HEROPAK

Zero Waste Load Stabilization: A Future Beyond Single-Use Stretch Film

HEROPAK PROUDLY PRESENTS:
ZERO WASTE LOAD STABILIZATION –
A FUTURE BEYOND SINGLE-USE STRETCH FILM

HeroPak is a young, dynamic and enthusiastic start-up who is excited about the possibility of ending single-use plastic packaging in the grocery and retail sector.

HeroPak is on a mission to "knock out" single use and unnecessary packaging with sustainable and circular solutions to closed loop single-use packaging waste.

HeroPak has a vision to help customers "Save the day" with their innovative packaging solutions and empower adopters to "Become the hero of their zero waste strategy."

HeroPak's dream is to leave the planet in a better way than it was found, for this generation and those that follow.

The purpose of HeroPak is to unwrap the potential of the circular economy and break away from wasteful ideas and resources. Your things need to get where they need to go in a safe and sustainable manner, and HeroPak can make that a reality because they believe that the movement of goods is the movement of humanity.

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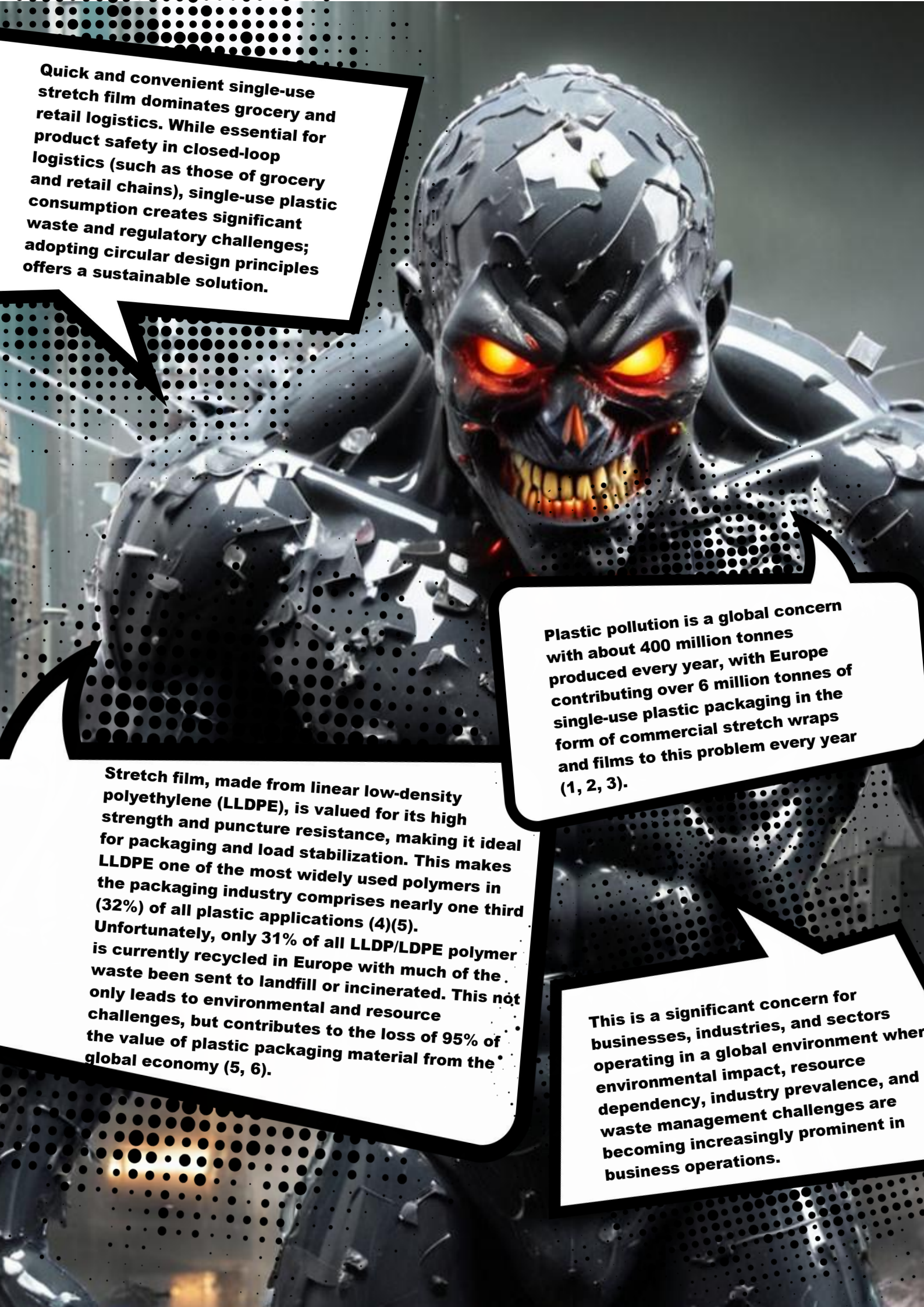


Quick and convenient single-use stretch film dominates grocery and retail logistics. While essential for product safety in closed-loop logistics (such as those of grocery and retail chains), single-use plastic consumption creates significant waste and regulatory challenges; adopting circular design principles offers a sustainable solution.

Plastic pollution is a global concern with about 400 million tonnes produced every year, with Europe contributing over 6 million tonnes of single-use plastic packaging in the form of commercial stretch wraps and films to this problem every year (1, 2, 3).

Stretch film, made from linear low-density polyethylene (LLDPE), is valued for its high strength and puncture resistance, making it ideal for packaging and load stabilization. This makes LLDPE one of the most widely used polymers in the packaging industry comprises nearly one third (32%) of all plastic applications (4)(5). Unfortunately, only 31% of all LLDP/LDPE polymer is currently recycled in Europe with much of the waste been sent to landfill or incinerated. This not only leads to environmental and resource challenges, but contributes to the loss of 95% of the value of plastic packaging material from the global economy (5, 6).

This is a significant concern for businesses, industries, and sectors operating in a global environment wher environmental impact, resource dependency, industry prevalence, and waste management challenges are becoming increasingly prominent in business operations.

TRANSFORMING BUSINESS OPERATIONS WITH CIRCULAR PACKAGING SOLUTIONS

Plastics play an essential role in modern life, ensuring products are securely and safely packaged from their point of distribution. However, consumers are increasingly aware of the negative impacts of plastics to their health and the environment, and public opinion suggests retailers must address the plastic waste issue(7, 8, 9).

Beyond consumer-facing plastics, businesses also generate a amount of significant waste before goods ever reach the shelves. This occurs primarily through bulk product wrapping and stretch film which is used briefly during transportation of goods from warehouses to supermarkets. This single-use commercial film consumption, discarded shortly after use, drives the continuous demand for virgin LLDPE in Europe, with net demand consistently between 6.1 and 6.7 million tonnes per year over the past decade (10).

Replacing single-use commercial film with circular packaging systems can address health and environmental concerns, reduce ongoing costs related to plastic consumption and disposal, and help retailers meet waste reduction goals in line with consumer expectations.

Despite stretch film's pivotal role in logistics, its single-use nature creates significant waste management challenges. Eliminating these materials must be central to any plastic reduction strategy (11). Graham Forbes of Greenpeace USA states, "You cannot solve the pollution crisis unless you constrain, reduce and restrict plastic production," a sentiment echoed by many packaging companies, whether voluntarily or due to tightening laws (1, 12).

The European Union has introduced extensive legislation to curb single-use packaging, making it increasingly costly and stressful for businesses to maintain traditional practices. Relevant regulations include:

- EU Single-Use Plastics Directive (Directive (EU) 2019/904)
- European Green Deal and Circular Economy Action Plan
- EU Plastics Strategy (2018)
- Waste Framework Directive (Directive 2008/98/EC)
- Packaging and Packaging Waste Directive (Directive 94/62/EC)

These laws aim to reduce waste generation and over-packaging, with mandated reduction targets for member states. NGOs and organizations like the Ellen MacArthur Foundation advocate for a circular economy to address the plastic crisis. This model focuses on eliminating waste, circulating products and materials, and regenerating nature. Dilyana Mihaylova, programme manager of the plastics initiative at the Ellen MacArthur Foundation, asserts, "It is a resilient system that is good for business, people, and the environment" (12).

Adopting circular economy principles can reduce unnecessary single-use plastic packaging through recyclable materials and long-lasting reusable systems, promoting a balance of planet, people, and prosperity.

SUSTAINABILITY SHOWDOWN: HOW DO ALTERNATIVE PACKAGING SOLUTIONS STACK UP?

Polypropylene Sheets

Polypropylene sheets have been effectively integrated into the logistics operations of Transgourmet's Austria branch, which serves over 2,500 hospitality customers (13). Initially tested with 1,600 Roll Safe units, Transgourmet is now expanding to replace 15,000 units with 30,000 plates, significantly reducing single-use plastic. This shift has cut plastic consumption by approximately 20,000 tonnes annually (14). Despite the upfront investment and installation costs, the transition to reusable systems has proven cost-effective, recouping expenses within 2 to 3 years. Adopting reusable plastic sheets instead of disposable film not only lowers costs but also reduces waste and environmental pollution (15).

Despite the benefits of reducing single-use plastics, polypropylene sheets are facing scrutiny. Although these sheets have streamlined warehouse operations by eliminating manual wrapping, they are now showing signs of wear. Polypropylene, while effective for transport protection, is vulnerable to impact and strength degradation. UV radiation exposure causes the material to discolor and lose up to 70% of its strength within six days, with further degradation occurring over time (16, 17).

In practice, additional film is often used to secure goods to the Roll Safe units, indicating that polypropylene sheets alone may not fully meet security needs. Furthermore, the straps used to attach the plates to the Roll Safe units may not always ensure complete security for transported goods.

Fiber-Based Stretch Wrap

The paper packaging industry, previously affected by bans on single-use packaging, has been exempted from these restrictions, which now target plastic packaging and will be enforced by 2030 (18). In response to rising pollution and single-use plastics, manufacturers are developing durable, stretchable, and tear-resistant paper-based solutions for load stabilization and container wrapping. These solutions align with circular economy and sustainability principles, as paper pulp is highly recyclable and favored by consumers for its environmental benefits (19). Companies like Seaman Paper and Mondi have introduced such alternatives, with Mondi's life cycle assessment (LCA) showing that their paper-based stretch wrap alternative results in 62% lower greenhouse gas (GHG) emissions compared to virgin plastic stretch film, and 49% lower GHG emissions compared to plastic stretch film with 50% recycled content (20).

While the packaging industry's move towards paper-based solutions demonstrates a commitment to sustainability, Jim Owen, a senior analyst at Rabobank, cautions that these alternatives may not be as sustainable or easy to implement as perceived. Owen argues that pulp and paper solutions “... can introduce their own ecological - and business - complications.”

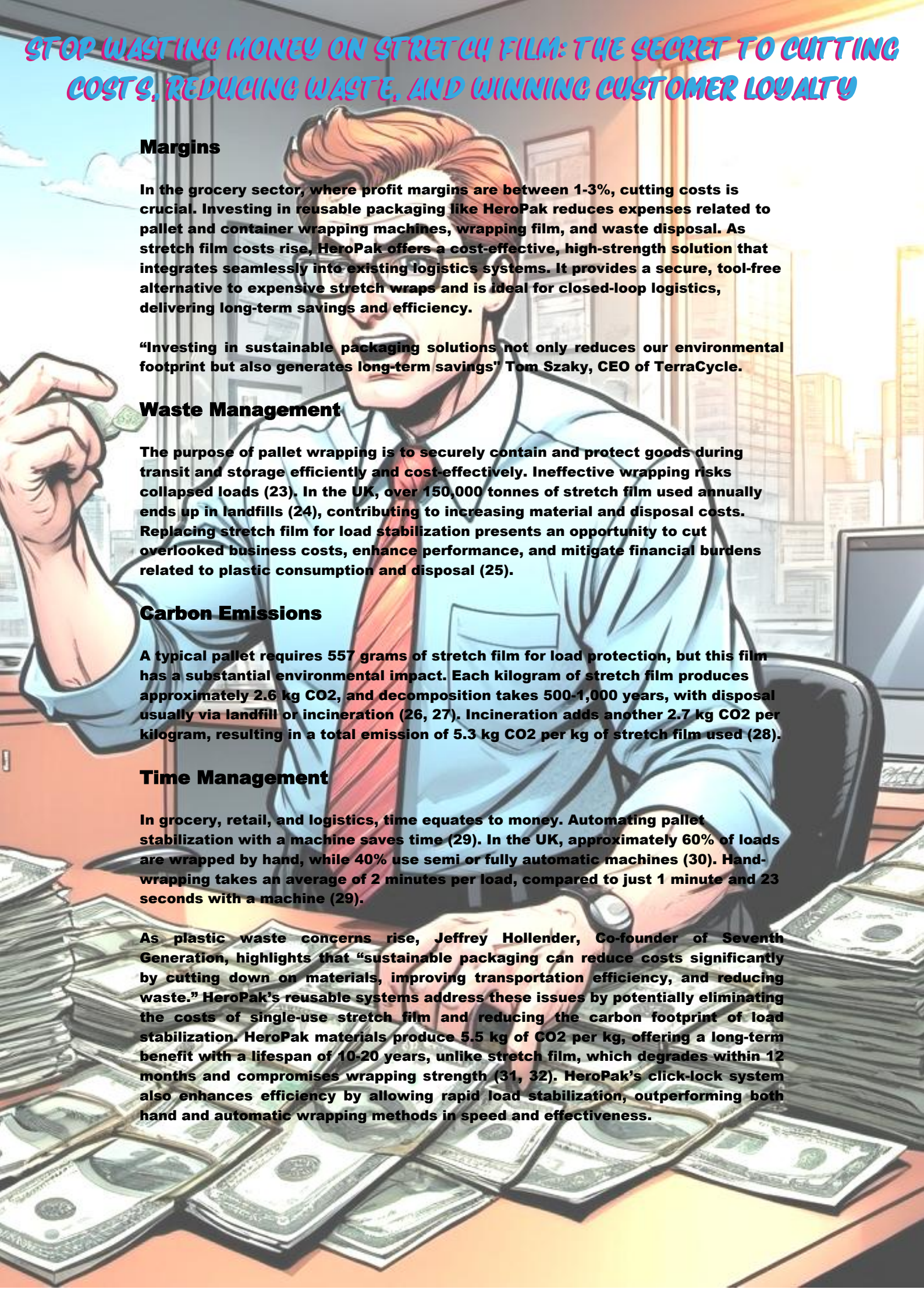
Although paper-based wraps initially provide strength, they lack the impact and tear resistance critical for logistics, where goods may face rough handling (21). Additionally, these wraps are more expensive than plastic, and the processes of logging and pulping contribute to their own environmental impacts. While integrating paper-based films into existing wrapping systems is feasible, it is essential to consider factors such as cost, material durability, impact resistance, speed of application, water resistance, and the challenges of uneven wrapping (22, 21).

HEROPAK: THE ULTIMATE PACKAGING SOLUTION FOR ZERO WASTE LOGISTICS

HeroPak offers a range of patented, tool-free, reusable, and recyclable packaging solutions designed to meet new legislation and circular economy principles while reducing packaging waste. These solutions can be easily integrated into closed-loop logistics chains with minimal disruption. HeroPak eliminates the need for single-use stretch film and provides additional benefits such as anti-theft features, cost and time savings, enhanced safety and environmental protection, addressing the needs of both small and large retail and grocery operators.

Unlike polypropylene sheets, HeroPak's packaging is weather-resistant, impact-resistant, and has a 20-year service life. It is lightweight and is designed for long-term use, withstanding scratches and tears without losing functionality, unlike paper-based solutions that are single-use only. HeroPak's durability and reusability make it a sustainable choice that minimizes waste and ongoing costs.

STOP WASTING MONEY ON STRETCH FILM: THE SECRET TO CUTTING COSTS, REDUCING WASTE, AND WINNING CUSTOMER LOYALTY



Margins

In the grocery sector, where profit margins are between 1-3%, cutting costs is crucial. Investing in reusable packaging like HeroPak reduces expenses related to pallet and container wrapping machines, wrapping film, and waste disposal. As stretch film costs rise, HeroPak offers a cost-effective, high-strength solution that integrates seamlessly into existing logistics systems. It provides a secure, tool-free alternative to expensive stretch wraps and is ideal for closed-loop logistics, delivering long-term savings and efficiency.

“Investing in sustainable packaging solutions not only reduces our environmental footprint but also generates long-term savings" Tom Szaky, CEO of TerraCycle.

Waste Management

The purpose of pallet wrapping is to securely contain and protect goods during transit and storage efficiently and cost-effectively. Ineffective wrapping risks collapsed loads (23). In the UK, over 150,000 tonnes of stretch film used annually ends up in landfills (24), contributing to increasing material and disposal costs. Replacing stretch film for load stabilization presents an opportunity to cut overlooked business costs, enhance performance, and mitigate financial burdens related to plastic consumption and disposal (25).

Carbon Emissions

A typical pallet requires 557 grams of stretch film for load protection, but this film has a substantial environmental impact. Each kilogram of stretch film produces approximately 2.6 kg CO_2, and decomposition takes 500-1,000 years, with disposal usually via landfill or incineration (26, 27). Incineration adds another 2.7 kg CO_2 per kilogram, resulting in a total emission of 5.3 kg CO_2 per kg of stretch film used (28).

Time Management

In grocery, retail, and logistics, time equates to money. Automating pallet stabilization with a machine saves time (29). In the UK, approximately 60% of loads are wrapped by hand, while 40% use semi or fully automatic machines (30). Hand-wrapping takes an average of 2 minutes per load, compared to just 1 minute and 23 seconds with a machine (29).

As plastic waste concerns rise, Jeffrey Hollender, Co-founder of Seventh Generation, highlights that “sustainable packaging can reduce costs significantly by cutting down on materials, improving transportation efficiency, and reducing waste.” HeroPak’s reusable systems address these issues by potentially eliminating the costs of single-use stretch film and reducing the carbon footprint of load stabilization. HeroPak materials produce 5.5 kg of CO_2 per kg, offering a long-term benefit with a lifespan of 10-20 years, unlike stretch film, which degrades within 12 months and compromises wrapping strength (31, 32). HeroPak’s click-lock system also enhances efficiency by allowing rapid load stabilization, outperforming both hand and automatic wrapping methods in speed and effectiveness.

Customer Perception

In the EU, 87% of citizens are concerned about plastic pollution's environmental impact, and 74% about its health effects. 85% believe manufacturers and retailers should reduce, reuse, and recycle plastic packaging. Consumers prefer minimal plastic and are willing to pay 9.7% more for sustainably produced goods, with some paying a 12% premium for products with minimized environmental impact (9, 33, 34).

To combat plastic pollution, the EU has introduced key initiatives including the 2018 European Plastics Strategy and the 2020 Circular Economy Action Plan. These measures focus on transitioning from single-use plastics and unnecessary packaging to reusable and circular packaging solutions (9).

HeroPak’s circular packaging solutions are a smart investment in anticipation of future legislation, easily integrating into existing logistics infrastructure. These solutions significantly cut single-use wrapping film consumption, enhance sustainability, and address consumer concerns. By adopting HeroPak, businesses not only align with regulatory trends but also foster consumer loyalty, potentially offsetting the investment costs through demonstrated commitment to environmental responsibility.

Theft Prevention

The HeroPak system significantly reduces theft by using a secure click-lock mechanism and impact-resistant polycarbonate sheeting. Unlike single-use stretch wrap, which can be easily breached with simple tools, HeroPak's robust design deters thieves by requiring more effort to access goods. The added top lock system ensures that items remain secure throughout transit, upgrading theft attempts to "break and entry" rather than opportunistic theft. This reinforced protection not only prevents theft but also acts as a natural deterrent, enhancing overall security and safeguarding your cargo from both intentional theft and accidental damage.

Impact Reduction

HeroPak provides a product-life guarantee, covering repairs and replacements for any damaged units. Units beyond repair are decommissioned, dismantled, and recycled in a closed-loop system. The use of polycarbonate, known for its high recyclability, allows for remanufacturing into new sheets, which further reduces the material's carbon footprint. Recycled polycarbonate cuts CO_2 emissions from 5.5 kg per kg of virgin material to 1.76 kg per kg (31). Additionally, research by the Netherlands Environmental Assessment Agency outlines decarbonization strategies for the polycarbonate industry, which can be implemented globally (35).

Circular Economy

The waste hierarchy prioritizes preventing waste, and if unavoidable, reusing items. In grocery and retail sectors, where closed-loop logistics are essential, HeroPak offers a high-strength, lightweight, reusable alternative to single-use films and wraps. This tool-free system integrates seamlessly into existing logistics chains without disrupting staff workflows. By shifting from single-use wraps to reusable solutions, businesses can more effectively reduce plastic waste and meet their plastic reduction goals. HeroPak’s innovation supports sustainability efforts while enhancing operational efficiency.

As consumers and legislators push for reductions in single-use plastic, businesses in grocery, retail, and logistics face increasing pressure to shift away from wasteful stretch wraps and films. HeroPak provides a powerful solution with its sustainable, reusable packaging alternatives. By integrating effortlessly into existing systems, HeroPak helps companies meet plastic reduction and circular economy targets, all while saving time, cutting emissions, and reducing costs. Make the smart choice for a sustainable future with HeroPak—where innovative packaging solutions support your environmental goals and operational efficiency. Contact us today to lead the charge against plastic waste.

Benjamin Smits is the Chief Strategy Officer at HeroPak where he plans and develops the strategic vision of the HeroPak team.

Prior to that, he was a student at FH Campus Wien where he achieved his Master Degree in Packaging Technology and Sustainability and previously at RMIT where he gained a Bachelor Degree in Engineering.

Benjamin is also raising 2 beautiful daughters in Linz, Austria.

HeroPak assists you in delivering a “knock-out blow” to single-use and wasteful packaging.

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References

1. The Guardian (2024) World must come together to tackle plastic pollution, says chair of UN talks. [ONLINE] Available at: https://www.theguardian.com/environment/2024/apr/23/world-must-come-together-to-tackle-plastic-pollution-says-chair-of-un-talks

2. Eurostat (2023) EU packaging waste generation with record increase. [ONLINE] Available at: https://ec.europa.eu/eurostat/web/products-eurostat-news/w/ddn-20231019-1

3. Sphera (2021) Tackling Plastics and Packaging in Supply Chains [ONLINE] Available at: https://www.supplyshift.net/blog/tackling-plastics-and-packaging-in-supply-chains/

4. Quora (No date) What is the difference between plastic wrap and stretch film? [ONLINE] Available at: https://www.quora.com/What-is-the-difference-between-plastic-wrap-and-stretch-film

5. Plastics Recylers Europe (2019) Flexible Polyethylene Recycling in Europe: Accelerating the Transition Towards Circular Economy [ONLINE] Available at: https://plieweb.plasteurope.com/members/pdf/p242784b.PDF

6. Ellen Macarthur Foundation (No date) Plastics and the circular economy – deep dive [ONLINE] Available at: https://www.ellenmacarthurfoundation.org/plastics-and-the-circular-economy-deep-dive

7. National Retail Federation (2022) Plastics & Packaging in the Retail Industry [ONLINE] Available at: https://nrf.com/topics/sustainability/esg-tool-kit/plastics-packaging-retail-industry

8. Ellen Macarthur Foundation (2022) Flexible Packaging: The urgent actions needed to deliver circular economy solutions [ONLINE] Available at: https://www.ellenmacarthurfoundation.org/flexible-packaging-the-urgent-actions-needed-to-deliver-circular-economy?utm_campaign=flexibles&utm_medium=Referral&utm_source=report_embed

9. Changing Markets Foundation (2022) Under wraps? What Europe's supermarkets aren't telling us about plastic [ONLINE] Available at: https://changingmarkets.org/report/under-wraps-what-europes-supermarkets-arent-telling-us-about-plastic/

10. Plastics Recylers Europe (2020) Flexible Films Market in Europs State of Play: Production, Collection and Recycling Data [ONLINE] Available at: https://743c8380-22c6-4457-9895-11872f2a708a.filesusr.com/ugd/dda42a_ff8049bc82bd408faee0d2ba4a148693.pdf

11. Ellen Macarthur Foundation (2022) Flexible Packaging: Move Away From Single-Use Flexibles: Innovative Elimination and Reuse [ONLINE] Available at: https://www.ellenmacarthurfoundation.org/move-away-from-single-use-flexibles-innovative-elimination-and-reuse

12. Inside Packaging (2023) Experts: circular economy spurs packaging choices, infrastructure improvement urgent [ONLINE] Available at: https://inside-packaging.nridigital.com/inside_packaging_dec23/experts_circular_economy_spurs_packaging_choices_infrastructure_improvement_urgent

13. Dispo (2022) Nachhaltige Transportsicherung für Transgourmet [ONLINE] Available at: https://dispo.cc/artikel/nachhaltige-transportsicherung-fuer-transgourmet/

14. TransGourmet (2023) Plastikreduktion in der Belieferung [ONLINE] Available at: https://www.transgourmet.ch/de/news/plastikreduktion-der-belieferung

15. Taten Statt Worte (No date) Mehr Wendeplatten - weniger Plastik: Transgourmet setzt seit 2023 komplett auf Transportsicherung Roll-Safe [ONLINE] Available at: https://tatenstattworte.transgourmet.at/taten/mehr-wendeplatten-weniger-plastik

16. Xometry (2022) UV-Resistant Plastics, Polypropylene vs. Nylon [ONLINE] Available at: https://www.xometry.com/resources/injection-molding/uv-resistant-plastics-polypropylene-vs-nylon/

17. Sybridge Technologies (2022) Examining the UV Resistance Qualities of Polypropylene and Nylon [ONLINE] Available at: https://sybridge.com/uv-resistance-qualities-polypropylene-and-nylon/

18. Politico (2024) EU to ban single-use plastic in deal on new green packaging rules [ONLINE] Available at: https://www.politico.eu/article/eu-ban-single-use-plastic-packaging-deal-green-rules/

19. Two Sides (2022) Paper packaging is preferred by consumers [ONLINE] Available at: https://twosides.info/paper-packaging-is-preferred-by-consumers

20. Mondi (2021) Life cycle assessment of Mondi's paper for pallet wrapping shows lower climate impact [ONLINE] Available at: https://www.mondigroup.com/news-and-insight/2021/life-cycle-assessment-of-mondis-paper-for-pallet-wrapping-shows-lower-climate-impact/

21. Lindum (2023) Is paper pallet wrap the future? [ONLINE] Available at: https://www.lindumpackaging.com/resources/is-paper-pallet-wrap-the-future/

22. European Supermarket Magazine (2024) Turning To Paper 'Not An Easy Solution' To Plastic Issue, Says Rabobank [ONLINE] Available at: https://www.esmmagazine.com/packaging-design/turning-to-paper-not-an-easy-solution-to-plastic-issue-says-rabobank-259462

23. Omni Group (2023) 50% of Load Damage is a result of Ineffective Pallet Wrapping [ONLINE] Available at: https://omnigroup.com.au/blogs/ineffective-pallet-wrapping

24. Acopia (2024) Is sustainable pallet wrap an option? [ONLINE] Available at: https://acopia.co.uk/resources/blogs/is-sustainable-pallet-wrap-an-option/

25. Food Manufacturer (2022) Packaging costs rise in wake of plastics tax [ONLINE] Available at: https://www.foodmanufacture.co.uk/Article/2022/05/06/packaging-costs-rise-in-wake-of-plastics-tax

26. Envirogroup (No date) Do more for the environment with less film [ONLINE] Available at: https://enviro-group.de/en/verpackungsoptimierung/stretchfolienoptimierung/

27. 8 Billion Trees (2024) 2023 Plastic Carbon Footprint: Official Emissions Numbers + Calculator [ONLINE] Available at: https://8billiontrees.com/carbon-offsets-credits/carbon-ecological-footprint-calculators/plastic-carbon-footprint/

28. KTH Industrial Engineering and Management (2020) Mapping and investigation of carbon emissions from incineration of plastics: A thesis investigation on common polymers and how they should be managed [ONLINE] Available at: https://www.diva-portal.org/smash/get/diva2:1465315/FULLTEXT01.pdf

29. Lindum (2022) Is a pallet wrapper quicker than wrapping by hand? [ONLINE] Available at: https://www.lindumpackaging.com/resources/is-a-pallet-wrapper-quicker-than-wrapping-by-hand/

30. LinkedIn (2016) Pallet Stretch Film and CO2 Emissions [ONLINE] Available at: https://www.linkedin.com/pulse/pallet-stretch-film-co2-emissions-mark-barter/

31. High Line Polycarbonate (2023) Low Global Warming Potential Polycarbonate. [ONLINE] Available at: https://highlinepc.com/low-global-warming-potential-polycarbonate/

32. Robopac USA (2023) Does Stretch Film Have an Expiration Date? [ONLINE] Available at: https://robopacusa.com/does-stretch-film-have-an-expiration-date/

33. PWC (2024) Consumers willing to pay 9.7% sustainability premium, even as cost-of-living and inflationary concerns weigh: PwC 2024 Voice of the Consumer Survey [ONLINE] Available at: https://www.pwc.com/gx/en/news-room/press-releases/2024/pwc-2024-voice-of-consumer-survey.html

34. Bain (2023) Consumers say their environmental concerns are increasing due to extreme weather; study shows they're willing to change behavior, pay 12% more for sustainable products [ONLINE] Available at: https://www.bain.com/about/media-center/press-releases/2023/consumers-say-their-environmental-concerns-are-increasing-due-to-extreme-weather-study-shows-theyre-willing-to-change-behavior-pay-12-more-for-sustainable-products/

35. PBL Netherlands environmental Assessment Agency (2021) Decarbonisation options for the Dutch polycarbonate industry [ONLINE] Available at: https://www.pbl.nl/sites/default/files/downloads/pbl-2021-decarbonisation-options-for-the-dutch-polycarbonate-industry-4560.pdf

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