

# Plastics Consumption & Waste: A Growing Problem?

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"A whale found washed up on a beach in Spain earlier this year had 29kg of large pieces of plastic in its digestive system – including rubbish bags, ropes, pieces of net and a drum.

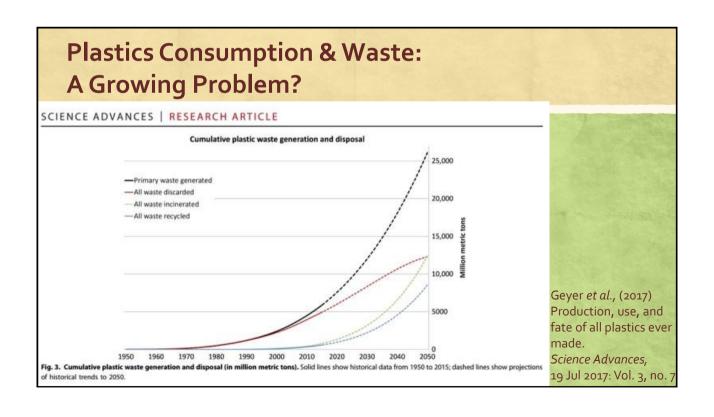
In 2015, an international research team led by Erik van Sebille at Imperial College London estimated that between **15** and **51** trillion plastic particles are floating in the world's oceans. Their combined weight is between **93,000** and **236,000** tonnes.

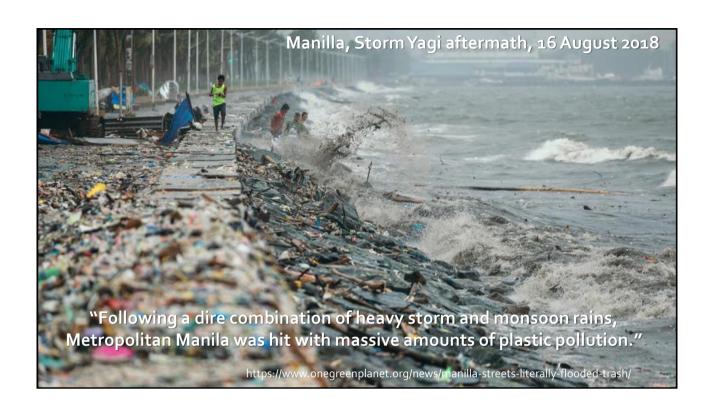
Each year, between **1.2 and 2.4 million tonnes** of plastic enters the oceans from **rivers**, according to a paper published last year in Nature Communications by Laurent Lebreton of The Ocean Cleanup (TOC) and colleagues. They calculated that two-thirds of this comes from just **20 rivers, mostly in Asia**."

The Institution of Engineering & Technology (2018)

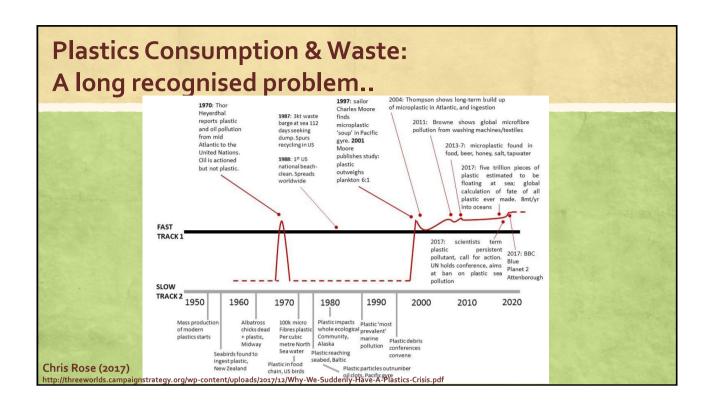
https://eandt.theiet.org/content/articles/2018/o5/plastic-waste-pollution-in-the-ocean-technology-at-the-tipping-point/articles/2018/o5/plastic-waste-pollution-in-the-ocean-technology-at-the-tipping-point/articles/2018/o5/plastic-waste-pollution-in-the-ocean-technology-at-the-tipping-point/articles/2018/o5/plastic-waste-pollution-in-the-ocean-technology-at-the-tipping-point/articles/2018/o5/plastic-waste-pollution-in-the-ocean-technology-at-the-tipping-point/articles/2018/o5/plastic-waste-pollution-in-the-ocean-technology-at-the-tipping-point/articles/2018/o5/plastic-waste-pollution-in-the-ocean-technology-at-the-tipping-point/articles/2018/o5/plastic-waste-pollution-in-the-ocean-technology-at-the-tipping-point/articles/2018/o5/plastic-waste-pollution-in-the-ocean-technology-at-the-tipping-point/articles/2018/o5/plastic-waste-pollution-in-the-ocean-technology-at-the-tipping-point/articles/2018/o5/plastic-waste-pollution-in-the-ocean-technology-at-the-tipping-point/articles/2018/o5/plastic-waste-pollution-in-the-ocean-technology-at-the-tipping-pollution-in-the-ocean-technology-at-the-tip-pollution

#### Global plastic production... **Plastics Consumption & Waste:** 1 800 A Growing Problem? "Based on forward projections, current (2018) waste arisings are estimated at 5.2 million tonnes, and are 1 000 forecast to increase to around 6.3 million tonnes by 800 2030 – a 20% increase over this 12 year period." 600 ...and future trends A plastic future: Plastics consumption and waste management in the UK 400 (WWF, 2018) 200 205 Global plastic production and future trends (Ryan, 2015)











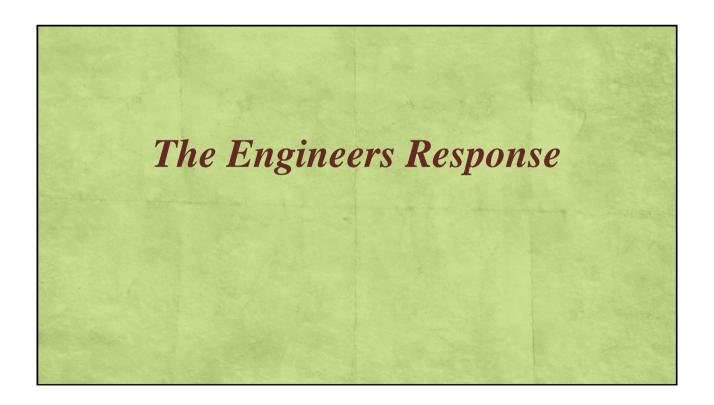












#### **The Engineers Response**

- There's huge Media and Consumer hype.
- ..and **ignorance**: e.g. carbon emissions from ground down recycled glass greater than that of single use plastics.
- Yet, we need to do something/seek acceptable consumer solutions.
- It used to be the product that was centre of attention, now it's the packaging!

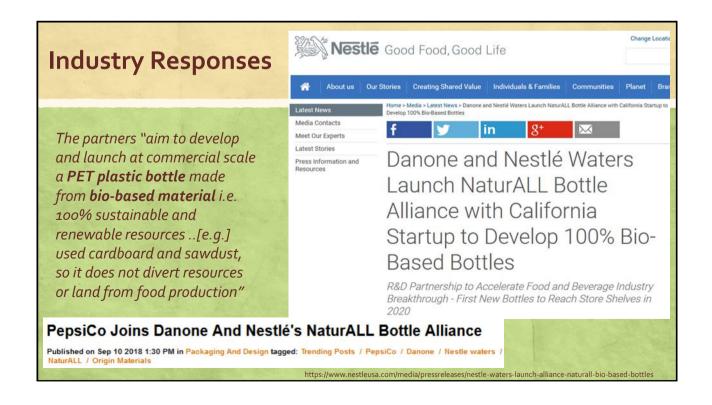












#### **Industry Responses**

#### new materials

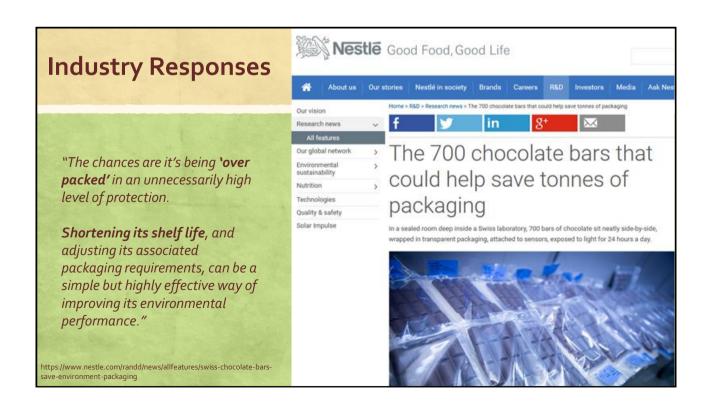
#### Plastic: changing it up

If we are going to benefit from new materials, clear labelling will be essential. Bio-PET, for instance, is a plastic made from renewable feedstocks like the leftover pulp from harvesting sugarcane. Coca Cola's bio-PET Plant bottle is made like this, but bio-PET behaves like oil-based PET (used for plastic bottles) and is recyclable, but not compostable.

There may yet be hope for biodegradable PET following the discovery of an enzyme dubbed 'PETase', produced by a bacterium called Ideonella sakaiensis 201-F6 that was found in the soil of a Japanese PET bottle recycling plant. Researchers at the US Department of Energy's National Renewable Energy Laboratory (NREL) and University of Portsmouth announced recently they had developed a faster working variant of the enzyme this year that can break down PET bottles more quickly.

#### The Institution of Engineering & Technology (2018)

https://eandt.theiet.org/content/articles/2018/05/plastic-waste-pollution-in-the-ocean-technology-at-the-tipping-point/



#### **Industry Responses**

"A Tetra Pak package has a thin layer of polymer, or plastic, to prevent moisture getting in or out and to keep contents fresh. ..Our long-term ambition is for all our chilled and ambient packages to be made from renewable alternatives to oil-based plastics.

..Despite considerable progress, bio-based polymers are still only in a small fraction of our cartons and a niche product for the plastics industry.

..We are working with a number of our stakeholder partners to explore these issues, while also continuing to assess alternatives like other **plant** 

-based materials, organic waste and algae."

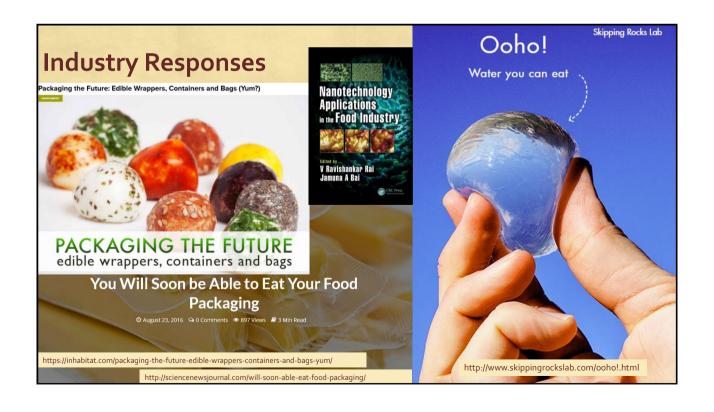


#### **Industry Responses**

"Performing as regular plastic is not so simple. ..TIPA's solution is a blend of bio-based polymers and derived from plant-based sources, which is not an easy technological feat."















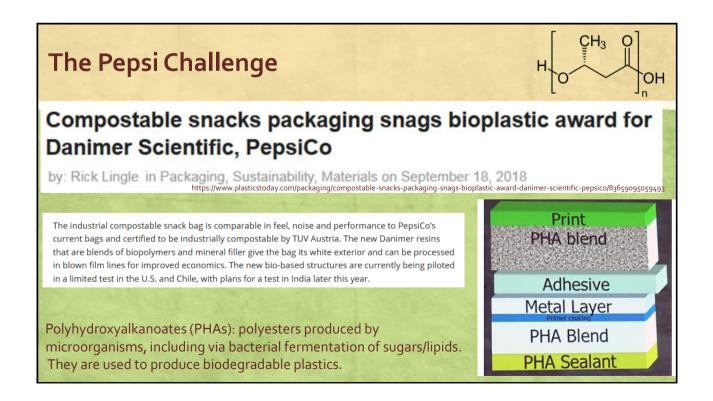










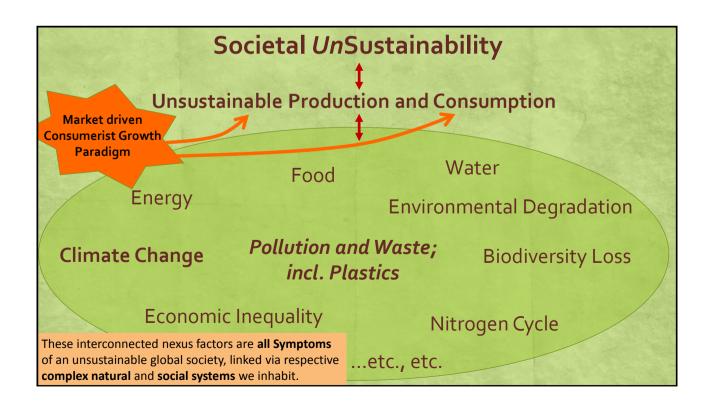


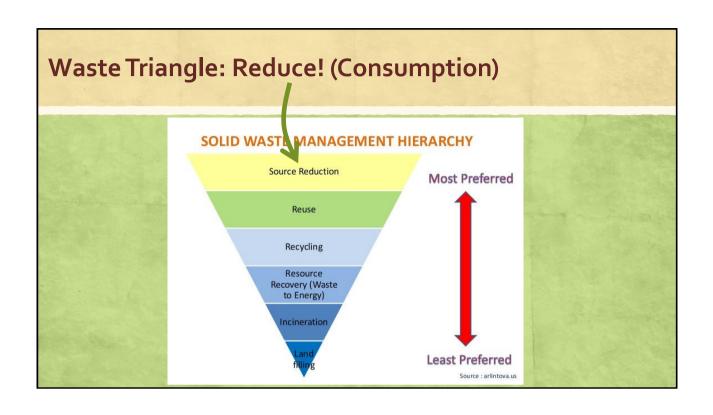
#### **Problematizing Responses..**

Are proposed 'solutions' (including recyclable, bioplastic, biodegradable or no packaging options) more sustainable?

..Or in the context of the dominant societal paradigm of consumerist growth will they ultimately just contribute to creating

more waste, carbon emissions & environmental degradation?





#### The problem with Recycling..

'in the long run, recycling reduces waste generation only if it reduces primary material production; otherwise, it merely delays it'.

Geyer et al. (2015) Common Misconceptions about Recycling, Journal of Industrial Ecology, 20, (5) pp. 1010-1017.

"No amount of recycling can get us out of this global mess," said Abigail Aguilar,

Campaigner at Greenpeace Philippines.

"Corporations may have conned us by providing so-called convenience but it's not convenient when Your city, oceans, roads, and rivers are clogged by plastic garbage."

https://www.onegreenplanet.org/news/manilla-streets-literally-flooded-trash/

#### The problem with Biodegradable Plastics..

# European Parliament says biodegradable plastics will not solve plastic pollution

13 09 2018

animals. The Parliament today has acknowledged that biodegradable plastics are not a silver bullet to our plastic pollution crisis, but merely a distraction from real solutions. Policies that dramatically cut our plastic footprint need to be urgently implemented."

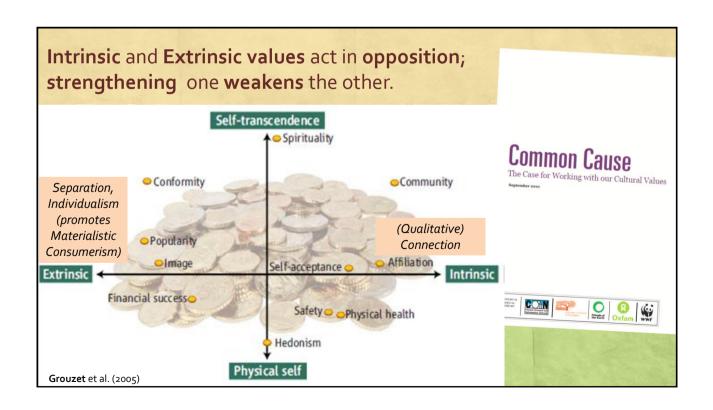
The Parliament voted to strengthen the European Commission's plans to slash plastic pollution, under the European Strategy for Plastics in a Circular Economy launched in January 2018.

FOR IMMEDIATE RELEASE: Strasbourg, 13/9/2018

https://rethinkplasticalliance.eu/news/european-parliament-says-biodegradable-plastics-will-not-solve-plastic-pollution/

# Promoting Responsible Consumption?





#### **Demonstrating Conflicting Values?**

A careful evaluation of the narratives used in our everyday lives as consumers reveal that the package of narratives used are **collectively contradictory**.

In the context of ethical and environmental narratives, ...we purchase water-intensive Fairtrade organic fruit and vegetables that are imported huge distances by air transport from countries prone to drought."

P. Haynes (2015), Consuming Sustainability Narratives, in *Advances in Consumer Research*, 43, 364-367.

#### How to move to Sustainable Consumption?

http://www.srfood.org/en/how-to-move-to-sustainable-consumption

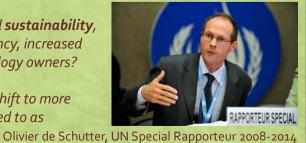
"Much of what we consume remains fueled by status competition and the quest for social recognition and acceptance: this suggests that in order to make progress in curbing excessive consumption and its impacts on sustainability, we may need to reconceive consumption not merely as a matter of individual choice but as one of social norms that is tied in with broader efforts to achieve social justice.

-If social norms are such a big driver of consumption, how can these norms be made to evolve?

-How can **technological** change be **reoriented** around **sustainability**, instead of the never-ending quest for economic efficiency, increased labor productivity, and profit maximization for technology owners?

-How can markets be reshaped in order to favor the shift to more sustainable consumption patterns, sometimes referred to as voluntary simplicity"?

Olivier de Sci



## Douglas Holt (2012): Another way towards Sustainable Consumption?

- Extremely difficult/will take too long to dislodge the **Dominant Consumerist** Market Paradigm
- But, its **not necessary**; Use **marketing tools** to change **behaviour** (and elicit sustainable consumption tipping point), as with introduction of **plastic bottled water** from the 1980s, which was not down to drinks companies, but due to:
  - Fears over tap water safety following high profile incidents
  - 1988 NYTimes article suggesting experts recommend people drink 8 glasses water/day to remain hydrated
  - 1990/2000s narratives around obesity and sugary drinks

D. Holt (2012) Annals of the American Academy of Political and Social Science, Vol. 644, pp. 236-255

