



EVERYDAY PLASTIC

What we throw away and where it goes

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About us

Everyday Plastic

Everyday Plastic is an art and educational project that aims to communicate the realities of our plastic consumption in a personal and relatable way.

Daniel Webb collected every piece of plastic he used in 2017. Having counted, categorised, weighed and photographed the whole collection of plastic waste, he turned it into a large-scale billboard. The giant mural was on show at Dreamland in Margate earlier this year and officially launched the Everyday Plastic project.

The project received worldwide media coverage and has had features in The Guardian, National Geographic, Metro, Sky News, BBC and more. One of the key aims of the project is to improve communication of plastic pollution and raise awareness within the wider public sphere.

Daniel Webb

Daniel has worked in marketing for 10 years across a range of sectors including art, music, food and drink and sport.

He has had a more active interest in conservationism since 2015 which led him to launch Everyday Plastic in 2017. Daniel delivers talks on the project at schools, businesses and events and works with major environmental charities such as Greenpeace, Friends of the Earth and Surfers Against Sewage.

Dr Julie Schneider

Julie is an expert in Earth Sciences. Having started her studies in Paris in 1995, she went on to complete her Masters and PhD at one of France's dedicated scientific research institutions - Université Montpellier II - in 2004.

Her post-study roles include a geochemistry research fellowship in Taiwan before spending 8 years lecturing and researching in Earth Sciences at the Université Nice Sophia Antipolis. Since moving to the UK, she volunteered to research with Friends of the Earth before moving to CHEM Trust - a charity that works to prevent man-made chemicals from causing long term damage to wildlife or humans.

Everyday Plastic: what we throw away and where it goes

By Daniel Webb
and Dr. Julie Schneider

Disclaimer: The arguments expressed in this report are solely those of the authors, and do not reflect the opinion of any other party.

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everydayplastic.org
dan@everydayplastic.org
@everydayplastic
plasticeveryday



**SURFERS
AGAINST
SEWAGE**

sas.org.uk
info@sas.org.uk
@surfersagainstsewage
sascampaigns



leap.eco
info@leap.eco
@leapness
leapness

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Foreword



Everyday Plastic is an incredibly powerful representation of a seemingly mundane, easy-to-fix, problem that envelopes all our lives, not just every day but almost every hour, every minute and every second of our existence. A problem that passes through all of our hands daily, which has now become one of the world's biggest environmental emergencies, the bed fellow of climate change and one that evokes the pesticides and toxic chemicals catastrophes of the '50s and '60s which Rachel Carson highlighted in her

seminal book *Silent Spring*.

Plastic transactions dominate our lives and are virtually inescapable. Daniel's project demonstrates the cumulative scale and impact of those seemingly innocuous transactions with single-use plastics. How the small choices we make can unwittingly build our own personal plastic monster that shadows us at every corner shop, supermarket, café, restaurant and workplace. A plastic shadow that is consuming the very ground that we all walk on.

Plastic transactions dominate our lives and are virtually inescapable.

The numbers are startling, even for the most avid fans of the plastic free movement. A massive 4,490 pieces of plastic over the course of a year. On this basis, the UK throws away 295 billion pieces of plastic annually. Throws away! Not reuses, not refills, not recycles – throws away! Most of this packaging comes from the food we consume and much of it is unrecyclable anyway, irrespective of the complicated and stalling recycling systems the public currently has at its disposal. Only a miniscule amount of the plastic collected for recycling in the UK is reprocessed domestically – a tiny 4%. Don't be fooled, the containers in your kerbside recycling aren't currently fast-tracked back into new containers on our supermarket shelves. Not that we shouldn't continue every effort to use current recycling systems.

The public is caught between a rock and a hard place, all too often becoming the plastic pollution scapegoats. We're provided with inadequate recycling systems but have increasing amounts of pointless plastics foisted upon us. This ominous combination virtually 'weaponises' single-use plastics, creating plastic munitions that rain down on our streets, fields, forests, beaches and oceans. The systems the public are provided, which incidentally we pay for through our taxes, haven't kept pace with the plastic armada industry controls and profits from.

Polluted beaches looking like supermarket shelves.

However, we the public is making a stand against this threat. Polluted beaches looking like supermarket shelves and supermarket shelves looking like polluted beaches have driven an almost unprecedented environmental movement. We started with the end of pipe solutions – beach and countryside cleans where the problem is acutely visible. Then the personal choices to refuse plastics – Plastic Free Communities, refill schemes, refusing straws and carrying a cotton tote bags to name but a few. Government policy and legislation broadly followed this growing public discontent about plastic pollution.

However, with almost 1 in 10 barrels of oil being designated to plastic production, the oil industry will unquestionably be the final target. There lies the epicentre of the plastic tsunami.

Make your voice count and let's keep up the pressure together, which is a critical component of driving reforms in government policy, legislation and business practices. Your everyday choices and actions make a bigger difference than you think when it comes to plastic pollution.

Together, we can call for government and business to change too.

Hugo Tagholm CEO,
Surfers Against Sewage

To start or join a Plastic Free Community, please visit sas.org.uk

In a nutshell

In 2017, I collected every piece of plastic that I threw away. I wanted to analyse the results of this year-long experiment to help the impact of our plastic consumption resonate on an individual level and with everyday people. This process has been integral in shifting my position from being oblivious of my consumption to being able to quantify it piece by piece.

1

Over the course of one year, I threw away **4,490 pieces of plastic**

Based on the weight of this, this is just below average compared to what the rest of the UK consumes and throws away.

2

The UK throws away over **295 billion pieces of plastic every year**

If we applied the amount of plastic waste I collected to every individual in the country, it would mean that the population of the UK throws away 295 billion pieces of plastic every year. In volume, this represents a pile of plastic rubbish big enough to cover Clapham Common and rise as high as The Shard.

4

67% of my throwaway plastic was used to package, wrap and consume **food**

No surprises here. We can buy food anytime, anywhere and in abundance, especially from supermarkets. And most of it comes wrapped in plastic.

3

93% of my collected plastic waste was **single-use packaging**

Shockingly, 4,177 pieces of plastic were single-use packaging, specifically designed to be thrown away. By simply combining the Oxford English Dictionary definitions for single-use and packaging, we can offer a fresh take on the definition of single-use packaging as 'a material used to wrap or protect goods that is designed to be used once and then disposed of or destroyed'.

5

47% of the throwaway plastic is made of **low grade, low value and unrecyclable plastic film**

Almost no piece of packaging made of plastic film can be recycled, yet this makes up the majority of the pieces in my collection of plastic waste. It cannot be made into new plastic nor can it be made from recycled plastic.



6

70% of the plastic that I threw away in a year is **not currently recyclable**

Plastic bottles, trays and pots are widely collected by local councils in the UK, but under a third (30%) of the plastic waste I created is currently recyclable in the UK.

7

Only 10% of my throwaway plastic waste would be collected for recycling

Given that every local authority has a different policy and approach to waste management and recycling, it's unsurprising that much of the recyclable plastic is not collected. The plastic waste ends up in the wrong bin, escapes or spills, or is not recyclable under one council, so it means only about 10% of all the plastic I threw away is actually collected to be recycled.

Only 4% of my collection of plastic waste would be recycled at UK recycling facilities

Of the 4,490 pieces of plastic that I saved over the course of a year, only 161 would be recycled. We define recycled as 'plastic waste that has been converted into reusable materials at facilities in the UK'.

Are we being lied to about recycling? Because clearly, recycling is not enough.

To really make an impact on this urgent situation, governments, industry and retailers need to act now. For example, phasing out plastic film if its unrecyclable, making packaging more reusable and recyclable, and investing in improving recycling infrastructure will make huge leaps towards reducing our plastic footprint in the UK and overseas.

As well as raising our voices to put pressure on policymakers and corporations, each of us needs to acknowledge that we are part of the system, and that each of us has a responsibility too. We need to acknowledge that our throwaway consumer culture has affected the environment and that our love for cheap and superfluous convenience will have irreversible damage on our future.

Less plastic needs to be produced, and less plastic needs to be consumed.

Background

During a plastic-riddled run along the Margate coast one September evening in 2016, I started thinking about what my own personal impact was on plastic pollution. How much plastic is in the sea? Is any of it mine? How much rubbish could one person living alone actually produce...?

Following this head-on confrontation with marine and coastal litter, I asked Thanet District Council about what recycling was available to me in my block of flats. The answer? None. Neither at my kerbside nor the local waste management centre. Given that the products in my local Aldi are nearly all packaged in plastic, I found myself wondering how I could avoid buying plastic or how I could dispose of it responsibly.

I decided that for the next 12 months, starting 1 January 2017, I would not throw away any plastic waste I produced. Not a bottle top, piece of bubble wrap, straw, toothbrush, salad bag, coffee lid or clothing label.

Margate, like dozens of coastal towns across the country, is overwhelmed by plastic pollution in its seas. It costs

councils millions to clear its coastline and streets each year¹ and most of Kent's waste is in fact incinerated or is recovered to produce fuel.²

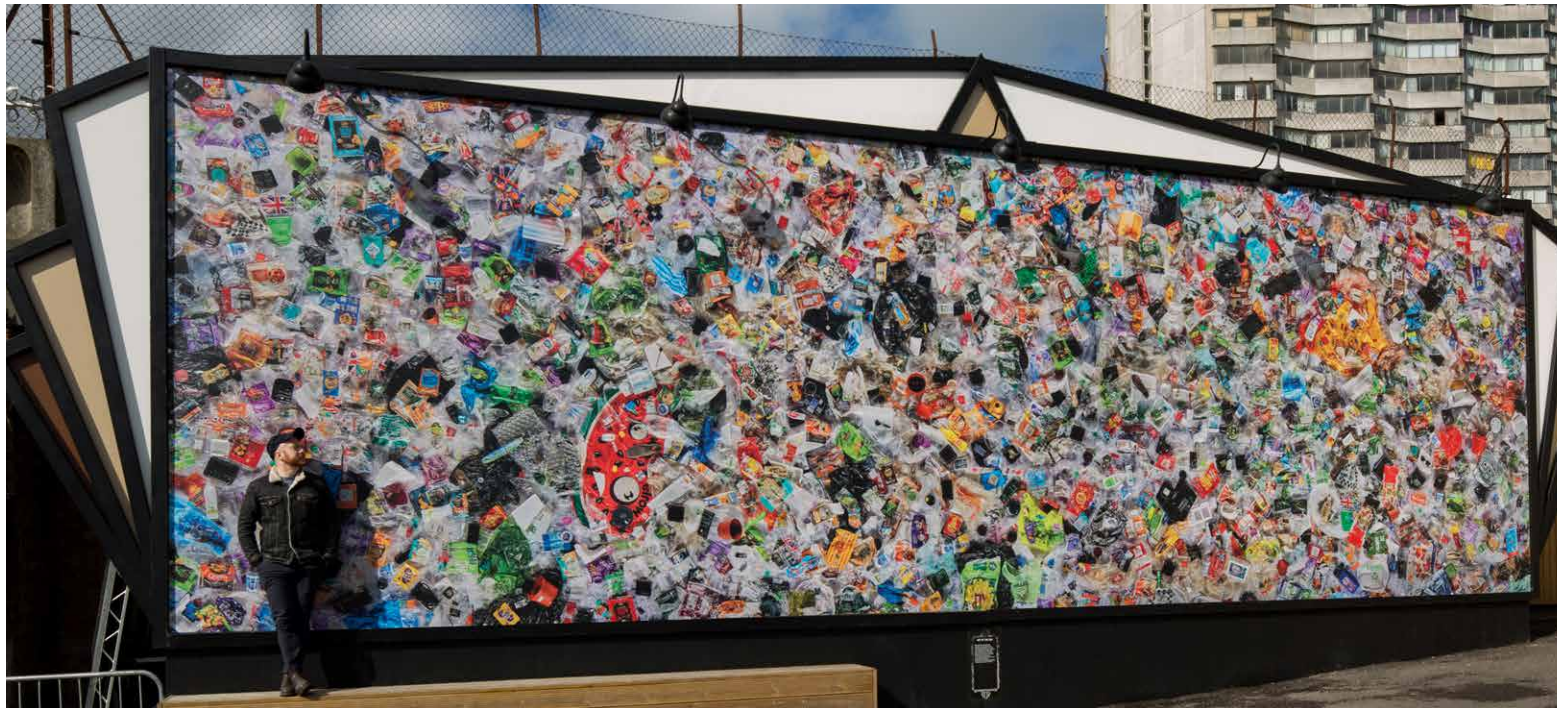
If most of it is not being recycled, then how much plastic waste is each of us producing and where is it ending up?

I want to share this report with you to show what your annual plastic use looks like so we can understand our individual contribution to plastic pollution.

I am not a journalist, activist, environmentalist or scientist, and I have written this report in a straightforward and accessible manner. For this reason, the words, opinions, analogies, language and philosophy in this report come from me and Julie.

This year-long process of collecting has given us a hugely comprehensive inventory of plastic waste.

I may be the crazed collector, but the experiment and its effects can be applied to every one of us. From brushing your teeth to making dinner, the report shows just how much throwaway plastic is in our day-to-day lives.



About me

I'm your average British bloke.

I'm 36 and enjoy all the regular things someone in their mid-30s enjoys. Having a pint, going out for a meal, cooking at home, riding my bike, going for a run, going to gigs, going to the cinema etc.

I moved to Margate in Summer 2016, attracted by the sea, creative community, small town feel and the opportunity to continue my freelance marketing work.

I try to eat pretty healthily. I don't buy ready meals or own a microwave. That's not to say that I don't love a snack - crisps, peanuts, crackers, chocolate, cake - the lot. My local Aldi, which is about 400 metres from my house, is great for picking up cheap and quality ingredients for meals.

It was around 2015 when I really started to pay attention to environmental problems, notably climate change and how it was communicated. I became really conscious of plastic pollution in 2016, and stopped using water bottles around September of that year. I'm not vegetarian, but I have continued to cut down on how much meat I consume for the past two years.

Introducing Dr Julie

Dr Julie has a PhD in Geosciences.

She was a lecturer in the field at Université Nice Sophia Antipolis in France until 2015. After two decades studying and researching Earth Sciences, she moved to the UK to lend her skills and knowledge to NGOs and charities such as Friends Of The Earth, Break Free From Plastic and CHEM TRUST.

It was whilst researching the petrochemical industry and the use of fossil fuels as a raw material in manufacturing that she realised one of its main products was plastic. Horrified by plastic's abundance, durability and toxicity, she started to dig deeper into the issue. Combining her expertise in geosciences with her passions for social and environmental change, she is determined to turn the tap off on plastic production.

I met Julie on Facebook in the very early days of Everyday Plastic when I was looking for a researcher, and thank my lucky stars I did. This report would not exist if it wasn't for her. She has dedicated hours, days, weeks, months of her free time to meticulously analysing and calculating data from every source imaginable and applying it to our findings.



Methodology

To collect the data presented in this report, the first task was to classify the collection by purpose, plastic type and recyclability. To do so, we needed the help of 20 volunteers.

As all the pieces were mixed within 20 different bin bags, we started by firstly separating pieces by hard and soft plastics. Amongst the hard plastics were milk bottles, tomato trays, yoghurt pots, tablet packs, toothpaste tubes etc. The soft plastics included carrier bags, bubble wrap, cling film, salad bags and crisp packets.

To determine the type of plastic that each category was made from, we had to go through the arduous process of checking the packaging for the plastic code e.g. 1 = PET, 5 = PP, 6 = PS etc³. If the piece didn't list the code, we identified the type based on its texture and appearance.

After we'd completed this process, we were then able to identify 114 sub-categories based on both their plastic type and purpose e.g. LDPE bread bag or PP bread bag, HDPE shampoo bottle etc. Finally, we counted, measured and weighed each piece in the sub-categories.

We have applied publicly available statistics to the data collected in this experiment. This has given us the means to make accurate calculations into the fate of my plastic within the UK waste system as well as energy and resource consumption related to the lifecycle of my plastic.

To see all the data collected and detail of calculations, see the appendix 2.

We were able to identify 114 sub-categories



How is this study representative of an average UK citizen?

This year-long experiment gives an authentic picture of my plastic consumption.

To be sure that I was representing other people in the UK and Europe, we have compared my plastic consumption with publicly available data. Our fictional character - Diane - represents the average UK citizen.

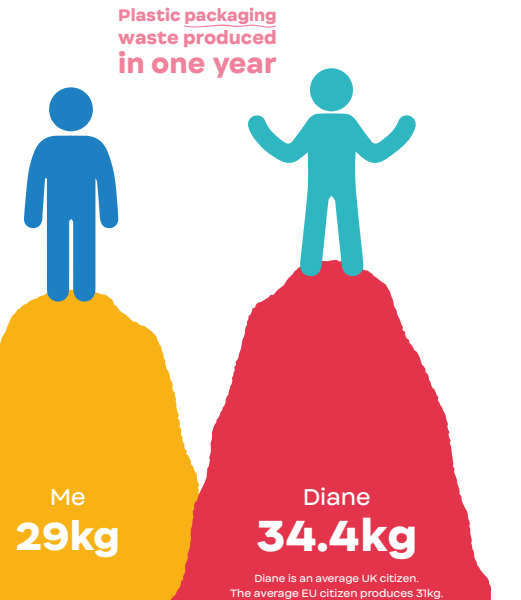
For 2017, I'd decided not to buy or drink water out of plastic bottles. This explains why my plastic bottle consumption is lower at 5.7kg than the average 9kg consumed by Diane.⁴

My penchant for yoghurts and tomatoes is a bit more than Diane's. 8.9kg of my collection is pots, trays and lids whereas Diane's weighs 8kg.⁵

Many of my friends noticed how much I love to eat crisps. However, Diane eats around 166 packets of crisps and savoury snacks per year, whereas I eat 146.⁶

Altogether, this explains why my total plastic packaging consumption of 29kg in 2017 is 15.7% lower than Diane's at 34.4kg⁷. The average European uses 31kg of plastic packaging per year⁸. This is 2kg (6%) higher than mine.

This is important to acknowledge as throughout this report, we will apply my data to the UK population to understand the scale of the problem on a national level. As seen above, it is worth bearing in mind that my consumption of plastic is slightly lower than average.



Over the course of one year, I threw away 4,490 pieces of plastic

Ever wondered how much plastic we use in a year?

The UK throws away an estimated 295 billion pieces of plastic every year

Over the course of one year, I threw away 4,490 pieces of plastic.

Since my plastic consumption is pretty close to the average UK citizen, what if we multiplied the amount of plastic that I threw away by the number of people living in the UK - i.e. 65.6 million people?^d

It works out that as a country, we throw away hundreds of billions of plastic pieces in just one year.

My entire plastic pile weighs 35kg. Applying this to whole country, this adds up to 2.3 million tonnes - the equivalent of about half the weight of the UK population.⁹

And in volume, it represents a pile of plastic rubbish big enough to cover one of London's largest green spaces - Clapham Common (89 hectares) and rise as high as the UK's tallest building - The Shard (306m).¹⁰

How do you throw away 4,490 pieces of plastic in a year?

Throwing away 4,490 pieces in a year works out at an average of 86 pieces each week or 12 a day.

12 pieces per day could seem like a lot, but let's take a milk bottle as an example. It is one product that often comes with five separate plastic pieces: the bottle itself, the bottle cap, the safety seal around the cap, the peelable seal on top of the bottle, and the plastic sleeve around the bottle which features the brand name, use-by date etc.

A more accurate breakdown of what I used and threw away in a week is provided in the Appendix 2 - Table 2.



UK Annual Plastic Waste 306m high

The Shard 306m high

UK Annual Plastic Waste 1,074m diameter

The London Eye 123m diameter

UK Annual Plastic Waste 92.4 million m³

What is throwaway plastic?

This is a collection of my plastic waste i.e the stuff I'd thrown away. However, I was still shocked that pretty much every piece was actually designed to be thrown away.

Oxford English Dictionary defines throwaway as 'denoting or relating to products that are intended to be discarded after being used once or a few times'. Throwaway encompasses several sub-categories, including single-use - defined as 'designed to be used once and then disposed of or destroyed' - and disposable - defined as 'intended to be thrown away after use'. We feel that it's important to define packaging too. The OED defines packaging as 'materials used to wrap or protect goods'.

Therefore, we can offer a new definition;

Single-use packaging /'sɪŋg(ə)l/ /ju:s/ /'plɑːstɪk/ a. n. A material used to wrap or protect goods that is designed to be used once and then disposed of or destroyed.

Based on these definitions, we decided to break my plastic waste down into 4 categories:

A) **Single-use packaging** such as salad bags, bread bags, cheese packets, shower gel bottle etc., is so ubiquitous, that 93% of my plastic waste is single-use packaging (4,177 pieces).¹¹

B) **Single-use non-packaging** such as straws, stirrers, takeaway cutlery, wet wipes etc. made up 4% of my pile of plastic. I tried my best to refuse these pieces throughout the year but somehow managed to end up with 171 pieces!

C) **Disposable non-packaging** pieces such as a Bic biro is not single-use, but it is designed to be thrown away once the ink has run out. Other pieces include cleaning sponges, razor blades and gift cards, and there were 48 pieces in total, accounting for just 1%.

D) **Durable** pieces that are designed to last such as pipes, keyboard, electric toothbrush make up the remaining 94 pieces (2%). But they still break, and are then ultimately thrown away.

Categories A, B and C are throwaway plastic. In total, this equates to 98% of my whole collection of plastic waste (4,396 pieces).

For the rest of the report, the statistics will be based on the 4,396 pieces of throwaway plastic only. We've chosen to focus on throwaway plastic as we are most interested in the fate of plastic that has been specifically designed to be thrown away, highlighting the consequences of our fast moving consumer culture.

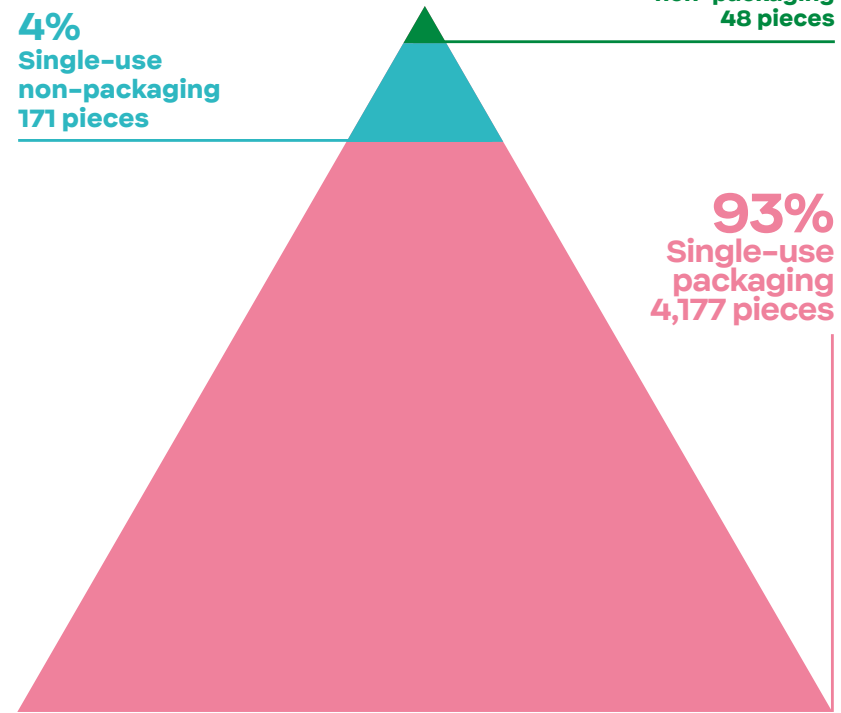
In total, throwaway plastic equates to 98% of my whole collection of plastic waste.

How much of the plastic waste was packaging?

4%
Single-use non-packaging
171 pieces

1%
Disposable non-packaging
48 pieces

93%
Single-use packaging
4,177 pieces



98%
Throwaway Plastic
4,396 pieces

2%
Durables
94 pieces

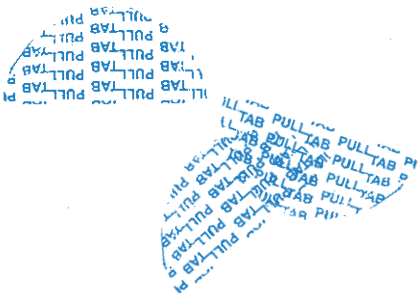
What use were the throwaway plastic pieces designed for?

We calculated that 98% of my plastic waste is throwaway plastic.

But what is the plastic designed to do before it is thrown away? It didn't take much to narrow down the collection of plastic waste into 4 main categories:

- 1 **Food packaging**
- 2 **Protective packaging** (from polystyrene chips to parcel bags)
- 3 **Personal hygiene, home cleaning and medical packaging**
- 4 **Miscellaneous** (from pens to paint pots)

My initial instinct was that a lot of it was food packaging. And I was right!



2,658 pieces (67%)¹⁰ of the throwaway plastic were used to package, wrap and consume food.

This includes crisps and cling film, hummus pots and HP sauce, salad bags and spaghetti packs, and cutlery and coffee cups.

Having bought new furniture, hardware and electronics for my flat, as well as ordering a whole host of paraphernalia from Amazon and clothes from ASOS, there was a lot of protective packaging. 867 pieces (22%) were used as protective packaging. These pieces range from polystyrene chips to parcel bags, bubble wrap to bin bags and birthday card wrappers to carrier bags.

We analysed which pieces would be used for my daily washing and cleaning routine. In total, 378 pieces (10%) were used to package personal hygiene, home cleaning and medicine products. These include everything from tablet packs to toilet paper wrap, bleach bottles to Brita filters and wet wipes to washing tablets.

What about the things that aren't designed for single-use packaging but are designed to be thrown away once we're done with them? These pieces include pens, paint pots, plant pots and inner soles. There were 54 of these pieces (1%).

What use were the throwaway plastic pieces designed for?



67%
Food packaging
2,658 pieces

22%
Protective packaging
867 pieces

10%
Hygiene and cleaning packaging
378 pieces

1%
Miscellaneous
54 pieces

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But what does the packaging look like?

The sturdier, less flexible plastic that we see used in ketchup, shower gel,

and milk bottles, or tubs, pots and trays to package your meat, soup, ice cream and vitamins accounted for 1,227 pieces (28% of the throwaway plastic)¹³.

These are the pieces that are most widely collected for recycling.

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Nearly half of the throwaway plastic (2,060 pieces – 47%) is made of this material, commonly known as plastic film.

Most of the throwaway plastic is the soft, thin, flimsy stuff. Think of a carrier bag, or a bag of pasta, spinach, cereal or crisps, or the wrap around your chocolate bar, coffee pouch, frozen peas or cheese. You know, that stuff.

Nearly half of the throwaway plastic (2,060 pieces – 47%) is made of this material, commonly known as plastic film.

You'll notice that this kind of stuff is not included in your local council's list of recyclable pieces.

What type of plastic is the throwaway plastic made from?

This is the science-y bit. How is plastic made? How do different processes make different types of plastic? What are those types used for?

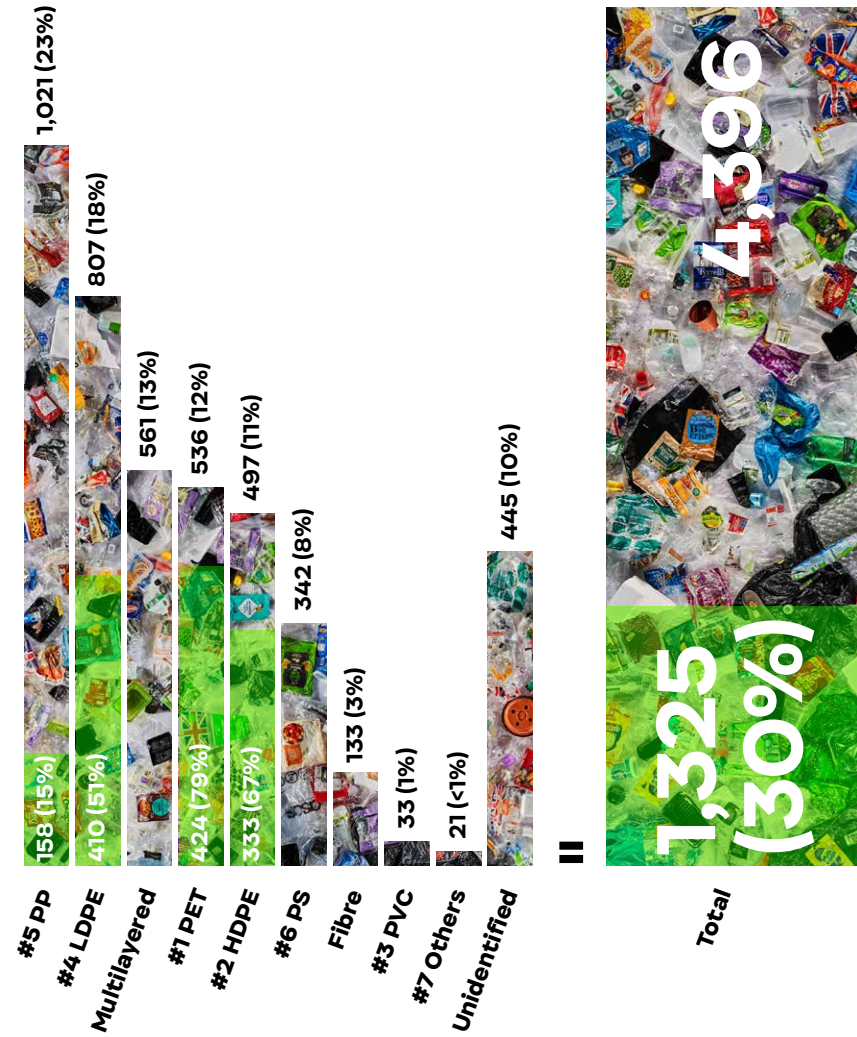
Most of the plastic we see in our day-to-day lives is made from refined oil and/or gas. How it is refined determines the type of plastic.

For example, the gas ethane could be extracted from shale gas. Ethane is then converted to ethylene, a single molecule, or 'monomer'. A group of monomers are then joined together to form a longer chain of molecules or 'polymer'. This process creates polyethylene (PE), which is the most abundant and number one plastic that is used for packaging (29% of the throwaway plastic from my plastic waste is made of PE). Depending on the way the ethylene molecules are joined together during the polymerisation process, polyethylene can take on different forms. The denser, harder and heavier plastic that we see in milk and shampoo bottles is High-density Polyethylene (HDPE). Thin, flexible and lighter plastic such as carrier bags, bread bags or cling film is Light-density Polyethylene (LDPE).

There are 6 main types of plastics used for packaging as well as a multitude of other types used in various applications such as electronics, cars, planes, construction, clothing, medicine etc. We sorted my plastic waste using the Resin Identification Coding System, as well as separate categories for multilayered packaging, plastic fibres (e.g. textile), unidentified and other.

PP (e.g. pasta bag), LDPE (e.g. bread bag) and multilayered (e.g. crisp packet) plastics make up over half (53%) of the whole collection. These plastics are either not or very poorly recycled in the UK. The two plastic types that are theoretically the most easily recyclable in the UK, PET (e.g. water bottles) and HDPE (e.g. milk bottles), account for less than a quarter (23%). PS (e.g. takeaway boxes), PVC (e.g. gift cards), other (inc. ABS, PLA), polyester, nylon, other fibres, and unidentifiable plastics make up the remainder. None of these are recyclable in the UK.

What type of plastic is the throwaway plastic made from?



Of the throwaway plastic, how much is recyclable in the UK?

Before calculating how much of my plastic waste would be recycled at UK recycling facilities after it has been put in the bin, we wanted to estimate the amount of plastic that is theoretically recyclable.

Defining 'recyclable' however is not easy. Even Steve Alexander, President and CEO of The Association of Plastic Recyclers, has said "recyclability goes beyond just being technically recyclable there must be consumer access to a recycling program, a recycler must be able to process the material, and there must be an end market."¹⁶

For the purpose of this report, we have defined recyclable as 'pieces that are collected for recycling by local councils in the UK'. To be even more precise, we developed 4 categories based on the pieces that are collected by councils from widely to not at all.¹⁷

- A **Widely collected** | 90% of councils will collect for recycling (e.g. PET and HDPE bottles)
- B **Mostly collected** | 70% of councils will collect for recycling (e.g. pots and trays)
- C **Poorly collected** | 20% of councils will collect for recycling (e.g. LDPE films like bread bags)
- D **Not currently recycled** | 0% collected for recycling by councils (e.g. multi-layered packaging, cling film etc.)

Theoretically, every piece in categories A, B and C is recyclable. After sorting all the pieces according to these categories, it turns out that less than a third (1,325 pieces - 30%)¹⁸ is currently recyclable in the UK.

This means that 3,071 pieces (70%) that I consumed over a year are not currently recyclable.

Of the 4,396 pieces of throwaway plastic, how much is recyclable in the UK?

Not Currently Recycled: 3,071 pieces 70%



Poorly Collected for Recycling: 424 pieces 9.6%



Mostly Collected for Recycling: 523 pieces 12%



Widely Collected for Recycling: 378 pieces 8.4%

70%
of the plastic
I threw away
over a year is
not currently
recyclable

If 30% is recyclable, how much is actually collected for recycling?

While 1,325 pieces (30%) of my plastic waste are recyclable, only 451 pieces (10%) would be collected for recycling. How did we work that out?

If we take PET plastic trays used for our tomatoes and strawberries as an example: 100% are recyclable in the UK, 76% of local councils collect them but only 32% are actually collected for recycling²⁰. Therefore, we applied the 32% collection rate to the PET plastic trays in my collection, working out at 268 pieces. If we estimated how many would be collected? 86 pieces.

Some pieces have collection rates of 58% such as PET plastic bottles, while others such as crisp packets have a collection rate of 0%. We applied the same methodology for each category in my plastic waste, and we worked out that only 10% of my throwaway plastic (451 pieces) would be collected for recycling²¹.

Only 10% of my throwaway plastic would be collected for recycling.

Of the throwaway plastic, how much is recycled in the UK?

We define recycled as 'plastic waste that has been converted into reusable materials at facilities in the UK'

As Dr Karl Williams, Head of the Centre for Waste and Resource Management at the University of Central Lancashire, said: "If you collect rubbish and ship it to China that's not recycling, that's just collecting"^h.

It is estimated that on average, 63% of the plastic packaging collected for recycling in the UK is exported overseas^c.

By adding together the total number of recycled pieces in each category, we have concluded that 4% – only 161 pieces of my 4,396 throwaway plastic pieces – would be recycled in the UK. Yes, only 4%²².



Just **4%**
of my plastic
waste would be
recycled at UK
recycling facilities

So what about the remaining 96%?

Just over a third²³ of what we diligently put into our plastic recycling bins is actually recycled in the UK, which demonstrates the immense lack of recycling infrastructure.

What happens is that most of the plastic waste in our recycling bin is exported to Europe for incineration, or to South East Asia for 'recycling'. Since China banned any more plastic rubbish from entering the country, Malaysia, Vietnam and Thailand are the new top three destinations shouldering the UK's plastic waste^l. In total, 289 pieces (6%) from my plastic waste would be exported.

This means that tens of billions of plastic pieces would be exported from the UK every year, and ultimately dealt with by other countries²⁴.

From the plastic that is not collected for recycling or is unrecyclable, 2,627 pieces (60%) would be incinerated. Extracting energy from burning waste is becoming an increasingly widespread solution to deal with rubbish, and can power and heat our homes^k. However, incineration comes at a heavy environmental cost. Firstly, it releases carbon dioxide and other greenhouse gases into the atmosphere which contribute to climate change^k. Secondly, burning plastics can release toxic chemicals^l. This potentially puts the health of those living near an incineration plant at risk if toxic emissions are not properly controlled and are released into the atmosphere^m.

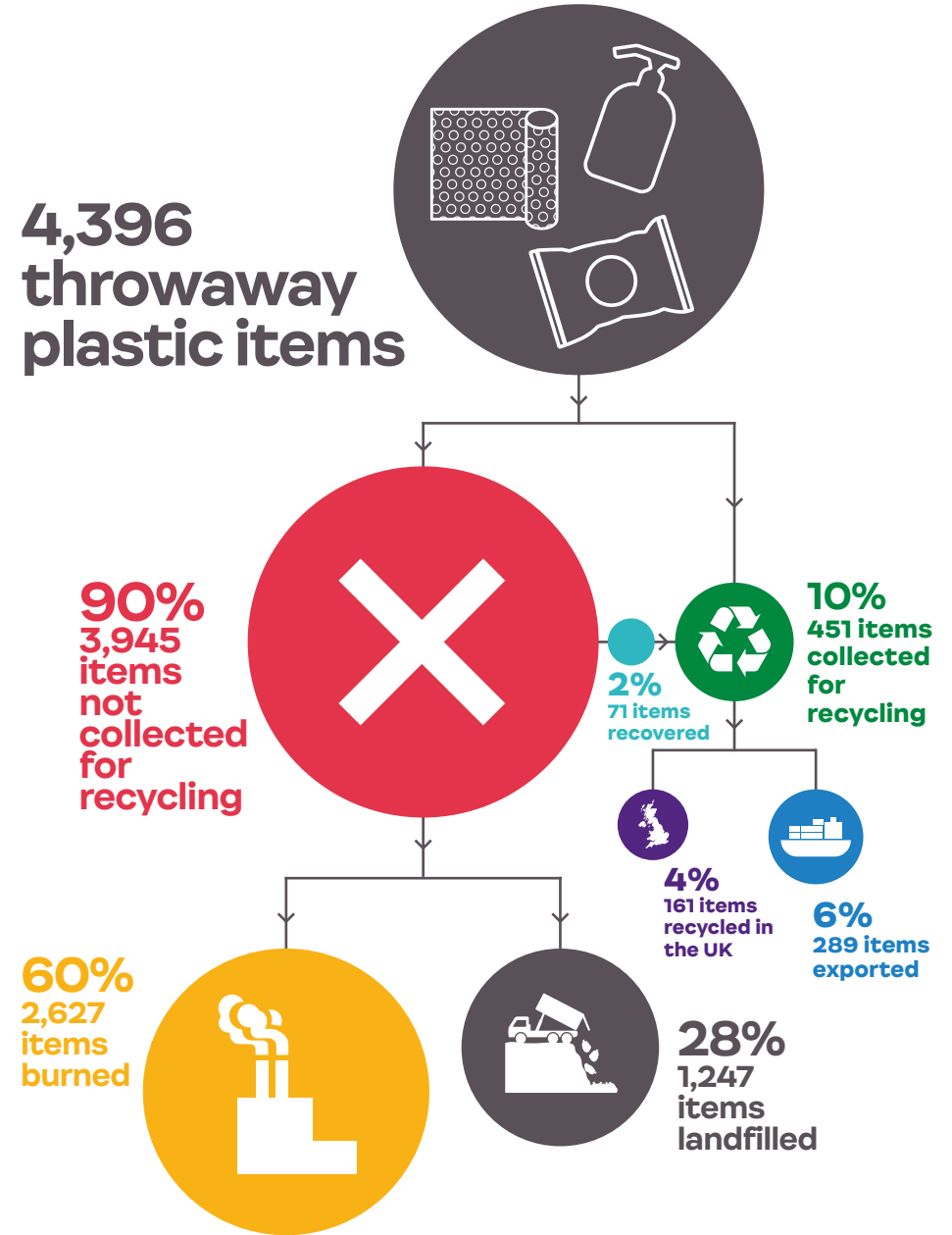
1,247 pieces (28%) would be sent to landfill. If we think about it, landfill is just a giant storage unit for future generations to unearth and worry about. Landfilled plastics are exposed to a number of external elements that alter its state such as heat, pressure, water, sunlight, gases or acidic leachates released by the waste. These elements combined cause the hazardous chemicals that could be present in plastic to leak into the environmentⁿ.

Finally, from the 3,945 plastic pieces that could have ended up in my normal bin, 71 pieces (2%) such as milk bottles would be recovered by staff at waste centres and sent to recycling facilities in the UK or overseas.



What actually happens to all the throwaway plastic?


4,396 throwaway plastic items



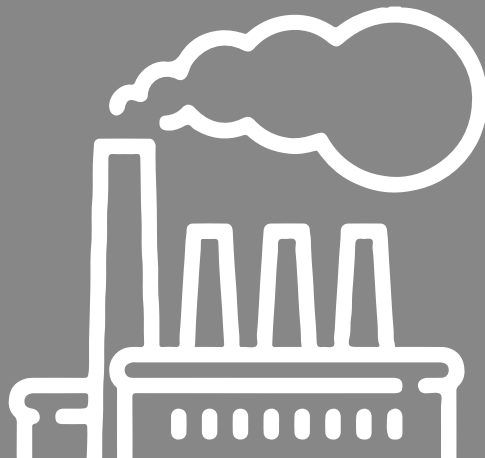


1.3%

of the plastic I threw away is made from recycled materials (only 59 pieces!)



The rest is made from newly-made plastic



EVERYDAY PLASTIC

How much of the recycled plastic is used to produce new plastic?

One of the most stark statistics revealed by the analysis of the plastic types present in my plastic waste is that only 59 pieces are made from recycled materials (precisely, recycled PET).

This is 1.3% of my total collection of throwaway plastic waste.

This number says a lot about the huge limitations of our current recycling system. Bear this in mind when you're cleaning, disposing, putting the bin out, watching it get collected etc., that only 1.3% of the plastic I threw away is made from recycled plastic.

If 4% of my plastic waste would end up being recycled as we show above, surely we should expect 4% of the pieces to be made of recycled plastic? The difference between the two represents what is called downcycling. When we think of recycling, we imagine a plastic bottle being recycled into a new plastic bottle, over and over again. This perfect and infinite loop is the

ideal of what's known as the circular economy. This is definitely something that we should be aiming for.

Realistically however, there is an unavoidable loss during the plastic recycling process. It is hard to extract pure plastic type that hasn't been contaminated by other plastics, food residues, chemicals etc. Usually, only a small percentage of the plastic collected for recycling is of a quality that satisfies food grade packaging standards for instance. This means that only a fraction of the plastic is recycled into new packaging. The rest is used to create other types of products like a fleece jacket or a park bench, both example of which are not currently recyclable.

Only 1.3% of my throwaway plastic waste is made from recycled materials

How much energy, natural resource and raw material was used to produce all my plastic waste?

Another startling statistic revealed by the analysis of the plastic types present in my collection is that **PLA (plastic made from plant-based materials²⁸), considered by some to be the saviour of plastic production, was used to produce only 8 pieces – 0.2% of the whole collection²⁹.**

If only 0.2% of my collection is plant-based, this means that 99.8% is fossil fuel-based. Every crisp packet, straw, milk bottle, pair of sunglasses is made from oil or gas.

Oil and/or gas are the key components of the plastic manufacturing process. Oil and gas are extracted and refined

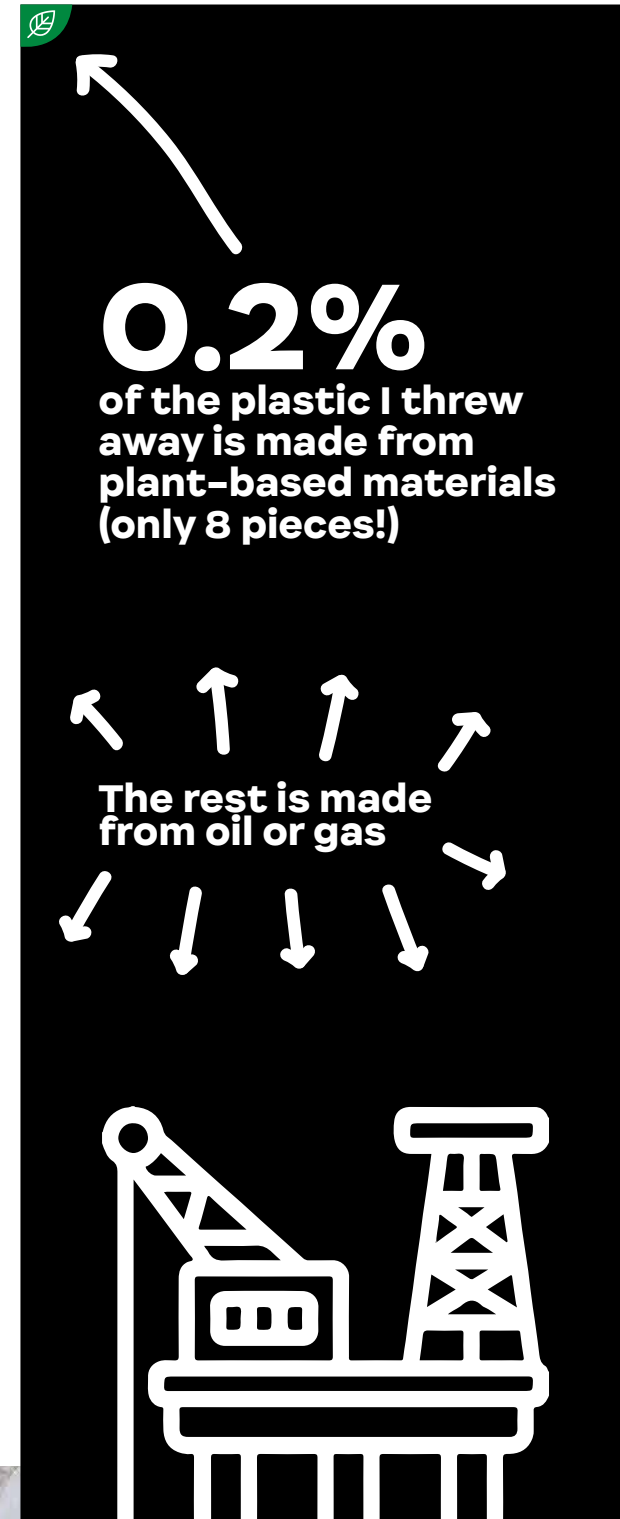
as the primary raw materials to produce plastic. Not only that, but they are used to power the plastic manufacturing plants and transport the finished products across the globe. If the amount of oil used to produce my plastic waste was refined to make petrol, it would create 49 litres. This is enough to get me from my home in Margate to Edinburgh in my VW Polo travelling at an average speed of 50mph³¹.

The amount of energy manufacturers would use to make the 4,490 pieces of plastic that I consumed in 2017 would amount to 713 kilowatt hours³². That is enough energy to power your laptop for 9,507 non-stop hours. If you use a laptop in your average Monday to Friday 9am to 5pm job, that would keep it going for over five years³³.

What natural resource does every manufacturing process have in common? Water, and lots of it. To make the amount of plastic I used in a year would take 1,736 litres – roughly a months' worth of daily showers³⁴.

Water is not the only resource that is used in plastic production. A whole range of chemicals and resources are extracted, processed and emitted before, during and after the production of plastic. Manufacturing, transportation, energy supply and waste management all contribute significantly to CO₂ emissions and our carbon footprint. The amount of plastic that I would have thrown away would have contributed 69 kg CO₂e to my carbon footprint³⁵.

Every crisp packet, straw, milk bottle, pair of sunglasses is made from oil or gas.



The verdict:
We're not being
told the truth
about
recycling

In 2016, while out on a run, I stumbled across a pile of plastic entangled in washed-up seaweed. Shortly after, a query to my local council regarding plastic recycling garnered the response: "I'm afraid it's not available where you live".

I struggled to compute this. Why was the opportunity for me to help the environment, tackle plastic pollution and responsibly dispose of my plastic waste being denied? Recycling is our way of doing good, right?

Ignorance is bliss and recycling allows us to obliviously get rid of our plastic waste. Sadly, it far from gets rid of the problem.

In fact, plastic recycling isn't just inadequate, it is a complete failure. Illustrated by the statistic that only 4% of my plastic waste would actually be recycled, it exposes plastic recycling as a system that barely exists in this country. More of the plastic that you throw into your recycling bin is actually sent to another country, and many people living in extreme poverty will work, eat and sleep amongst it. I don't know about you, but that makes me feel really angry and upset.

One year of throwing away 4,490 pieces of plastic waste made me stop and re-think. Recycling is a smokescreen. To make it work, we have to massively improve and invest in infrastructure, but also significantly reduce what we produce and use.

Recycling is not and never will be the sole solution.

It's amazing how your mindset can change over the course of a year and this very personal and exploratory journey has revealed a very

unfortunate truth... We are not being told the truth about recycling.

When I emptied my year-long collection of plastic waste from the 22 bin bags I'd accumulated, filling the floor of a massive warehouse with thousands of familiar products and brands, I was struck by shock and sadness. This was all the stuff I'd bought, used and chucked away in 2017. Such is the nature of our fast-moving throwaway society, I barely remembered using any of it. Collecting my plastic waste for a year certainly says a lot about me, but it also says a lot about us.

Each piece of plastic waste is the legacy of a decision made, a thirst quenched, a belly filled, a wardrobe brightened or an iPhone unpacked.

We're sleepwalking through supermarkets aisles, shopping malls and online retailers, consuming without opening our eyes or acknowledging the product wrapped in plastic packaging that we're holding in our hands. And here lies the heart of the issue.

Plastic pollution is a by-product of consumerism

- a culture that perfectly blends the interests of the economy and society. When a culture takes root, it grows, and our throwaway consumer culture has been both subtly indoctrinated and warmly embraced.

We need to consciously and purposefully take back control of our decision-making from the hands of marketers, advertisers, retailers, shareholders and policy-makers. Impulse buys, retail therapy and convenience stores are etched into

everyday language, but really they're just catchy phrases that have been dreamt up in boardrooms. I work in marketing, and I never thought I'd say this, but we really are being sold stuff we do not need.

There is an epidemic of over-production and over-consumption.

The temptation to buy shiny new things is always going to be present because it's how our modern society is programmed. To resist consuming is to swim against the tide.

When you're choosing between Hula Hoops and Wotsits on your next lunch break, consider the packaging, just for a moment: where did it come from? Who made it? How many resources were used, how many hours and how much energy did it take to create? That crisp packet was specifically designed to be thrown away. Then pause to consider that: it has been specifically designed to be thrown away. This needs to be urgently addressed.

We need to design stuff that doesn't have to be thrown away.

We need to keep plastic waste in the system and out of the natural environment, and move towards a circular economy. It's funny to refer to a much loved piece of packaging that almost became obsolete, but the glass milk bottle is a perfect example of a circular economy. It's delivered, consumed, returned, washed, sterilised, refilled with milk, delivered and repeated. After it's been through this cycle around 25 times, it'll get melted down and turned back into a milk bottle, ready to start the sequence again.

Food packaging waste is having a huge impact on our environment. We

calculated that 67% of the packaging I threw away was used to pack, wrap or consume food. More pointedly, our everyday items such as vegetables, nuts, bread, fruit, crisps, cereal, pasta, toilet paper, chocolate bars, washing tablets, chips, sugar, coffee and cheese are all pointlessly packaged in flimsy, thin, low value, non-recyclable plastic film - and that plastic film made up nearly half of everything I used.

If most of it cannot be reused and none of it can be recycled, then why are we so reliant on plastic film and how have we ended up in a situation where there are no alternatives?

Sitting here, writing this in September 2018, almost two years after I decided to start the Everyday Plastic project, I'm a reformed and recovering consumer. From childhood to adulthood, I've made hundreds, probably thousands of gratuitous purchases, but now I've stopped buying things in the same way that I used to.

Reducing my consumption has made way for greater resourcefulness and creativity.

My fridge is less full, I reuse tubs and jars, I buy longer-lasting tinned goods, I repair my things (badly) and unsurprisingly, I'm a fully functional human being with the things that I already have.

These conclusions are by no means extensive. I haven't touched on the influence of the fossil fuel industry, local authority funding cuts, recycling target exploitation, how the packaging industry should pay their way, government and

industry transparency on collection and disposal, subsidies for innovators, supermarket superiority and so on.

The key objective of this experiment was always to improve our understanding of our individual impact on plastic pollution. I want to share as much as I've learned over this two year investigation as possible, so you don't have to go through the same laborious and lengthy process. Everyday Plastic provides us with a very personal connection to the plastic waste we throw away.

Learning to connect with and reduce what we consume not only addresses the issue of plastic pollution, it can also improve our society as a whole.

After all, plastic pollution is not just an environmental issue. It's a human one.

How can I reduce my own individual impact on plastic pollution

Collecting every piece of plastic I used in a year took willpower, motivation and a shift in habit. This can easily be applied to reducing the amount of plastic we use. We need to swap convenience for a stubborn resistance. It can be done.

There are steps you can take that turn out to be cheaper and easier in the long run than using plastic. If I'd have completely given up plastic water bottles, coffee cups, straws, stirrers, cutlery, bags and shower gel, I would have thrown away 316 fewer items in 2017.

Even if we applied this amnesty to half the UK population, we could prevent 10 billion pieces from entering the waste system. And this is the key. Reducing the amount of plastic we produce and consume reduces the impact on our global waste system.

So don't let anyone ever tell you that individuals can't make a difference!

Footnotes

- 1 / English local authorities spend more than £700 million on street cleaning every year ^a.
- 2 / Kent County Council sent 49.1% of the waste to make energy in the period 2015/16 ^b
- 3 / See Appendix 1.
- 4 / See Appendix 2 – Table 1. UK households consumed 594 million kg of plastic bottles in 2016 ^c. By dividing this number by 65,648,100 – the estimated UK population in 2016 ^d – we calculate that 9kg of plastic bottles were consumed per person in the UK in 2016.
- 5 / See Appendix 2 – Table 1. UK Households consumed 525 million kg of plastic pots, tubs and trays in 2016 ^e. By dividing this number by 65,648,100 – the estimated UK population in 2016 ^d – we calculate that 8kg of plastic pots and trays were consumed per person in the UK in 2016.
- 6 / See Appendix 2 – Table 1. In 2010, 10.4 billion packs of crisps and savoury snacks were bought in the UK ^e. For an estimated population of 62,769,500 people in 2010 ^d, we calculate that on average, 166 packs were consumed per person.
- 7 / See Appendix 2 – Table 1. The total plastic packaging consumed by UK households in 2016 weighted 2.26 billion kg ^e. By dividing this number by 65,648,100 – the estimated UK population in 2016 ^d – we calculate that 34.4kg of plastic packaging was consumed per person in the UK in 2016.
- 8 / 31kg of plastic packaging waste per person was produced in the EU in 2014 ^f.
- 9 / For this estimation we divided 2.3 million tonnes by the average weight of an adult (70kg). This equals the weight of 32.9 million people.
- 10 / Over the course of a year, 22 bin bags with an 80 litre capacity were filled with my plastic waste. This adds up to 1,760 litres. We decided to reduce the volume of the bags by 20% to account for leaving space to tie the bags closed bringing the volume to 1,408 litres (or 1.5m³). For the whole UK population this represents 92,432,525m³, or a cone with a base of 1074 meters in diameter or 906,201 m² (90.6 hectares) in surface for an elevation of 306 meters.
- 11 / All percentages are based on the number of pieces. For percentages based on weight, see Appendix 2 – Table 1.
- 12 / See Appendix 2 – Table 3. The percentages given in this section are based on the identified pieces from the Throwaway Plastic fraction (3,957 pieces). There were pieces whose purpose we couldn't identify. They were either too small, too ripped, too indefinable. These 'Bits and Bobs' amounted to 439 pieces, 10% of my whole plastic waste in number of pieces, but only 2% in weight.
- 13 See Appendix 2 – Table 4.
- 14 / See Appendix 2 – Table 5.
- 15 / The Resin Identification Coding System (RICS) is a set of symbols appearing on plastic products that identify the plastic resin out of which the product is made. Resin is another word for plastic most commonly used in the industry. For more information see Appendix 1.
- 16 / See Appendix 2 – Table 5.

- 17 / All the data are based on the UK Household Plastics Collection Survey 2017 published by Recoup ^e.
- 18 / See Appendix 2 – Table 6.
- 19 / The difference between Recyclable (30%) and collected for recycling (10%) can be explained by two factors:
1 Not all local authorities offer a collection service. e.g. only 19% of local authorities have a scheme to collect plastic film ^e.
2 The fact that an item doesn't end in the right bin: For example, a person might not sort their waste; is confused by which pieces can be recycled or in which bin they should go; or does not have the means to go to a collection point located far from their house to dispose of their sorted waste. "Fewer than one in ten shoppers (9%) always or often take packaging back to a supermarket to be recycled" ^f.
- 20 / All data are from ^e.
- 21 / See Appendix 2 – Table 7.
- 22 / See Appendix 2 – Table 7.
- 23 / 37% precisely ^e.
- 24 / See Appendix 2 – Table 7.
- 25 / See Appendix 2 – Table 7.
- 26 / See Appendix 2 – Table 7.
- 27 / See Appendix 2 – Table 5.
- 28 / See Appendix 1.
- 29 / See Appendix 2 – Table 5.
- 30 / See Appendix 2 – Table 8.
- 31 / My VW Polo 2009, with a 1.4 engine consumes 44.8 MPG ^g. 49 L = 10.8 gallons, therefore I could drive for 484 miles with 49 litres of petrol.
- 32 / The whole energy consumption used to produce the 4,490 pieces of the collection is 2,567 MJ or 713 KWh (see Appendix 2 – Table 8). For a laptop using an average of 75W per hour ^h, this means enough energy to power the laptop for 9,507 hours or 1188 days (8h a day) or 3.3 years.
- 33 / Calculated for 8 hours per day, 5 days a week with 28 days of holidays per year which represents 1,856 hours of work per year. 9,507 hours would then be equivalent of 5.1 years of work.
- 34 / See Appendix 2 – Table 8. Calculated for a daily shower of 7 min using 55L of water.
- 35 / See Appendix 2 – Table 8.

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About our supporters

Surfers Against Sewage

Surfers Against Sewage is a national marine conservation and campaigning charity that inspires, unites and empowers communities to take action to protect oceans, beaches, waves and wildlife.

Surfers Against Sewage has the support of thousands of members across the UK. Together, we speak out for the protection of the coastal environment – your oceans, waves and beaches.

We're not just surfers and we're not just about sewage. We're a voice for all water users and coastal enthusiasts, from surfers to swimmers, canoeists to holidaymakers. Anyone who loves going to the beach but hates seeing it polluted – that's who we speak for.

Our HQ is in St Agnes, Cornwall, but we cover all 19,491 miles of UK coastline, protecting beaches, monitoring water quality, organising beach cleans, developing Plastic Free Communities, running educational tours, challenging government and industry, reporting on pollution, and campaigning for the protection and conservation of your local spots.

What We Do:

We Protect the Environment
We call for better legislation and stronger action to address complex environmental issues, including marine litter, sewage and diffuse pollution, climate change, and coastal development. We also take direct action, creating a powerful network of coastal campaign leaders, and running community beach cleans and awareness campaigns to target these issues head-on.

We Challenge Industry

We produce and promote scientific, economic and health evidence to support calls for a cleaner and safer marine environment. We also lobby industry to adopt better standards to protect our coastlines, marine life and seas.

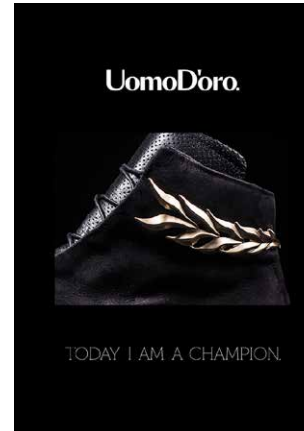
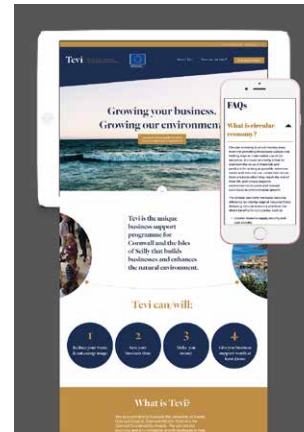
We Influence Government

We talk to MPs, MEPs and county councils about key issues affecting oceans, wildlife, beaches and recreational water users, and the policies and legislation needed to better protect them.

We Motivate People

We create volunteering opportunities for individuals and communities to be proactive in safeguarding our seas, coastlines and beaches. Our community-led beach cleans remove tonnes of marine litter every year and our education programme inspires thousands of school children nationwide to get involved. We also support communities with environmental initiatives on achievable, sustainable solutions, which can help protect our waves, oceans and beaches.

For more information on all of our campaigns, environmental initiatives and opportunities, please visit our website: sas.org.uk



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APPENDIX

1. Plastics Glossary



PET: Polyethylene terephthalate. This is the plastic used for water and soda bottles. It is also used in packaging for trays, cups and pots. PET can also be processed into fibre where it is better known as Polyester and is widely used in clothes.

R-PET: Recycled Polyethylene terephthalate. It is used in the same way as PET.

PE: Polyethylene. It is the most produced plastic and the number one plastic used for packaging under its High- and Low-density forms (HDPE and LDPE).



HDPE: High-density Polyethylene. HDPE is used for rigid containers like milk, shampoo, cleaning products bottles etc.



LDPE: Low-density Polyethylene. LDPE is used for film packaging/wrapping, like plastic bags, bread bags, toilet paper wrap etc.



PVC: Polyvinyl Chloride. This is the third most produced plastic after PE (Polyethylene) and PP (Polypropylene), but it is used mostly in construction and buildings and not so much in packaging.



PP: Polypropylene. This is the second most produced plastic after PE (Polyethylene). Polypropylene can be processed into film, for packaging such as snack wrappers, and is also used for rigid containers like hummus and margarine pots.



PS: Polystyrene. Polystyrene can be solid or foamed. Foamed polystyrene, known as Expanded Polystyrene (EPS) is used in protective packaging and in takeaway containers, whereas the solid form is used in packaging for yogurt pots for instance.



Others (including)
ABS: Acrylonitrile butadiene styrene. This is mostly used for electronic appliances and vehicles, rarely used for packaging.

PLA: Polylactic acid. PLA is a bioplastic derived from renewable resources like corn or sugar cane. It is degradable under certain conditions. It is used in packaging for cups and trays or coffee cup lids.

Multilayered packaging: Packaging such as crisp bags or coffee pouches are made by the juxtaposition of film layers of different materials. This packaging is designed to combine the different functional properties of the different materials (light, moist and oxygen barriers; strength etc.). The plastics LDPE, PET and PP are commonly used as well as alumina.

2. Data

Please refer to the tables available online at everydayplastic.org/report-appendix





everydayplastic.org
dan@everydayplastic.org

 @everydayplastic  @plastic everyday

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