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The world is becoming a more circular place, in that it's no longer enough to produce something without considering where and how it's produced, what it's made of, who makes it, who uses it, where it's used, what it's used for, and – crucially – how it's thrown away.

Not that it needed a whole week to bring the issue to the public eye, but this week is **Zero Waste Week**¹. Led by Rachele Strauss and her team, the initiative that began in 2008 has now evolved into a global movement that aims to empower people to “rethink rubbish” and consume, and dispose, more sustainably.

Although much of today's waste-related discussion focuses on plastics and packaging – notably drinks bottles, supermarket bags, microbeads, cotton buds, straws and coffee stirrers – the practice of minimising and making best use of waste applies to nearly every walk of life.

Printer ink cartridge recycling partnerships with schools have been popular over recent decades. Energy is going down the Smart Meter route in order to minimise unnecessary usage. Food waste businesses like The Real Junk Food Project² and apps like Olio, who previously partnered with Bucks County Council on waste prevention³, are gaining traction. Fashion too, with apps like Depop⁴ and takeback schemes⁵ from retailers like Primark, is another industry where circularity is slowly becoming the norm.

So, what next?

WEEE (waste electrical and electronic equipment)

Those waste electronics you've probably got in your drawer at home – of which there are reportedly up to 40 million of in the UK⁶ – are going to get more attention. They've been under scrutiny for a while, but consumer and media attention appears to be building momentum. The mandate to tackle this waste stems from the EU's WEEE regulation⁷, which sets targets for the collection, recycling and recovery of goods from lighting and medical devices to fridges, freezers and IT equipment. It has been transposed into UK law, which has forced manufacturers and distributors, to some extent, to design and label products to facilitate recycling and the reuse of components and materials⁸.

¹ <https://www.zerowasteweek.co.uk/international/>

² <https://trjfp.com/>

³ Let's Recycle, 2017. <https://www.letsrecycle.com/news/latest-news/buckinghamshire-council-partner-with-app-to-prevent-food-waste/>

⁴ <https://www.depop.com/>

⁵ The Guardian, 2018. <https://www.theguardian.com/business/2018/dec/29/fast-fashion-giving-way-sustainable-wardrobe>

⁶ The Independent, 2019. <https://www.independent.co.uk/environment/unusual-phones-electronics-recycling-rare-earth-metals-gold-arsenic-indium-a9072821.html>

⁷ European Commission, 2019. https://ec.europa.eu/environment/waste/weee/index_en.htm

⁸ Edie, 2016. <https://www.edie.net/blog/Non-compliance-with-the-WEEE-Directive-whats-the-worst-that-can-happen/6098068>

According to the Royal Society of Chemistry, natural sources of six elements that are commonly found in unused electronic gadgets – such as gold, platinum, copper and indium – are set to run out within the next 100 years⁹. The unused gadgets in UK homes contain huge amounts of such materials, and with barely 10% of smartphones getting recycled¹⁰, there is a huge opportunity for the UK to become a leader in advancing WEEE recycling. Recovered materials could then be used in a multitude of ways; the organisers of the Tokyo 2020 Olympics have even said that all medals will be made from e-waste returned by Japanese residents through municipal authorities¹¹.

One million mobile phones can reportedly deliver 16 tonnes of copper, 350kg of silver, 34kg of gold and 15kg of palladium¹². When you consider that roughly two billion smartphone users upgrade their phone every 11 months¹³, it quickly becomes apparent that there is an opportunity to be gained by preserving these resources. On top of the environmental point, tackling e-waste is also crucial for social reasons. The incorrect disposal of materials such as mercury, arsenic, chromium and lead can lead to soil, river and air pollution, which negatively impacts on local populations' health, like in Guiyu, south-eastern China¹⁴.

Vaping

Focusing in on one segment of the electronics industry, the global vaping and e-cigarette market is growing significantly and is estimated to reach 55 million adults by 2021¹⁵. This is a market that was worth roughly US\$5.5bn in 2018 and is made up of hundreds of different brands. In addition to vapes' use by youth being declared a serious health epidemic by the CDC in the US¹⁶, leading manufacturers have been called out for taking insufficient action to tackle their part of electronic waste. Hazardous waste firm PEGEX state that vape cartridges that hold flavoured or cannabis solution contain chemicals that must be dealt with as hazardous waste, and the lithium ion batteries must also be handled by e-waste programs¹⁷.

San Francisco's waste management firm Recology said that vapes and e-cigs cannot be disposed of through existing channels because they contain batteries; an issue which many local authorities and waste collectors around the world will also realise. In San Francisco's case, this and the issues around youth health led to the city – ironically home to Juul Labs' HQ – being the first city to ban the sale of e-cigarettes¹⁸. This relatively new market therefore faces pressures on both social and environmental fronts. Now would seem like an opportune moment for the larger brands to take the lead on key issues, such as the waste impact of the industry. As we are about to see, there is growing interest in private initiatives.

⁹ The Independent, 2019. <https://www.independent.co.uk/environment/unused-phones-electronics-recycling-rare-earth-metals-gold-arsenic-indium-a9072821.html>

¹⁰ BBC, 2016. <http://www.bbc.com/future/story/20161017-your-old-phone-is-full-of-precious-metals>

¹¹ The Guardian, 2019. <https://www.theguardian.com/sport/2019/feb/08/olympics-medals-recycled-gadgets-electronic-waste>

¹² BBC, 2016. <http://www.bbc.com/future/story/20161017-your-old-phone-is-full-of-precious-metals>

¹³ Ibid.

¹⁴ US National Institute of Environmental Health Sciences, 2013.

https://www.niehs.nih.gov/research/programs/geh/geh_newsletter/2013/7/articles/ewaste_recycling_in_china_a_health_disaster_in_the_making.cfm

¹⁵ The Guardian, 2019. <https://www.theguardian.com/society/2019/aug/26/vapings-other-problem-are-e-cigarettes-creating-a-recycling-disaster>

¹⁶ CDC, 2019. https://www.cdc.gov/tobacco/basic_information/e-cigarettes/surgeon-general-advisory/index.html

¹⁷ The Guardian, 2019. <https://www.theguardian.com/society/2019/aug/26/vapings-other-problem-are-e-cigarettes-creating-a-recycling-disaster>

¹⁸ NPR, 2019. <https://www.npr.org/sections/health-shots/2019/06/25/735714009/san-francisco-poised-to-ban-sales-of-e-cigarettes?t=1566984668627&t=1567009084752>

Razor Blades

Disrupted by new competitors like Harry's and Dollar Shave Club, Gillette – in partnership with TerraCycle – have begun offering the World's First National Razor Recycling programme¹⁹, which is currently being rolled out in the UK²⁰.

Through the services that TerraCycle provides, Gillette can recover the hard-to-recycle materials that local waste managers fail to collect and reprocess these into new products²¹, thereby saving on procurement costs and minimising their carbon impact (e.g. from the mining, transportation and processing of virgin materials). Plastics from the old razors are cleaned, turned into pellets and then made into products such as picnic tables and park benches. The metals are melted down and turned into new alloys.

Time will tell if such private partnership recycling initiatives will provide cost-effective solutions to tackling waste on a significant scale. On one hand, seeing large brands entering into these indicates confidence in the model; it would not be backed without a level of belief in its effectiveness. On the other, the whole initiative is a big ask with its success reliant on consistent consumer participation. Without ongoing behaviour change on a large scale, the initial investment may not prove worthwhile.

The future

Looking ahead, there would appear to be no theoretical limit to the effectiveness of the private recycling partnership model when tackling niche waste types. If certain products aren't collected by local authorities and the way that they're manufactured not adapted to suit existing waste management infrastructure, nothing stops brands and retailers partnering up with other waste managers, or establishing recovery schemes of their own.

Of course, the cost of undertaking such an activity might not be perceived to be worthwhile, especially considering that packaging compliance bills are already going up massively, with brands and retailers likely facing a x17 increase across the next several years (*watch this space for more soon*). However, for valuable materials such as metals in electrical and electronic equipment, such a system could be very effective, but only if consumers get on board with the idea. The chance of greater effectiveness increases with a deposit-based system, such as that in Loop or in a Deposit Return Scheme (DRS).

As sustainable thinking and circularity proliferates and grows across the globe, we will undoubtedly see more and more materials called out for their recyclability credentials. We will continue to see innovation in the reuse and repurposing of materials, and more steps taken towards embedding circular economy principles in everyday business.

¹⁹ Gillette, 2019. <https://gillette.com/en-us/about/terracycle>

²⁰ KamCity, 2019. <https://www.kamcity.com/namnews/uk-and-ireland/manufacturers/gillette-brings-recycling-programme-and-heated-razor-to-the-uk/>

²¹ Energy Live News, 2019. <https://www.energylivenews.com/2019/08/06/gillette-shaves-off-carbon-impacts-with-razor-recycling-programme/>