[15].

This report concludes that in the case of plastic products, the proportion of potentially misleading claims could rise up to about 50%. It goes without saying that the issue needs to be addressed: consumers deserve reliable and credible information in order to be able to play their part in the green transition.

Ticking the right boxes

Our approach

Research

At the time of writing, the assessment and tackling of potentially misleading green claims is high on the political agenda of key regulators worldwide, with reports and initiatives launched in different instances[16]. All these initiatives assess, in one way or another, a number of green claims commonly found on consumer products, and all present the same observation: there are too many unsubstantiated and potentially misleading environmental claims on products. This is why we decided to conduct our own analysis of plastic products and the claims they so proudly sport.

First, we identified highly impactful types of consumer plastic products that boast green claims. They were selected based on the types of plastic items that are most commonly found on beaches. We also included other massively consumed items that our linear economy struggles to properly dispose of, and which often end up in huge landfills across the world, floating in our oceans, incinerated or burnt in the open air.

As a result, we analysed a diverse sample of claim types present on 82 different plastic items, found in a web search[17]. Relying on our expertise in plastics, packaging materials, and their lifecycle impacts, we assessed whether these claims were sufficiently informative to allow consumers to make sustainable choices based on our adaptation of the UNEP Fundamental Principles for providing product sustainability information[18]. We also considered whether the claims were supported by certification schemes or adequate standards. Our research revealed that various manufacturers made similar claims for certain types of products, which we detail in the following section.

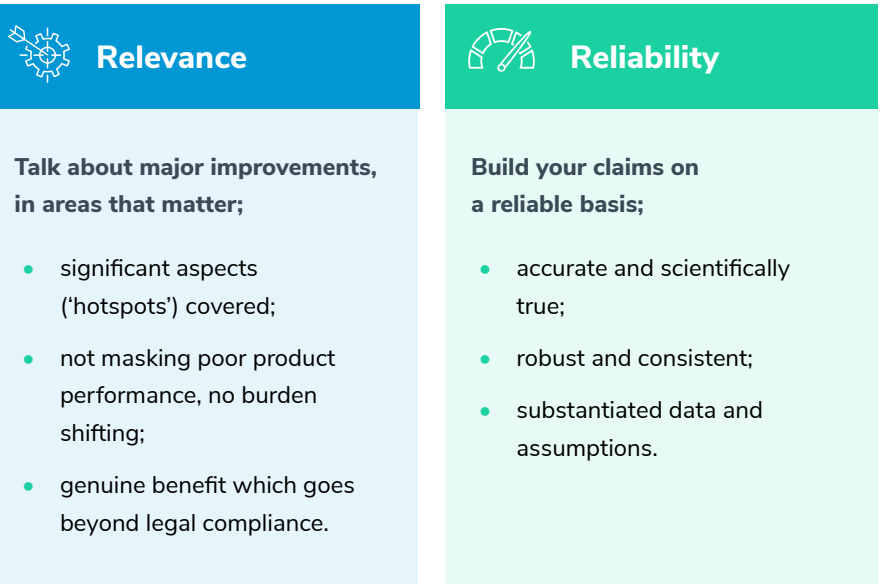
Defining a ‘green claim’

This report adopts the definition of ‘green claims’ proposed in the guidance document on the implementation/application of Directive 2005/29/EC on unfair commercial practices[19], where the term is defined as: 'practice of suggesting or otherwise creating the impression (in a commercial communication, marketing or advertising) that a good or a service has a positive or no impact on the environment or is less damaging to the environment than competing goods or services'. This may be due to its composition, how it has been manufactured or produced, how it can be disposed of and the reduction in energy or pollution expected from its use. When such claims are not true or cannot be verified, this practice is often called ‘greenwashing’.

Conceptual framework

When examining the green claims commonly found on plastic products, we have identified many issues related to the type of information that is advertised, the way in which it is presented, the context in which it will be read or the proof that the claim itself is true.

Our analysis was guided by the United Nations Environment Programme's (UNEP) Fundamental Principles, contained in the *Guidelines for Providing Product Sustainability Information*. We believe they clearly and concisely capture the principles that effective and trustworthy claims should follow. These principles are shown in Table 1.



*Adapted to also encompass UNEP's Transparency and Accessibility principles under one category.

Table 1 UNEP Fundamental Principles for providing product sustainability information

ECOS Ideal Claims Checklist

Based on the Fundamental Principles outlined above, we developed the ECOS Ideal Claims Checklist (hereafter, the Checklist) to benchmark green claims. The Checklist lays out a set of qualitative sustainability criteria against which green claims can be assessed. The criteria focus on the reusability and refillability, recyclability, recycled content, biodegradability, compostability, and bio-based content of plastic items. As such, this Checklist is both a benchmark and a set of recommendations for brands, policymakers and standardisers on how to offer relevant, reliable and clear product information, and avoid greenwashing.

As a rule, we recommend all green claims should be:

- based on a publicly available set of requirements (refers to the **Clarity** aspect);
- third-party verified (refers to the **Reliablity** aspect).

In addition, specific green claims should meet a number of criteria. These are listed below, per type of claim.

Reusability and refillability claims

Relevance

- ensure that infrastructure is accessible for the product to be reusable or refillable in practical terms (facilities available to collect, wash, refill, and redistribute the reusable asset);
- or state how the product is to be consumed and reused/refilled at home, or at a servicing point;
- avoid product designs suggesting any similarity with products commonly consumed as single use;
- exclude 'opportunistic' reuse and refill for other purposes or products than originally intended, such as reusing a glass food jar to store another type of food.

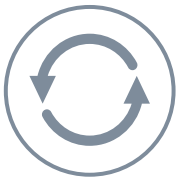
Reliability

- should be based on confirmed and realistic testing of product performance through multiple reuse cycles.

Clarity

- state the environmental benefits of the reuse/refill system used;
- provide instructions on the reuse/refill system available, such as the location to which users should return the product;
- include advice on how to maximise the product's performance through as many reuse cycles as possible.

Recyclability claims



Relevance

- only apply if mechanically recyclable;
- exclude chemical processing;
- only apply if a separate collection or deposit return system is available within a specific and reasonably sized geographical range from where products are sold;
- exclude products composed of inseparable material combinations;
- exclude substances of concern, such as listed in the EU REACH Candidate List[20] and EU Classification, Labelling and Packaging Regulation classification[21];
- exclude dirty plastics such as PC, PS, PUR and PVC, which are hardly recyclable.

Clarity

- offer advice to consumers regarding sorting, using unambiguous symbols and terms placed directly on the product or packaging;
- contain instructions relevant to the local context, or specifies when such sorting instructions should be sought from local waste management authorities;
- explain how to separate different parts of a product or packaging if only part of it is recyclable.

Recycled content claims

Relevance

- only consider post-consumer waste as recycled content;
- exclude pre-consumer waste and additives, as they do not qualify as recycled content.

Reliability

- apply a batch level mass balance as chain of custody system, according to a recognised methodology.

Clarity

- indicate a percentage of recycled content;
- indicate whether the recycled content comes from closed- or open-loop recycling;
- exclude subjective, misleading or vague claims such as ‘circular plastic’ or ‘plastic-free’;
- exclude aggregation of recycled content at (multi)site level;
- indicate whether the material was mechanically or chemically recycled;
- communicate the higher sustainability value of recycling against an explicit and sensible baseline to empower consumers in their choice.

Compostability claims

Relevance

- exclude products that are typically reusable or recyclable, following the circularity hierarchy[22];
- apply only to products typically containing organic matter for disposal, thus increasing or facilitating organic waste collection;
- apply only to products that are fully compostable in all their parts, even after use;
- apply only to locations where composting infrastructure is available at scale;
- include instructions on appropriate composting conditions (theoretical timeframe, temperatures and humidity composting conditions matches actual practices).

Reliability

- ensure that all components contained in the product are separately tested and proven compostable.

Clarity

- offer instructions to consumers about product disposal, directly on the product;
- clearly distinguish between home compostability and industrial compostability;
- explicitly discourage littering;
- specify the optimal conditions (timeframe, temperature, humidity) under which composting takes place;
- provide a conservative time estimation for full biodegradation.

Biodegradability claims

Relevance

- exclude products that are intended for composting only in a specific environment (e.g. industrial composting);
- include only products which by their typical use are disposed of in an open environment, but never as a means to address littering;
- apply only if all components contained in the plastics are biodegradable, additives included;
- should not apply to products which have non-biodegradable components;.
- take into account regional conditions affecting biodegradability, including climatic conditions, soil temperature, water salinity, etc.

Reliability

- ensure that biodegradation testing covers all components contained in the product.

Clarity

- inform on the suitable environment for biodegradation (soil, water, etc.);
- clearly mention that the product should not be littered.

Bio-based content claims

Relevance

- apply only to bio-based materials which have been ‘sustainably’ sourced as per the indications stated in the standard followed;
- provide proof of higher sustainability value through lifecycle analysis;
- exclude non-bio-based additives from the bio-based content reported.

Reliability

- ensure that verified bio-based content is present inside the product (products whose bio-based content is virtually attributed through credits or creative accounting should be excluded).

Clarity

- provide the exact percentage of bio-based content;
- explicitly mention that biomaterials were ‘sustainably’ produced (according to a specific standard) and unequivocally communicates on the higher sustainability value of the product;
- exclude vague or misleading terms such as ‘circular plastic’, ‘bio-plastic’ or ‘plastic-free’ to indicate bio-based content;
- ensure that instructions on what happens at the end of life of the product are well displayed, given the confusion among consumers on bio-based vs. biodegradable.

All that glitters is not gold

Assessment of issues found in claims

In this section, we present our analysis of the types of claims encountered in the research, using the UNEP Fundamental Principles and the ECOS Ideal Claims Checklist's criteria[23].

The results presented below are based on online information gathered about a selection of massively consumed products. We relied solely on publicly accessible information, taking the average consumer's perspective. All the examples of products and claims listed in this section have a purely illustrative purpose, and are meant to show the types of green claims commonly made by companies.

Our assessment of the 82 items is summarised in Figure 1. The pie charts show that claims which, in our assessment, fulfilled the criteria (relevance, reliability and clarity) represent approximately a third of all assessed claims. It is worth mentioning that in spite of the limited number of items analysed, the share of claims we deemed did not meet the criteria is very similar to the results presented by works relying on larger samples[24]. Only eight products met all the criteria in the Fundamental Principles and the ECOS Ideal Claims Checklist.

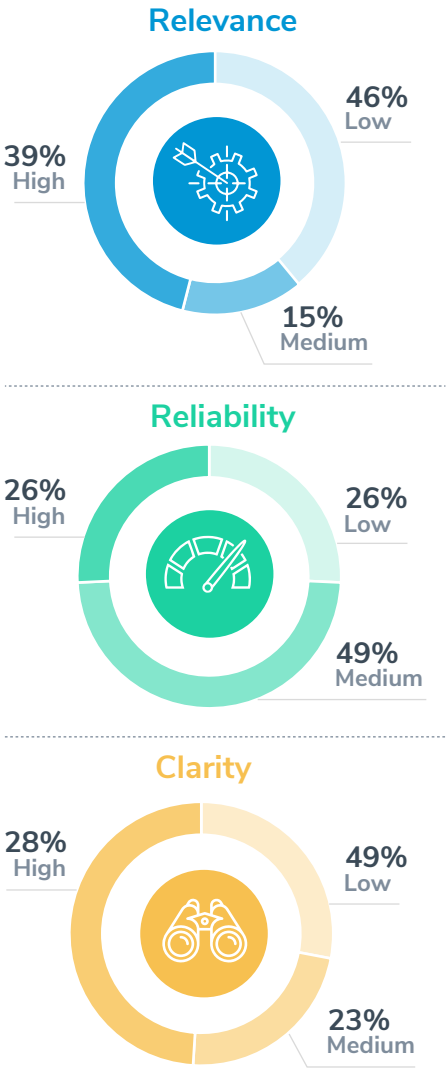


Figure 1 The overall results of scores according to our assessment against the UNEP Fundamental Principles and ECOS Claims Checklist

A review of claims found on plastic products

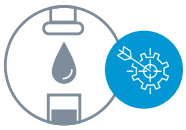
Although green claims may vary significantly from one product to another, the overwhelming majority of the claims we analysed against our benchmark relate to six characteristics only: reusable, recyclable, compostable, biodegradable, with recycled content or with bio-based content. For this reason, we analysed these claims in depth. The minority of claims which did not relate to these six characteristics, either referred to the absence of specific substances or chemicals, or to greenhouse gas emissions, and were not considered in this report.

Figure 2 List of green claims found on the 82 analysed products

Claims on reusability and refillability

Reuse and refill systems offer some of the most efficient means of addressing the single-use plastic pollution[25]. The best initiatives supporting reuse and refillability have a dedicated infrastructure, and are accessible to any consumer purchasing products or containers. At every point of purchase, simple protocols for both consumers and staff members are put in place.

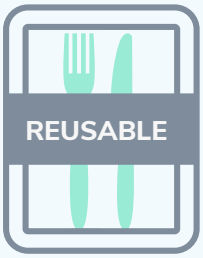
A high-performance system for reuse or refill effectively decreases the amount of single-use plastic employed, and guides consumers towards the most sustainable options in a clear way, while minimising pollution risks caused by single-use items. However, reuse and refill systems can also fail to deliver on these promises when the packaging and instructions do not unambiguously suggest that the product is meant for reuse.



Relevance

When single-use is strikingly similar to ‘reusable’

Consumers are exposed to plastic products labelled as 'reusable' dishware and cutlery. Real-life tests carried out on such plastic items, show that they tend to lose their functionality and aesthetic (shape and colour) after only a few washing cycles, often fewer than the amount advertised by brands (for example 20 dishwasher cycles)[26]. These ‘reusable’ products are unlikely to motivate consumers to reuse them: their cheap price and poor aesthetics make it all the easier to throw them away after the first use with few regrets for the money spent.



'Reusable' dishware: the myth of 20 dishwasher cycles

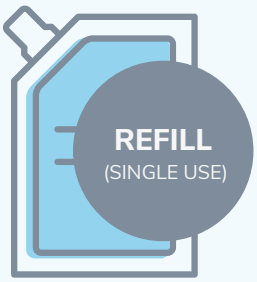
Washable and otherwise single-use glasses, cups, plates and silverware are sold as 'reusable' in European supermarkets. In the EU, single use plastic tableware is no longer allowed on the market as from 3 July 2021 – since this date and in the absence of clear standards on what counts as reusable, plastic items could still be sold without significantly changing product features from their single-use counterparts to make them truly reusable.

Refilling systems... with single-use containers

A number of systems offer refillable containers, but refills themselves are sold in single-use plastic ones. This approach could potentially create two single-use packaging products instead of a single refillable one, particularly if consumers do not recognise the brand’s intentions, for example when the reusable container is cheaper than the refill. Ultimately, the use of single-use refilling bottles or pouches leads to the production of more single-use items, with all the negative end-of-life impacts this implies.

The single-use refill pouch

Some products offer refillable options that still rely on the use of single-use refill containers.

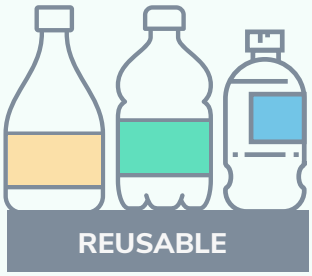


Reliability

No appropriate standard for reuse and refill

None of the reusability and refillability claims assessed were verified by independent organisations. Currently, there is no standard setting an appropriate framework for reuse and refill with low environmental impact. Existing standards do not provide an exhaustive definition of 'reusable' or 'refillable', and the methods for testing product performance through multiple-use cycles are missing.

A significant opportunity for the scaling up of reusable containers lies in standardising reusable packaging formats and systems, allowing business operators to use (and reuse) containers for their products[27].



Corporate-designed return-on-the-go systems for beverages[28]

Returnable beverage bottle systems exist but remain niche. The scaling up of these initiatives could be supported by better standards for reusable packaging and systems.

The definitions for 'reusable' and 'refillable' packaging in current standards are insufficient or vague

For example, products manufactured and sold in accordance with the 2004 CEN standard EN 13429 on packaging reuse, are presumed to comply with the relevant requirements of the European Union's Packaging and Packaging Waste Directive[29]. However, this standard does not, for instance, clearly specify the need for reuse infrastructure to be accessible, or define specific durability requirements to ensure a maximum number of reuse cycles.

Clarity

Reuse and refill schemes must be explained to consumers

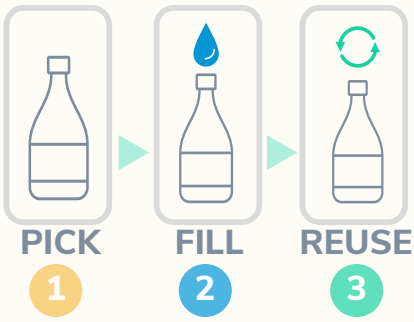
Today, reuse and refill schemes are jeopardised by a lack of infrastructure and clear instructions to consumers on how to return their reusable items and increase the number of times a specific packaging can be used.

Reuse and refill systems come in diverse forms. Some rely on single-use refilling items, others require products and containers to be returned to a factory or shop to be refilled. Furthermore, the impacts of the different means of providing reusable and refillable products are not well known. In order to make a conscious choice, consumers should be informed about the requirements and benefits of each system.

...and their performance must be clarified

None of the examined claims provided information about how to maximise product durability over time and reach a high number of reuse cycles.

Worse still, certain products do not always display information to consumers specifying when the offered refill containers are single-use and possibly non-recyclable. This is a clear example of how producers may risk confusing buyers' eco-consciousness by omitting details on the full picture.



In-store refillables

Ease of manipulation and clarity of information are key to successful in-store refill systems.

Claims on recyclability

Material recycling is a key priority for a circular economy, after reducing material use and making reuse possible. However, products that claim to be recyclable are not always recycled. At the moment, there is no harmonised definition of recyclability which accounts for real-life conditions such as the availability of recycling infrastructure and costs of recycling. Some brands could take advantage of this loophole.

Relevance

Recyclability claims were found on polyethylene terephthalate (PET) plastic bottles, paper-based recipients with polyethylene (PE) liners, and a prototype of recyclable sneakers made from thermoplastic polyurethane (TPU).

While PET bottles are more likely to be recycled, especially in countries offering deposit-refund schemes, composite paper/plastic products analysed in this study also claim recyclability. Even though producers may not always be able to control where the product will end up being sold, they should still ensure that claims are sensitive to the local availability of domestic collection and recycling infrastructure, or at least invite consumers to check themselves.

Providing clarity to recyclability claims: metrics and criteria used by the Ellen MacArthur Foundation

In its 2020 Reporting Guidelines for business signatories to the *New Plastics Economy Global Commitment*[30], the Ellen MacArthur Foundation proposes that product packaging be recyclable **at scale** and **in practice** in order to be qualified as 'recyclable'.

- **'At scale'** means that the 'recycling of a certain packaging type needs to be proven to work in practice in multiple regions [...] This to indicate that the recycling in practice is replicable, and that the design of the packaging is not the barrier to realise recycling in practice in other countries'.
- **'In practice'** means that 'within each of these regions, the recycling system (end-to-end system from consumer to recycled material) effectively recycles a significant share of all packaging of that type put on the market'.

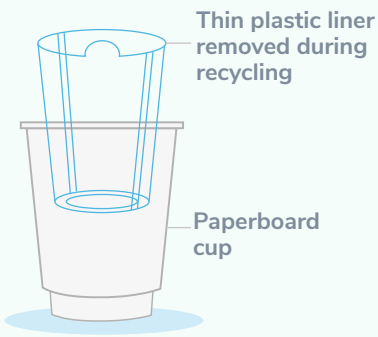
Chemical vs. mechanical recycling

There are three main types of recycling technologies: mechanical recycling (the most common one), chemical recycling and solvent-based purification (these two mainly at a pilot stage). The differences in their environmental impacts are worth mentioning, in particular in terms of energy use and related greenhouse gas emissions for their yield. Chemical recycling has much higher impacts and is most often more of an energy recovery process than a recycling one[31]. None of the products analysed for the purpose of this report mentioned the details of the processes necessary for their recycling.

Reliability

‘Self-certified recyclable!’

For all the examined products, the recyclability claims were supported only by company statements. None of the claims appeared to be independently verified, nor certified and supported by third-party verification.



Composite paper and plastic cups

Most paper cups contain a plastic liner to protect the outer shell from liquids. While these cups are usually not recyclable, others offer separable plastic liners, claimed to be easily separated during a standard recycling process. However, our research could not verify such claims based on publicly available information or on any known label or standard.

Clarity

'Can I recycle this?'[32]

- When a label says ’recycled‘, is the product ‘recycled’ or ‘recyclable’?
- Is this specific product recyclable, or does the producer merely contribute to a packaging recovery scheme?
- Will local recycling operators be able to recycle this item in practice?

In the absence of universally enforced standards on communicating recyclability, market actors have been using a variety of wording and symbols on products. These icons confuse consumers and do not necessarily mean that the product is recyclable in the area where they live[33]. As a result, non-recyclable products enter the recycling streams, only to be sent to other disposal facilities (incineration or landfilling), adding costs to waste management operations.

Instructions for sorting and recycling are often incomplete, ambiguous, or not easily accessible to consumers. For instance, recycling instructions are sometimes placed on websites rather than on the product itself. This prevents items from reaching a recycling facility at their end of life.

In practice, items are not recycled when the commercial value of the recycled material is lower than the cost of recycling. This is often the case for the recycling of polyvinyl chloride (PVC), low-density polyethylene (LDPE), polypropylene (PP) and polystyrene (PS)[34].

In our research, products composed of more than one type of material did not give clear information on how each of the components should be disposed of, whether they should be separated, or if they are at all recyclable. This is particularly often the case for unbranded items.

Same but different?

The use of chasing arrows is potentially misleading since those symbols can be used to describe different product characteristics. For example, they can inform about the type of polymer used, a contribution to a producer responsibility scheme (Green dot), or to indicate that products should be disposed of (although without clear instructions on how to do it).

Mobius loop, indicating recyclability

Recyclable glass

Made from recyclable aluminium

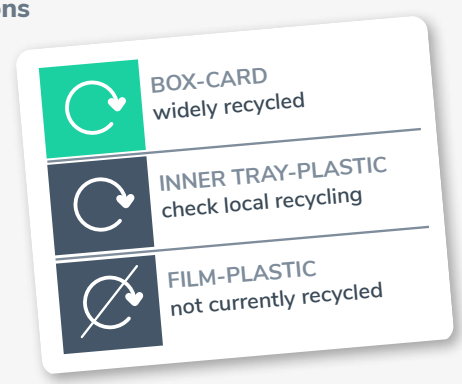
'Green dot', indicating that the producer contributes to a recovery scheme

Resin code number, indicating the type of plastic used

Reminder to dispose of waste appropriately

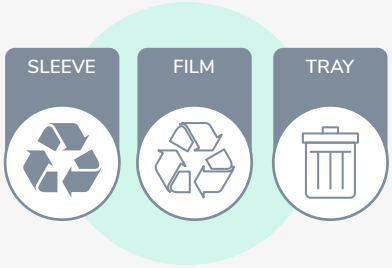
Providing clear recyclability instructions

The UK On-Pack Recycling Label (OPRL) and the Australasian Recycling Label provide concise information indicating whether the packaging is recyclable, and how to separate and dispose of the different components. In addition, the OPRL indicates whether recycling infrastructure might be locally available.



Recyclability instructions, done right

The UK On-Pack Recycling label (above) and the Australasian Recycling Label (below).



Hazardous substances in plastics

The presence of hazardous substances in plastics, such as some plasticisers which confer desired properties to plastics, or certain additives such as colouring, also diminish the quality of recycled materials and add to the costs of recycling, while passing down health and environmental risks to the next generation of products. Four types of plastics are particularly hazardous for health: polyurethane (PUR), polyvinyl chloride (PVC), polycarbonate (PC) and polystyrene (PS)[35]. Unfortunately, the presence of hazardous substances was not clearly stated on any of the products assessed.

Claims on recycled content

Claims on the use of recycled plastics in new products are far from clear: the very definition of what counts as recycled material can be called into question, the exact share of recycled material is obscured by vague terms and creative accounting, new technologies and materials are emerging with a host of health and environmental issues. These issues prevent green consumption choices towards products containing the highest shares of recycled material from safe and sustainable recycling technologies.

Relevance

Clarity

Pre-consumer or post-consumer recycled content?

The definition of 'recycled content' is not always clear. ECOS and the Rethink Plastic alliance consider that a claim on recycled plastic content is environmentally relevant when the plastic comes from post-consumer waste, i.e. from a product that has lived its life and was then recycled thus preventing littering. This is very different from pre-consumer waste, which is scrap or material leftover after industrial processing. The use of such industrial waste should not be accounted for as contributing to recycling targets or even advertised to consumers[36].

Industrial plastic scrap used in clothing

Some clothing items are made using pre-consumer waste, claimed as recycled content, which can confuse unsuspecting consumers into thinking they are purchasing clothing made from the waste of used products.

No added value from complying with laws on recycled content

Including recycled material into a product is in itself a positive step. However, self-declarations by brands on the percentage of recycled content in their products at levels mandated by law are sometimes simply complying with their obligations and therefore bring no differentiating advantage compared to other products. For example, beverage bottles in the EU must contain at least 25% of recycled plastic by 2025, therefore brand pledges towards this objective bring no additional benefit to what the law prescribes.

Turning mere legal compliance into a green claim is identified as a 'subjective misleading practice' in the European Commission Guidance on the implementation/application of the Unfair Commercial Practices Directive[37]. In the case of beverage bottles placed on the EU market as of 2025, recycled content claims should only be allowed to be displayed if the content is higher than 25% of the total average production.

Open-loop plastic recycling: losing material to downcycling

Products such as clothing claim to contain plastic recycled from PET bottles. However, this process is nothing but downcycling and is responsible for the loss of material for further recycling: once PET is turned into textile, or is mixed with fibres, it reaches its end-of-life, because blended fibres are nearly impossible to separate and recycle, and indeed currently less than 1% of textiles are recycled[38]. In fact, downcycling is rather problematic, as it reduces the amount of recyclable food-grade PET available to be used in, for instance, new food and beverage applications, both of which require safe materials, which do not expose consumers to hazardous substances.

The problem with ocean plastic

The environmental benefit of products that claim to be made from ocean plastic (plastic waste extracted from oceans or beaches) is unclear because benefits will depend on the type of waste as well as the type of recycling process used. As explained in the previous section, chemical recycling processes are significantly more energy-intensive than mechanical recycling and their yield is questionable[39].

Another important characteristic of ocean plastic is that plastic litter fragments have the ability to attract and fix chemical substances of the surrounding water, resulting in a greater contamination of these plastics with potentially hazardous additives and non-intentionally added substances[40]. Therefore, environmental benefits of recycling plastic litter depends on its level of toxicity, which is extremely variable.

Products made from ocean plastic

Our research has uncovered a variety of products containing ocean plastic, which are usually produced from chemical recycling processes. The claims on ocean plastic content were neither supported, nor verified by any label or standard.

Clarity

The use of plastic waste collected from the ocean may induce consumers to believe that the ocean littering problem can be solved if we retrieve some of the waste and use it as secondary raw material. This, in turn, might prove counter-productive for our efforts to avoid and reduce plastic production altogether, which is the most effective way to prevent ocean littering from occurring in the first place.

Illustration: @Visual Thinkery

Reliability

Clarity

'This contains recycled plastic! Just don't ask for numbers'

13 out of the 16 claims examined in our research are neither supported by reliable labels nor independently verified. In other words, several companies make claims on beverage bottles and clothing based on their own practices and policies. Other research has shown that some commitments and self-declarations were not necessarily fulfilled[41].

Claims and commitments for recycled content in bottles

Beverage producers are committing to or claiming high recycled content shares in their bottles. However, it is often unclear if these claims are based on any known standard and are independently verified.

Good practice on recycled content claims

Brands which claim an average yet accurate and certified amount of recycled content in their products offer a more truthful claim, allowing consumers to fairly compare products.

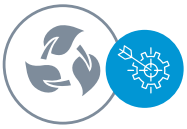
How companies use creative accounting for recycled content[42]

Items can contain little to no recycled content, as this depends on the chain of custody and accounting rules chosen to allocate the recycled inputs to the final products. The lack of robustness in identifying where and when waste is turned into a new product harms the credibility of the recycling industry. Usually, companies do not indicate to what extent the claimed recycled content actually matches the physical amount of waste in the product, and whether allocation of the recycled content was done in a very loose or rather conservative way.

Although this would be preferable, it is common practice not to communicate the average share of recycled content across all products. Other forms of claims tend not to present the whole picture and facilitate a liberal allocation of recycled content to any product of the product line. As a result, all recycled content available is allocated to a fraction of products, which are then advertised as '100% made from recycled materials', in order to target eco-conscious consumers. The reality is strikingly different, though: on average, each individual product contains but a fraction of recycled content.

Claims on biodegradability and compostability

The terms 'biodegradability' and 'compostability' are often used interchangeably, at the risk of being understood in the same way: that the product will easily and harmlessly disappear without a trace or impact on the environment. However, the two terms do not refer to the same phenomenon, as the optimal environmental conditions to ensure rapid material biodegradation differ based on the type of material.



Relevance

Home-compostable vs. industrially compostable

From a consumer perspective, compostability is often understood as the possibility to compost the product at home, or to place it in the municipal compost collection bin. When the precise composting conditions are not specified, the consumer may assume that the product is compostable under any conditions and in all types of composting installations: be it at home or in an industrial facility. These claims can lead to attempts at home composting of products which require specific conditions to degrade and will not biodegrade for many months or years.

Biodegradability: a license to litter single-use plastics

Illustration: @Visual Thinkery

Biodegradable plastics are often presented as the solution to the plastic pollution problem, giving consumers a 'license to litter' plastic into the environment, acting upon the assumption that the product will biodegrade by itself[43]. However, biodegradability is a process that only occurs as fast as the environmental conditions allow, mainly via exposure to heat, humidity, ultra-violet radiation from sunlight, presence of microorganisms, and other variable conditions such as water salinity (when considering marine biodegradability). Self-proclaimed 'biodegradable' single-use plastic can actually be harmful because it leaves behind plastic residues and chemical additives, acidifies water or soils, and may take much longer to degrade than advertised, and ultimately harms marine life including fisheries, as well as humans themselves[44].

For instance, food service items made of PLA (polylactic acid; for cold use such as salads) and CPLA (for hot use such as hot beverages or soup) take longer than organic waste to compost in industrial facilities due to the high temperature and specific conditions required, particularly in the case of CPLA products, which are more heat resistant. As a result, they may need to be manually removed from input materials in the composting plant as the time needed for them to fully compost is much longer than it is for organic matter. When littered in the open environment, these plastics do not degrade at a rate that can be expected from a biodegradable material; therefore, they should under no condition be littered[45].

Why so popular?

While brands jump at the possibility of using biodegradable plastic materials, the environmental added value of these single-use products is questionable when they are reused or recycled. In reality, biodegradability and compostability bring about added environmental benefits only in limited applications[46]. For instance, biodegradability comes in handy for products which serve as carriers of food waste, such as teabags, coffee capsules, or products such as agricultural mulch, which by their typical use are well suited for biodegradation. In these cases, plastic will biodegrade alongside the waste it contains without additional processing.

Biodegradable bottles

While some beverage producers are proposing to switch to biodegradable bottles, such innovations do not contribute to circularity. It is preferable for bottles to be produced from recyclable materials than to give consumers the license to throw waste bottles into the sea.

Although biodegradable textiles can prevent the release of persistent microplastics into the environment[47], biodegradability characteristics need to be adapted to these environmental conditions as regards water salinity, temperature, etc. Similarly to packaging products, textile products should rather be reused and recycled at their end of life and not left to decay in landfill or littered into nature, where biodegradation conditions may not be optimal. It should also be pointed out that they do not provide valuable nutrients to farmland if used as compost.

Finally, the use of compostable or biodegradable materials for certain products can be confusing to consumers[48], in particular when two versions exist on the market, one with biodegradable properties, and the other one without. A similar look and feel can in this case lead to biodegradable but non-recyclable plastics sent to recycling facilities, or non-biodegradable plastics being sent to compost facilities, contaminating composts and, by extension, farmland and the environment with plastic waste, microplastics, and the hazardous substances contained in them, and ultimately polluting the oceans at the end of their journey.

Biodegradable clothing

Our research uncovered products claiming to be biodegradable in landfill conditions. Such products, however, only incentivise the take-make-waste consumption models. Biodegradable textiles make environmental sense when they aim to tackle microplastic releases during washing – not for landfilling! Fibres advertised as biodegradable should biodegrade in water and in the marine environment, rather than in a landfill, as textiles should simply never end up in landfills.

Reliability

What about certification for biodegradability and compostability?

More than half of biodegradability claims analysed did not appear to be independently certified, including pledges on plastic bags, plastic film, food containers, cutlery, plates, cups, lids, stirrers and straws.

Similarly, the case of diapers and wipes made of bamboo fibres is a noteworthy one. They do not clearly point to any independent certification and can leave consumers thinking that using a natural material corresponds to an environmental benefit and proof of biodegradability.

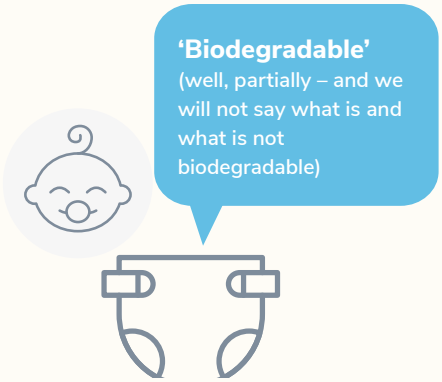
None of the investigated certification schemes offered principles for the use of biodegradable or compostable materials, nor did they exclude from the scope products which did not present any benefits from being labelled as such.

Illustration: @Visual Thinkery

Clarity

Contamination from used compostable products

Many of the self-proclaimed 'compostable' products are, by nature, likely to be contaminated after their use; this is certainly the case for sachets, pouches, wet wipes, and diapers. However, none of the examined claims provide clarity on whether the products should be composted along with this waste material. While some are certified as partially or fully compostable, they may not be accepted in composting facilities or may lead to contaminants release into agricultural land.



Not entirely gone after all

None of the 'biodegradable' diapers encountered in our research were fully biodegradable. No information is given on what the biodegradable parts of the diaper are and how they should be separated from the non-biodegradable parts. Claims are also seldom supported by publicly known labels or standards.

A product is only as biodegradable as its parts

Some products state that they are partially biodegradable or contain a certain amount of biodegradable material. However, the compostable parts are not clearly identified, nor are instructions provided on how to separate those parts before disposal. It is highly unlikely that consumers will separate components after using diapers, for example. Yet, half of the examined claims on biodegradability of diapers indicate that they are biodegradable, even when manufacturers acknowledge that certain plastic parts cannot be made from biodegradable materials.

Key information on compostability and biodegradability conditions is not easily accessible

We noticed significant gaps between information shown on product packaging and what appears on brand websites. While websites often provide more information on the conditions under which plastic items biodegrade or compost, most consumers are unlikely to go online and retrieve this valuable information.

Claims on bio-based content

While bio-based plastic (or polymer) can potentially substitute fossil-based plastic, this does not mean that its environmental performance is better. Bio-based polymers tend to behave similarly to fossil-based polymers: they are not necessarily biodegradable. In addition, 'bio-based' does not mean that the biomaterial in question was sustainably sourced, nor that it is the only form of plastic found inside the product as it could well be mixed with fossil-based plastic. Our research has even found bio-based plastic products claiming to be free from plastic although their chemical composition and their physical properties are the same as for conventional polymers.

Is bio-based plastic better than fossil-based plastic?

The overall greenhouse gas emissions balance of bio-based plastic may not necessarily be much better than fossil-based counterparts[49]. This largely depends on the production methods, which may involve fossil-fuelled agriculture, on the risk of land-use change from agricultural products, as well as on the end-of-life of the bio-based plastic. For instance, if they are incinerated, their carbon footprint is higher than if they are recycled[50]. Bio-based plastic production from agriculture also comes with the other forms of environmental degradation associated with industrial agriculture (biodiversity loss, soil depletion, water pollution, etc.).

Bio-based wipes

The different examples of bio-based wipes and their certifications we encountered do not provide environmental sustainability information about the raw materials used.

In addition, bio-based plastics often behave similarly to their fossil counterparts when littered. In spite of this, in the eyes of consumers, bio-based plastics (also marketed under the term 'bioplastics') could be easily taken for biodegradable, which is often not the case. In fact, bio-based plastics are likely to form microplastics and release chemical additives exactly as conventional plastics do[51, 52]. Moreover, when a 'chasing arrows' symbol is used for labelling bio-based plastics, consumers may confuse it with the well-known marking of recyclability.

None of the examined claims established environmental requirements for sustainable sourcing of the bio-based material used in the manufacturing of products, and only a few informed about their biodegradability. Consequently, none of the claims demonstrated the environmental superiority compared to a fossil-based plastic.

Bio-based... but is it recyclable?

Product labels sometimes use symbols which do not mean the same as in other contexts. For instance, chasing arrows typically refer to recyclability claims, but they are sometimes used for non-recyclable bio-based plastics only to signal bio-based content.

If you can't tell why it's good... don't say it

The use of bio-based plastic or of another biomaterial combined with plastic (such as paper and plastic composite products) does not necessarily entail an added benefit for the product's environmental performance, especially if it is non-reusable or non-recyclable, or if no statement is made regarding the sustainability of the biomass used. Our research has found no sustainability certification in the examined claims to ensure that biomass used in the manufacturing of products does not cause direct or indirect land use changes, does not affect biodiversity or the rights of the communities from where it was sourced, or that the product was made from waste biomass (which usually presents lower impacts). All this in spite of the fact that such sustainability certification schemes exist and do increasingly focus on these aspects – for instance, the Roundtable on Sustainable Biomaterials (RSB) has recently created a set of criteria to assess indirect land use change. The absence of any assessment of sustainability of the biomass used severely undermines the reliability of any claim.

Paper and plastic composite bottles

Several beverage producers are working on bottle prototypes made from paper, advertising the reduced use of plastic, typically used as a liner to protect the container from liquids. These designs raise concerns over their recyclability, but also over the potential environmental consequences for forest ecosystems related to transferring the demand for raw materials for the gigantic plastic bottles market.

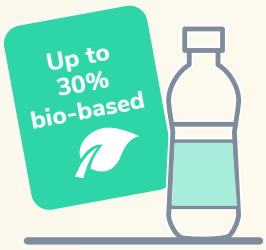
Claiming minimum shares of bio-based content

Only 3 out of 9 examined claims have independently verified the minimum share of bio-based content of the products they refer to. Therefore, for most products it is not possible to know if accurate and standardised methods have been used to determine this share. In other cases, only a maximum share of bio-based content is given, with no clarity as to what the actual share is.

Without information on the minimum share of bio-based content, consumers could assume that the entire product is made of bio-based materials, exaggerating the potential environmental benefit.

'Maximum' bio-based content claims

When only mentioning the maximum bio-based content, it becomes difficult to know the exact share of bio-based content used by the manufacturer for a product line. A preferable alternative is to indicate the minimum, or the average content.



For claims as reliable as they are green

Recommendations

It goes without saying: better environmental sustainability information will guide consumers towards better products. As far as plastic products are concerned, however, our research shows that sustainability information often remains approximative, and can lack relevance, reliability and/or clarity.

Here below, we outline four crucial recommendations - primarily for policymakers, but also for companies, standardisers and certification schemes. They aim to mitigate consumer exposure to potentially misleading claims and to provide more relevant, reliable and clear information to shoppers, thus empowering them to make the right choices for nature and our society.

Key recommendations

1. Eliminate loose and stretchable definitions
2. Legislate explicitly on what market actors may or may not claim
3. Strengthen legislative enforcement and sanctions against greenwashing
4. Make sustainable products the norm

Recommendation 1

Eliminate loose and stretchable definitions

As shown in this report, even such mainstream concepts as 'reusable' or 'recyclable' can be stretched to the point that they become confusing.

As a response, ECOS developed an Ideal Claims Checklist of sustainability criteria for assessing the **6 following characteristics** and covering the vast majority of the green claims we found on plastic products (see Figure 2):

- reusability and refillability;
- recyclability;
- compostability;
- biodegradability;
- made from recycled materials;
- made from bio-based materials.

Fundamental Principles and sustainability criteria from the Checklist should be used in legislation by policymakers, and embraced by market actors, standards writers, and certification schemes to ensure the relevance, reliability and clarity of green claims[53]. In particular:

- A **circularity hierarchy** should be considered across the 6 types of claims: reuse brings more environmental benefits than recycling, which, in turn, is superior to composting. This hierarchy needs to be well reflected in green claims: for instance, beverage bottles, which are usually recyclable, should not show green biodegradability claims, as this does not represent any environmental improvement. Compostability claims should be restricted to niche applications for selected specific items. These niche applications should be restricted to items mixed or attached to food waste such as fruit stickers or tea bags, where compostability might help reduce impurities. Biodegradability, on the other hand, is only a relevant product characteristic for products wearing off and/or leaking into the environment as a consequence of their use (such as shoe soles or textile microfibres released as part of the washing), as a damage control feature. Claims which do not comply with this hierarchy are, at best, irrelevant, or, in the worst case, counterproductive to fulfilling environmental objectives.

- The environmental benefits of products showing green claims need to be **systematically evaluated and transparently substantiated**. None of the 6 characteristics are simply 'good for the environment'. Buying products with claims on one or several of these characteristics can be fundamentally irrelevant to reducing one's impact on nature. To counter this problem, methodologies such as the lifecycle assessment (LCA) method and the related frameworks such as the EU Product Environmental Footprint could be used. For instance, LCA may be used for assessing the relative benefits of recycled content and sustainable sourcing of bio-based materials, as compared to the impacts of using virgin or fossil-based plastics. These approaches are, however, not enough, as they tend to overlook certain environmental and societal costs, such as littering and exposure to hazardous substances.

- Standardisers have an important role to play in properly defining these characteristics. They should **develop or update technical standards** providing definitions of reusability, refillability, recyclability, compostability, biodegradability, recycled- or bio-based content, on the basis of the principles stated in the Ideal Claims Checklist presented in this report. **Standards should help guide brands and policymakers** on the conditions that need to be met in order to claim certain product characteristics. **Certifications schemes must also align** with the updated standards and consider going beyond – for instance, third-party verification should comply with the latest requirements. Detailed recommendations on specific standards can be found in Annex 2.

- All 6 characteristics should be **assessed based on real-life conditions** in which a specific product is commonly used and disposed of across the whole value chain. For instance, compostability claims should reflect the common practices of most composting facilities – otherwise, claiming compostability can be potentially misleading, as in the case of diapers, which may not be accepted in composting plants after use, due to contamination issues.

- Content-related claims such as 'bio-based' or 'recycled content' must be based on **robust accounting and verification methodology**. This approach should also be applied to claims advertising products made with recycled[54] or bio-based materials. Any non-verified green claims advertising bio-based content should be considered potentially misleading for consumers, since there is no guarantee that bio-based materials are present in the product at all.

Recommendation 2

Legislate explicitly on what market actors may or may not claim

1. Develop a list of banned green claims

Policymakers should develop a list of banned green claims based on market studies. This list should include the most common misleading claims, including:

- **vague claims** (e.g. 'eco-friendly', 'sustainable', 'green', 'natural');
- **irrelevant claims for given product categories** (e.g. biodegradable beverage bottles, because all bottles placed on the market are obliged to be, at least, recyclable);
- **misleading claims potentially circumventing legislation** (e.g. 'reusable' plastic cutlery which avoid bans on single-use plastics);
- **claims not going beyond mandatory legal requirements** (e.g. recycled content self-declarations which are only complying with legislative requirements);
- **claims leading to environmental damage** (e.g. biodegradability and compostability claims on products that might encourage littering);
- **factually wrong claims, or claims that cannot be substantiated** (e.g. carbon neutral products, as this is not possible, and can only be the result of creative carbon accounting).

2. Establish a list of allowed green claims

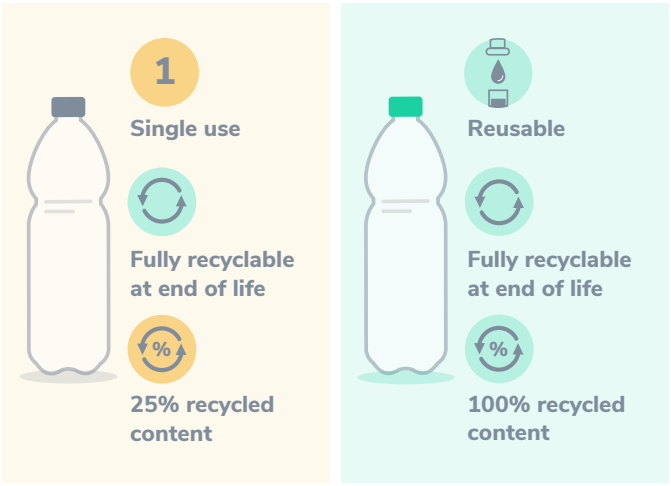
Policymakers should develop a list of allowed green claims. For plastic products, they may refer to the six characteristics using harmonised terminology and definitions, and providing sufficient clarity to users and disposal facilities.

Every claim allowed on the market must be substantiated with standardised methodologies and third-party verified by certification schemes.

3. Establish mandatory product information characteristics

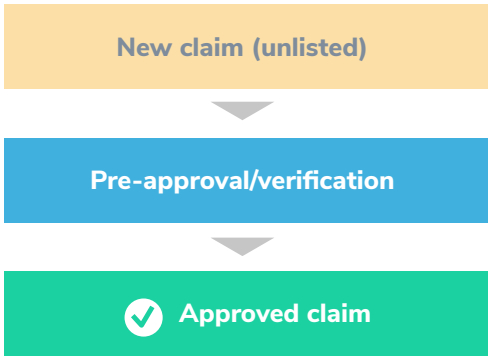
A new label applicable to all plastic products on the market should include mandatory information requirements for different product categories regarding their reusability/ refillability, recyclability, recycled content, biodegradability, compostability and bio-based content, following the criteria set out by the Checklist proposed in this report. Requirements could vary for different product categories.

Such a mandatory label would provide consumers with harmonised and comparable product characteristics for each product type. This way, consumers would have access to clear and comparable information.



4. Where duly justified, allow for exceptions to the rule

Manufacturers wishing to use a green claim which does not fall under any of the 6 categories outlined above, should be subject to a pre-approval procedure[55].



Learning from the EU's Energy Label

In 2004, the European Union Energy Label started to rank a number of home appliances according to their energy efficiency performance, rating them on a scale from A to G. Today, this widely recognised label is a successful tool in guiding citizens towards best performing products. The label is periodically reviewed, excluding the worst performing products from the market. In addition to energy consumption data, labels provide relevant environmental and performance information, such as water use or noise levels of the product.

Recommendation 3

Strengthen legislative enforcement and sanctions against greenwashing

This report shows the magnitude of the problem: 63% of the analysed products presented claims which, in our assessment, did not fulfil the relevance criterion, 38% did not fulfil the clarity criterion, and a quarter did not fulfil the reliability criterion.

Today, legislative enforcement is weak. Market surveillance needs to be strengthened to make sure that good commercial practices take place. Many of the claims made on plastic products, for example those on reusability or compostability, could easily be verified by authorities, often at low cost and with minimal training.

To facilitate enforcement, early warning mechanisms empowering civil society should be developed, making it easy for consumers, consumer organisations, and other civil society organisations to report any suspected non-compliant claim. Reported instances should then be assessed systematically and within a reasonable timeframe, e.g. within 2 months. Products sporting noncompliant claims should be immediately taken off the market. Other sanctions may be taken into consideration:

- **Penalties against greenwashing:** Fines imposed on the economic actors at dissuasive levels, such as based on a significant percentage of a company's annual income. Some authorities have already imposed financial penalties over health claims: for instance, Heinz was fined with 2.25 million US dollars after making unsubstantiated claims on the amount of fruit and vegetables present in their products[56]. A similar approach could be taken by authorities acting against other content-related claims such as on recycled- or bio-based content of plastic products.

- **Compensation where greenwashing generates undue costs:** Financial compensation should be offered to citizens, public bodies and supply chain actors who incurred undue costs or damages from the purchase, handling or use of products sporting claims that were proven to be non-compliant. Such a measure would increase the financial and reputational consequences for companies at fault. For instance, composting and recycling facility operators often have to deal with improper waste disposal, exacerbated by inaccurate or insufficient misleading product labelling as explained in this report[57].
- **Naming and shaming:** This type of strategy could increase consumer awareness of non-compliant brands and act as an effective deterrent to manufacturers that are keen to protect their brand. Competent authorities, media and environmental and consumer protection associations should also be legally protected when calling out companies who do not comply with the required standards.

Recommendation 4

Make sustainable products the norm

Improving consumer information is only part of the solution. The environmental impacts of products are complex and diverse – consumers cannot be expected to make the right decisions for the environment and society every time.

For this reason, policymakers should use and further extend the combination of push-pull mechanisms by putting in place mandatory product environmental labelling (as proposed in point 2 of Recommendation 2) alongside ecodesign requirements for plastic products. Ecodesign requirements should focus on the design phase of products and use a life cycle approach to identify and reduce the environmental impact of products by pushing the least performing ones off the market. Ultimately, the objective of these push-pull mechanisms is to ensure that technologies that are accepted to be least damaging to the environment today, progressively become the norm in the future.

By progressively excluding those products that do not fulfil minimum ecodesign criteria (such as single-use or non-recyclable products), the market will offer more relevant products to address the plastic pollution crisis. With better access to sustainable products, consumers' confidence in their ability to reduce their environmental footprint will also increase.

This report was brought to you by ECOS, the Rethink Plastic alliance, and the Break Free From Plastic movement.

We made sure this report is

Illustration: Visual Thinkery

*Too good to be true? Probably. This claim has not been independently verified, and so we cannot guarantee its relevance, clarity or reliability.

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#break free from plastic

Annex I

List of the types of products and claims assessed

Plastic bottles

- returnable bottle;
- in-store refillable bottles (3 products);
- refillable bottle, with single-use refill container;
- recycled bottles (3 products);
- ocean plastic bottles (2 products);
- bio-based bottle;
- biodegradable bottles (2 products).

Sachets and pouches

- refillable bottle, with single-use refill pouches (2 products);
- bio-based sachets;
- compostable and bio-based sachets and pouches for crisps, coffee and cleaning products (5 products).

Bags and plastic film

- refuse sacks from recycled material (5 products);
- compostable bags, incl. for shopping (3 products);
- compostable pet waste bags (3 products);
- compostable caddy liners (4 products);
- compostable cling film;
- biodegradable bag;
- biodegradable caddy liners and refuse sacks (5 products).

Plastics in food service

- reusable cups (5 products);
- recyclable paper and plastic composite cups;
- clear cups, containers, trays and straws (5 products);
- cutlery, stirrers, hot beverage containers (4 products).

Diapers and wipes

- plant-based wipes (2 products);
- biodegradable wipes (5 products);
- biodegradable diapers (2 products);
- compostable wipes and nappy liners (2 products).

Clothing

- recycled and/or recyclable sneakers (2 products);
- recycled clothing and accessories (3 products);
- clothing from pre-consumer recycled content;
- clothing and accessories from ocean plastic (2 brands);
- biodegradable clothing (2 products).

Annex II

Ideal Standards Checklist - detailed recommendations for standardisers

Standardisers should develop or update standards providing definitions of reusability, refillability, recyclability, compostability, biodegradability, recycled- or bio-based content, on the basis of the principles outlined in the Ideal Claims Checklist presented in this report.

Standards should help guide brands and policymakers on the conditions that need to be met in order to claim certain product characteristics. Certifications schemes must also align with the updated standards so that third party verifications comply with the latest requirements.

Existing standards and issues identified	Necessary revisions or new standards
European standard EN 13429:2004 'Packaging - Re-use'	**Comprehensive reuse and refill standards should**
• does not require the need for reuse or refill logistics and infrastructure; • does not specify minimum durability requirements to achieve a minimum number of trips or rotations; • lacks a test method for the verification of durability requirements; • allows the use of hybrid systems, where both refill and the reusable packaging may be used as single-use packaging.	• provide a definition of 'reusability' and 'refillability'; • specify criteria for meeting the definition, including the existence of infrastructure supporting reuse or refill, packaging durability in sustaining normal use and maintenance under realistic conditions (including a minimum number of rotations), and the existence of an incentive for packaging users to return the packaging (e.g. DRS); • establish test methods for verifying product durability through multiple reuse or refill cycles; • specify harmonised reuse and refill infrastructure and process requirements to collect, wash and reuse or refill packaging; • specify harmonised product shapes and dimensions, preventing exposure to hazardous chemicals, enabling efficient (reverse) logistics and storage, and designed to enable product branding by different companies across multiple lifecycles; • provide clear labelling to packaging users about the reuse system in place and its functioning; • specify or refer to existing recyclability criteria.

Recyclability

Existing standards and issues identified	Necessary revisions or new standards
European Technical Report CEN/TR 13688 on requirements for substances and materials to prevent a sustained impediment to recycling of packaging (under revision)	**Comprehensive recyclability standards should**
• only considers limited number of design criteria for packaging recycling and lacks non-toxic as well as non-hazardous criteria; • considers chemical recycling technology can accommodate any combinations of different plastic types.	• establish a finite number of quality grades of recyclate that can be used for new products/in new applications after a (transparent, sound) recycling process; • specify what type of collection and sorting schemes reach the minimum level of quality for plastic recyclate; • detail what type of product design guidelines can ensure the homogeneity and 'cleanliness' (in terms of presence of problematic substances) of subsequent plastic waste, and thus facilitate reaching the necessary quality for it to be taken up in new products; • include a mention that 'recyclability' also means easy geographical access to recycling plants and therefore, if claims are to be made based on the standard, specify a certain geographical proximity to a recycling plant, and the need to demonstrate that the recycling plant is treating such material in an ongoing manner with sufficiently high outputs per batch; • enlarge the design criteria for plastic packaging recycling, e.g. to non-toxic and non-hazardous materials and substances (e.g. additives, inks); • ensure that chemical recycling technologies and dissolution-based treatment are not described as silver bullets as they also require homogeneous input; • ensure a more detailed characterisation of sorted plastic waste, which typically exit sorting plant in a bale of unwashed products;
European Standard EN 15347:2004 on the characterisation of plastics wastes (under revision for sorted plastics wastes)	
• does not indicate the type and source of plastic waste (post or pre-consumer origin, commercial or household waste, sector); • does not precise the main polymer component of the waste and its minimum percentage by weight, • does not indicate the dominating colour and its minimum share; • does not indicate the maximum percentage by weight of other materials and other contaminants. Does not indicate prohibited impurities;	

Compostability and biodegradability

Existing standards and issues identified	Necessary revisions or new standards
European Standard EN 13432 on requirements for packaging recoverable through composting and biodegradation (under revision)	**Comprehensive industrial composting standards should**
• does not require separate industrial biodegradation testing on added constituents present in the product. As a result, can allow non-biodegradable substances up to 10%; • only tests toxicity in a plant germination test. It does not test toxicity for micro-organisms or other soil organisms; • only tests biodegradation in aerobic conditions (i.e. in an environment with oxygen). As a result, provides only a partial assessment of biodegradability; municipal organic waste, when separately collected, often ends up in biogas plants where biodegradation takes place without oxygen; • is rather disconnected from reality: residence time of compostable material in the industrial composter is rarely the 12 weeks foreseen in EN 13432; • only evaluate heavy metals, not the presence of hazardous substances, SVHC, PFAS, inorganic fluorine.	• specify that 'Biodegradation shall be determined separately for organic constituents which are present in the material at a concentration between 1% and 10% (by dry mass)'. This way, the use of small quantities of conventional plastics (e.g. LDPE) would no longer be allowed. This would be in line with other international and regional standards such as ISO 17088:2012 'Specifications for compostable plastics' and ISO 18606:2013 'Packaging and the environment - Organic recycling', or AS 4736:2006); • reduce the proportion of organic constituents without determined biodegradability to max. 3%; • add toxicity tests of the compost e.g. on earthworms, micro-organisms and other soil organisms to ensure the usability of the compost; • ensure compost quality by testing it on soil biodegradability since residence time of material might be insufficient to ensure full biodegradation prior to it being spread on land as fertiliser; • develop and include anaerobic digestion biodegradation tests to ensure that products designed to be collected with organic waste can be processed with that waste, regardless of whether the available infrastructure is a composting facility or a biogas plant; • reflect the fact that composting ranks lower in the waste hierarchy than reuse or mechanical recycling. The scope of standards on aerobic or anaerobic composting products could be restricted to niche applications for selected specific items that are mixed or attached to food waste such as fruit stickers or tea bags might help to reduce impurities and ease food waste collection; • ensure compost quality by testing it on soil biodegradability since residence time of material might be insufficient to ensure full biodegradation prior to it being spread on land as fertiliser; • assess additional characteristics such as the presence of hazardous substances, SVHC, PFAS, inorganic fluorine.

Existing standards and issues identified	Necessary revisions or new standards
European Standard EN 17033 on biodegradable mulch films (soil biodegradability)	**Comprehensive soil biodegradability standards (on mulch films and other products where relevant) should**
• requires biodegradation to take place in soil within 2 years; • does not require separate biodegradation testing on added substances present in a range of 1-10% in the product. As a result, allows for up to 10% of non-biodegradable substances; • sets the conditions for testing biodegradation at constant temperature (between 20 and 28°C -preferably 25). These unrealistic conditions are likely to underestimate the biodegradation time frame. While biodegradation is indeed triggered by higher temperature, the range in the standard is significantly higher than the EU average (which very rarely reaches 25°C: only in day time, and between July and September) and fails to account for variations between seasons and day/night. Does not require the final product to be tested. As a result, design aspects of the product (e.g. its thickness) might have an impact on the time required for biodegradation to take place.	• include the following requirement: 'Biodegradation in soil at ambient temperature (i.e 20°C - 28°C) shall be determined separately for organic constituents which are present in the material at a concentration between 1% and 10% (by dry mass)'. This way, the use of small quantities of conventional plastics (e.g. LDPE) or constituents which are only biodegradable under industrial composting conditions and not under soil conditions (e.g. PLA) would no longer be allowed. Such requirement is already included in recent international standard specifications for compostable products (i.e. ISO 17088:2012 'Specifications for compostable plastics' and ISO 18606:2013 'Packaging and the environment - Organic recycling' or AS 4736:2006); • introduce mandatory requirements for the product to be tested both in flaked form and in its final product form; • introduce mandatory real-life testing: the presumed soil-biodegradable plastic should be tested in soils reflecting the different soil environment conditions around Europe. It needs to be demonstrated that the 90% pass level is reached whatever the country; • reflect the fact that biodegradability ranks lower in the waste hierarchy than reuse or mechanical recycling. The scope of standards on soil-biodegradable products should be restricted to niche applications and under the condition that they respect all 3 requirements listed above. Examples of such applications are very thin mulch films, small plastic parts which serve in horticulture (e.g. to clip trees or branches together), and potentially slow release fertilisers;

Recycled and bio-based content

Existing standards and issues identified	Necessary revisions or new standards
European Standard EN 15343:2007, on recycling traceability and assessment of conformity and recycled content of plastics	**Comprehensive recycled-content standards should**
• is not aligned with the EU legal framework; • considers both pre- and post-consumer plastic waste for recycled content; • provides traceability requirements which are too loose; • does not indicate the type and source of plastic waste (post- or pre-consumer origin, commercial or household waste, sector).	• align this standard, as well as any other related standards, with the EU calculation method for counting, verifying, defining and reporting the recycled content of beverage bottles, which is being developed for the purpose of the SUP Directive targets. The European Commission should first set the rules in an EU legal act and then mandate CEN to align with the EU method; • distinguish between pre- and post-consumer plastic waste as only post-consumer waste should count for the EU recycled content targets; • add third-party certification; • only allow batch level mass balance, no free allocation and no 'book and claim'; • add further information on the plastic waste type and source.
European Standard EN 16785-2 on determination of the bio-based content using the material balance method	**Comprehensive bio-based content standards should:**
• contradicts the definition of bio-based products, which describes them as products 'wholly or partially made from biomass', by allowing to virtually attribute bio-based content to products with zero bio-based content.	• only allow physical bio-based content to be measured, for instance, in accordance with the methodologies laid down in European standard EN 16640 (using the radiocarbon method) or ASTM D6866; • restrict the communicated bio-based share to biomass produced according to certain minimum sustainability requirements, with a focus on and preference for biowaste.
All standards on bio-based content determination such as ASTM D6866 and EN 16640	
• do not contain any sustainability requirements applying to the biomass contained in the products. As a result, the standards fail to give any qualitative assessment on the raw materials used in the product.	

Annex III
Spotlight on the plastic products covered

This annex introduces the different plastic products covered in the report. The selection is based on the products' impacts during their production and the amount of waste these products generate, focusing primarily on the most littered items and particularly on those found on beaches around the world, notably in the European Union, the United States and South East Asia, as these regions are particularly impactful and impacted[58]. We also selected products based on the abundance of green claims we found on them.

Plastic bottles and jugs

Component materials

Mostly polyethylene terephthalate (PET), high-density polyethylene (HDPE) and low-density polyethylene (LDPE). Bottle labels are made of different types of plastics such as made of polyvinyl chloride (PVC), polypropylene (PP), polylactic acid (PLA), or polystyrene (PS), among others.

Key characteristics

- make up 26% of total plastic packaging[59];
- take an estimated 450 years to decompose;
- plastic bottles made from PET are among the top 3 plastic items most found in litter clean-ups around the globe, together with plastic bags and sachets[60].

Did you know?

A single-use plastic bottle will take between 450 and 1,000 years to decompose

This is just an estimate – no one truly knows how long it takes for plastic to decompose. The range of 450 to 1,000 is science's best guess[61].

Sachets and pouches

Sachets

Component materials

Mostly polypropylene (PP).

Key characteristics

- intended for single use for ready-to-consume condiments, conserves, instant beverages; consumer care products; milk and coffee powder;
- small size, large surface area relative to volume, often contaminated with product leftover after use and highly dispersed;
- expensive to separately collect, sort, and wash, even if – theoretically - recyclable[62].

Pouches

Component materials

Different kinds of film, especially polyethylene, high-density film and low-density film; sometimes different types of film combined.

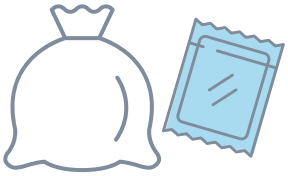
Key characteristics

- used both for single and multiple use packaging applications, including dry and frozen foods, liquid foods, pet foods and non-food household products;
- increasingly used as single-use refill pouches.

Did you know?

The international campaign 'Sack the Sachet' by A Plastic Planet[63] notes that 855 billion sachets are thrown away every year globally, enough to wrap the entire surface of planet Earth. Unchecked, waste sachets could reach a staggering one trillion by 2030.

Plastic film and bags



Bags

Component materials

Different polymers.

Key characteristics

- used for packaging, carrier bags, food waste collection bags, pet waste bags, bags for packing vegetables, bags for packaging magazines and newspapers, and dry-cleaning covers.

Plastic film

Component materials

Mostly two polymers: polyethylene and polypropylene.

Key characteristics

- plastic film is used as packaging in commercial, industrial and agricultural sources;
- difficult to recycle, most of it ends up in landfills, where they take hundreds of years to degrade, often leaching chemicals into groundwater.

Did you know?

A plastic bag has an average 'working life' of 15 minutes[64]. An average American family takes home almost 1,500 plastic shopping bags a year, while every EU citizen used about 200 plastic bags a year in 2010[65]. Only 1% of all plastic bags are returned for recycling, meaning that an average family only recycles a few bags a year. The rest ends up in landfills, incinerators, or as litter.

Plastics in food service

Component materials

Food containers, plates, cups, cutlery, lids stirrers and straws, typically used for take-away food and beverages, are usually made of polystyrene, either in its rigid transparent or coloured form, or in its Styrofoam form.

Straws and lids for hot beverage cups and food containers can also be made of polypropylene.

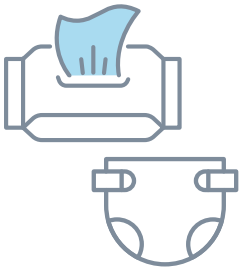
Key characteristics

- most often conceived as single-use items, immediately trashed or littered after a few minutes of use;
- although polystyrene can be recycled, this option is generally considered too difficult and expensive to make it worthwhile[66]. Styrofoam is difficult to break down or recycle, it never decomposes and stays in landfills forever[67].

Did you know?[68]

Plastic litter from take-away orders — including cups, plates, cutlery and straws— is a prime source of the estimated 269,000 tonnes of plastic pollution that plague our waterways and oceans.

Diapers and wet wipes



Wet wipes

Component materials

Mainly composed of a nonwoven fabric made from synthetic polymers (e.g. polyester, polypropylene and polyethylene) rayon, wood pulp or cotton. The packaging is made of plastic (usually PET or PE) to keep wipes moist.

Key characteristics

- used for cleaning and disinfecting for a variety of applications: make-up removal, body hygiene (including babies and toddlers), household and commercial hygiene;
- they neither degrade during a flush nor break down by the time they reach the sewer infrastructure. Even when not flushed, they end up in landfills[69].

Disposable diapers

Component materials

Liner, outer shell, and absorbent materials are made from different polymers[70].

Key characteristics

- used to absorb and contain excreta produced by babies and toddlers, adults, and pets.
- recycling is nearly impossible because of the component materials and the nature of their use. Generally thrown away with other household waste.

Did you know?

An investigation into the main causes of sewer blockages in the United Kingdom in 2017 found that wipes made up 93% of all products causing sewer blockages, with baby wipes making up 41%[71].

Clothing

Component materials

Traditionally made from plant fibres such as cotton and animal sources, for example wool. Plastics made possible to produce synthetic fibres such as petroleum-based polymers polyester and nylon, all widely used in the fashion sector. There also exist plant-based fibres that have properties similar to plastic, for instance cellulose.

Key characteristics

- while certain polymers or fibre mixes are recyclable, others are not easy or even impossible to recycle. Polyester made from PET can be produced from recycled PET plastic bottles, although this constitutes downcycling as the materials are mixed into a lower-quality product that can never be recycled again;
- nylon is made from polyamides and can be recovered. It is used, for example, in fishing nets.
- Polyamides can also be made from bio-based materials such as vegetable oils.

Did you know?

Each year, around half a million tonnes of plastic microfibres resulting from the washing of textiles – equivalent to more than 50 billion plastic bottles – are estimated to be released into the ocean[72].

Notes and references

1 See for instance Chatel L., *Plastique jetable vendu comme réutilisable : on ne laisse pas passer*, Zero Waste France, 2020. Available at: https://www.zerowastefrance.org/plastique-jetable-reutilisable-on-laisse-pas-passer/

2 UNEP, *Guidelines for Providing Product Sustainability Information Global guidance on making effective environmental, social and economic claims, to empower and enable consumer choice*, 2017 Available at: https://www.oneplanetnetwork.org/sites/default/files/guidelines_for_providing_product_sustainability_information_ci-scp_2017_revised.pdf.

3 Similarly to this report, a sweep of websites for 'greenwashing' has led national consumer protection authorities to conclude that 'in 42% of cases the claims were exaggerated, false or deceptive and could potentially qualify as unfair commercial practices under EU rules'. European Commission, *Screening of websites for 'greenwashing': half of green claims lack evidence*, Press Release, 28 January 2021. Available at: https://ec.europa.eu/commission/presscorner/detail/en/ip_21_269

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5 R. Geyer, J.R. Jambeck, K.L. Law, *Production, use, and fate of all plastics ever made*, Science Advances, 2017.

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11 See for instance Footprint Foundation, *Single Use Plastic Legislation*, Web, 2021. Available at: https://footprintusfoundation.org/single-use-plastic-legislation/

12 GfK Belgium, time.lex, Milieu Ltd, BIO IS and the Ecologic Institute with support of expert advisors of Brook Lyndhurst, Trucost and Heather Collie, *Consumer market study on environmental claims for non-food products*, Study for the European Commission, 2014, Available at: https://ec.europa.eu/info/sites/info/files/study_on_environmetal_claims_for_non_food_products_2014_en.pdf

13 European Commission, *European Commission launches Green Consumption pledge*, 2021, Available at: https://ec.europa.eu/info/policies/consumers/consumer-protection/green-consumption-pledge-initiative_en

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15 European Commission, *Screening of websites for 'greenwashing': half of green claims lack evidence*, 2021, Available at: https://ec.europa.eu/commission/presscorner/detail/en/IP_21_269

16 See in particular: United Nations Environment Programme & Consumers International, *Can I Recycle This? A Global Mapping and Assessment of Standards, Labels and Claims on Plastic Packaging*, 2020. Available at: https://www.oneplanetnetwork.org/sites/default/files/unep_ci_2020_can_i_recycle_this.pdf ; European Commission, *Screening of websites for 'greenwashing': half of green claims lack evidence*, 2021, Available at: https://ec.europa.eu/commission/presscorner/detail/en/IP_21_269; United Kingdom Government Competition and Markets Authority, *Misleading environmental claims*, 2020, Available at: https://www.gov.uk/cma-cases/misleading-environmental-claims

17 Selected items were mainly examined through photographs and information available on online retailers and their own brand or company websites. The items were reviewed taking the perspective of the average consumer. A list of the types of products assessed is presented in Annex 1.

18 UNEP, *Guidelines for Providing Product Sustainability Information Global guidance on making effective environmental, social and economic claims, to empower and enable consumer choice*, 2017. Available at: https://wedocs.unep.org/handle/20.500.11822/22180

Other sets of principles were developed since. See for instance: United Kingdom Government Competition and Markets Authority, *Draft guidance on environmental claims on goods and services*, 2021. Available at: https://assets.publishing.service.gov.uk/media/60a66a9cd3bf7f73893a8e1f/Draft_guidance_on_environmental_claims_on_goods_and_services-.pdf

19 European Commission, *Misleading green claims - Extract of the Guidance for the implementation/application of Directive 2005/29/EC on unfair commercial practices*, page 1. Available at: https://ec.europa.eu/environment/eussd/pdf/green_claims/en.pdf

20 Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH). For more information about the REACH Candidate List, readers can consult the website of the European Chemicals Agency: https://www.echa.europa.eu/candidate-list-table

21 Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures. For more information on this Regulation, readers can consult the website of the European Chemicals Agency: https://echa.europa.eu/regulations/clp/understanding-clp

22 The circularity hierarchy prioritises reuse before recycling, and recycling before composting.

23 The Fundamental Principles are described in Conceptual framework on page 9. The ECOS Ideal Claims Checklist is introduced on page 10.

24 For instance, 40% of the 500 claims found online and assessed by national authorities members of the International Consumer Protection Enforcement Network were found to be misleading. See: United Kingdom Government Competition and Markets Authority, 'Global sweep finds 40% of firms' green claims could be misleading', 28 January 2021. Available at : https://www.gov.uk/government/news/global-sweep-finds-40-of-firms-green-claims-could-be-misleading.

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26 Chatel L., *Plastique jetable vendu comme réutilisable : on ne laisse pas passer*, Zero Waste France, 2020. Available at: https://www.zerowastefrance.org/plastique-jetable-reutilisable-on-laisse-pas-passer/

27 An example of a reusable beverage bottle system could be found from Coca-Cola in Latin America, and is described by the Ellen MacArthur Foundation. Ellen MacArthur Foundation, *Reuse – Rethinking packaging*, 2019. Available at: https://www.ellenmacarthurfoundation.org/assets/downloads/Reuse.pdf

28 *Return on-the-go* designates systems which enable consumers to return packaging to a drop-off point (sometimes the point of purchase) to be sent for refill, rather than products to be refilled at home. Ellen MacArthur Foundation, *Reuse – Rethinking packaging*, 2019, page 13. Available at: https://www.ellenmacarthurfoundation.org/assets/downloads/Reuse.pdf

29 Directive (EU) 2018/852 of the European Parliament and of the Council of 30 May 2018 amending Directive 94/62/EC on packaging and packaging waste.

30 Ellen MacArthur Foundation, *The new plastics economy global commitment – reporting guidelines for business signatories*, 2019, Available at: https://www.newplasticseconomy.org/assets/doc/GC-Reporting-guidance-16.07.19.pdf

31 Rollinson, A., Oladejo,J., *Chemical Recycling: Status, Sustainability, and Environmental Impacts*, Global Alliance for Incinerator Alternatives, 2020. Referenced in: Joint NGO Statement – Chemical Recycling: 7 Steps To Effectively Legislate On Chemical Recycling See also: CHEM Trust, *Chemical Recycling: State of Play*, study prepared by Eunomia, 2020. Available at: https://chemtrust.org/wp-content/uploads/Chemical-Recycling-Eunomia.pdf

32 United Nations Environment Programme & Consumers International *Can I Recycle This? A Global Mapping and Assessment of Standards, Labels and Claims on Plastic Packaging*, 2020, Available at: https://www.oneplanetnetwork.org/sites/default/files/unep_ci_2020_can_i_recycle_this.pdf

33 Ibid.

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37 European Commission, *Guidance on the implementation/application of Directive 2005/29/EC on unfair commercial practices*, 2016, Section 5.1.6 on environmental claims highlights that Annex I point 10 of the UCPD 'clarifies that traders should not mislead consumers by unduly emphasising attributes that come from regulatory requirements'.

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