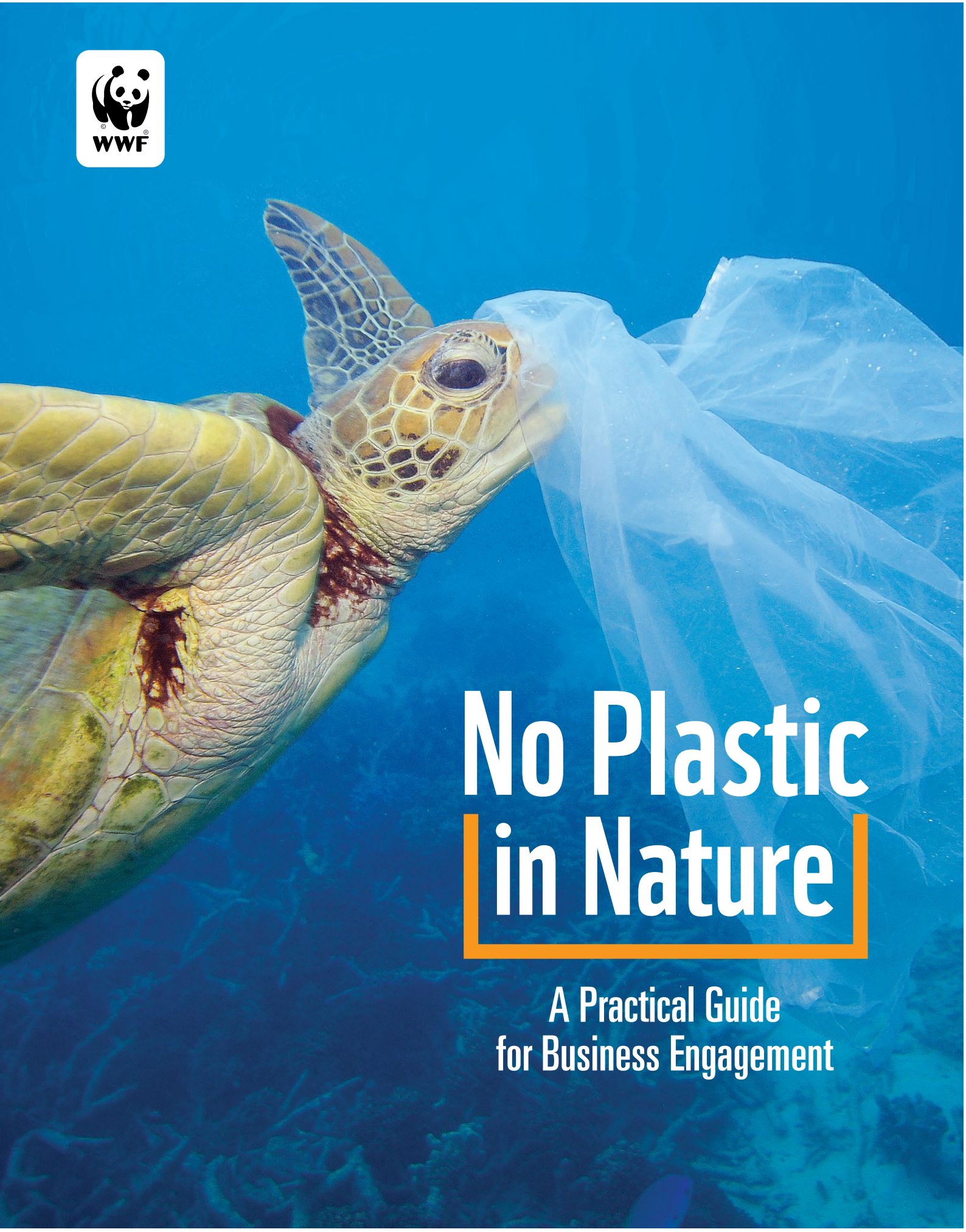
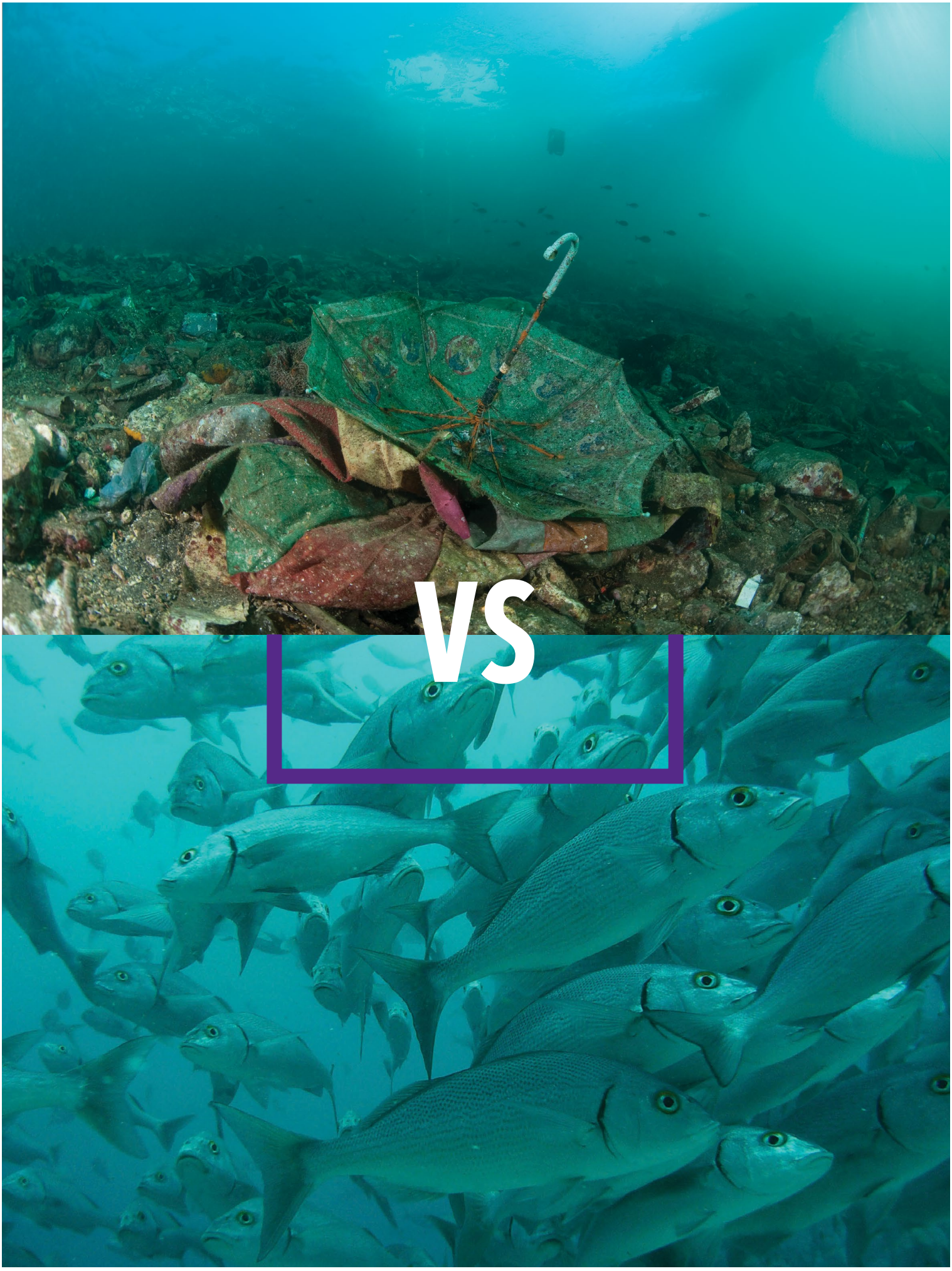


No Plastic in Nature

A Practical Guide for Business Engagement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Contents

Urgent action to halt decades of plastic pollution is necessary, but it will require international and coordinated collaboration on an unprecedented scale, since no single entity can successfully tackle this issue on its own. Governments, service providers, the public, business — commitment is needed from all sides for the system to succeed.


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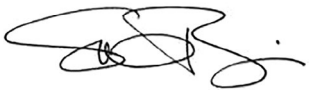
FOREWORD

Plastic is found in every corner of the world — in the most remote environments, in our food and water, and in hundreds of wildlife species. Everyday plastic items that end up as waste in nature will take hundreds of years to degrade, negatively impacting ecosystems and their inhabitants in ways we are just beginning to understand.

Urgent action to halt decades of plastic pollution is necessary, but it will require coordinated collaboration on an unprecedented scale, since no single entity can successfully tackle this issue on its own. Governments, service providers, the public, and business must be involved in helping make the global material system more sustainable. Business has a crucial role to play, since it can not only exercise decision-making powers over its own actions but also engage the individual consumers it serves, and the public as a whole. It is the hope of World Wildlife Fund (WWF) that private sector action will engage all stakeholders such that they may collectively realize the WWF vision of *No Plastic in Nature*.

The report aims to provide guidance to businesses on how to engage on this global issue. WWF brings a global perspective and fact base for future business action. For more than 50 years, WWF has been protecting the future of both people and nature by combining its global reach with a strong foundation in science. Through this report, WWF aims to demonstrate how time-tested management practices, buoyed by novel collaborations, can help bring major shifts towards a better-functioning plastics system.

This report was undertaken because of our evolving understanding of the plastic waste crisis as an enduring, global threat, and the urgent desire and need to act. We hope the following pages will stimulate conversation and action, inspiring businesses to pursue specific strategies and collaborations as part of a comprehensive approach to ending plastic in nature. With support, awareness, and momentum building around this issue, we ask businesses to join us as we embark on this challenging and worthwhile journey. We believe *No Plastic in Nature* is possible, and we encourage businesses to take on a critical leadership role in the transformational changes on the horizon.



Sheila Bonini

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Private Sector Engagement

World Wildlife Fund (WWF)


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EXECUTIVE SUMMARY

Plastic waste in our environment is a growing problem, and one that is rapidly becoming a crisis. It enters the ocean at a rate equivalent to one dump truck per minute. It adversely affects wildlife, the health of ecosystems, the integrity of food supplies, and livelihoods. The impact can be widely felt, from diminishing revenues from fisheries and tourism to clogged sewage systems and air pollution from the uncontrolled burning of plastic waste.

WWF has a vision of an economy and a society that has zero tolerance for plastic pollution and all harm caused to the environment by plastic — *No Plastic in Nature*. To successfully alleviate the potential harm that plastic pollution inflicts on our planet and its inhabitants, aligned action at all stages of the plastic life cycle is needed, with players working together in a committed manner. This report found that in addition to ensuring adequate basic waste management provisions in all geographies, three further strategies could contribute to and achieve this vision: 1) eliminate unnecessary plastics, 2) double global plastic recovery, and 3) shift to sustainable sources for the remaining plastic.

While organizations, governments, and individuals can all help alleviate the worst effects of plastic pollution, this report focuses solely on the actions that business can take to address the plastic pollution crisis. Companies have both a strong rationale for engagement and an important and unique role to play. The business case for action quoted by frontrunner companies ranges from mitigating brand risk and protecting one's ability to conduct business, to stronger employee satisfaction, better customer experiences, and tapping into new market segments. Corporate engagement and meaningful action across geographies is essential to catalyzing the action of other important stakeholders and achieving practical solutions. This report aims to share examples of what has already worked, to help businesses create effective engagement strategies and design concrete actions along the plastic life cycle to further these strategies.

Businesses across consumer-oriented sectors like fast-moving consumer goods (FMCG), retail, and tourism can be effective in their response to the call of the public, non-governmental organizations (NGOs), and policymakers to combat the plastic crisis. Several companies have already taken up this challenge. This analysis shows that effective corporate action is centered on four activities:

- Maximizing impact through strategic alignment, purposeful organizational design, and intense but selective collaboration;
- Designing products, packaging, and distribution models to improve recycling and recovery rates and to ensure robust end markets for recycled materials;
- Tailoring interventions to engage consumers; and
- Improving and innovating the existing collection and recovery infrastructure and growing it further.

Their involvement in these four crucial areas provides a helpful blueprint for companies that wish to similarly engage to successfully work toward a better-performing plastics cycle. This report draws lessons from each experience to inspire action on a grander scale so that we not only continue our current progress, but aspire higher, to bring an end to plastic pollution.


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1. Introduction

Plastic pollution is a growing environmental concern, and one that is rapidly turning into a crisis. Plastic waste enters the ocean at a rate equivalent to one dump truck per minute.[1] And leakage of plastic into nature is accelerating.[2] Plastic pollution adversely affects wildlife, the health of ecosystems, the integrity of food supplies, and livelihoods. Today, over 1,400 marine species,[3] including sea mammals and birds, are impacted by plastic in the ocean through ingestion, entanglement, or habitat effects.[4] It is estimated that by 2050, 99% of all seabirds will have ingested plastic.[5] The epicenter of the crisis is in Southeast Asia, where rapidly growing economies have lifted many people out of poverty but outpaced the ability to manage waste at the most basic level.[6] It is also where the impact of plastics pollution is often most acutely felt, in terms of diminishing revenues from fisheries and tourism, clogged sewage systems, and air pollution from the uncontrolled burning of plastic waste.

While eliminating single-use[7] plastics may seem like the obvious answer to this challenge, removing this one component of the global system of materials management may transfer environmental costs to another part of the system. Indiscriminate substitution of single-use plastics with paper products, for example, would overlook the crucial role plastic plays in preservation and food safety, with detrimental results for our natural resources. The plastics issue is not the only environmental crisis we face, and we therefore cannot seek solutions to plastic waste that exacerbate the adverse impact on our climate, forests, and food waste. WWF calls this integrated approach, which accounts for the interconnectedness of both technical and natural systems, a "one planet perspective." This is an approach that resonates particularly closely with the current strategy of WWF, *No Plastic in Nature*, and focuses additionally on outlining better choices for managing, using, and sharing the natural resources within our planet's limits — to ensure food, water, and energy security for all.[8]

No Plastic in Nature aims to stop the flow of plastic pollution into our ecosystems by 2030. To successfully alleviate the harm inflicted by plastic, aligned and committed action by all stakeholders at every stage of the plastic life cycle is needed. No one solution is, however, capable of defusing this crisis, and each region will therefore have to tailor its approach appropriately.

While organizations, governments, and individuals can all help in their respective ways to alleviate the worst effects of plastic, this report focuses on the role that business can play in contributing to solve the plastic pollution crisis.

Business has an important role to play in solving the plastic waste crisis. While it is not the sole responsibility of companies to solve this problem, their engagement and meaningful action is essential to catalyzing the actions of other important stakeholders and achieving practical solutions. Businesses control the design (and associated environmental impact) of their products and packaging, have enormous influence over their supply chains and the public's interaction with their products, and maintain the ability to make industry-wide changes through collective action. In addition, businesses could provide important support for policy changes that will make circular material systems more realistic. Importantly, businesses also have a strong rationale for taking action, ranging from improving employee satisfaction and customer experiences to building the next social contract based on sustainability and tapping into new market segments.

Organizations, governments, and individuals can all help in their respective ways to alleviate the worst effects of plastic pollution. This report, however, focuses solely on the contribution that business can make toward solving the plastic pollution challenge. While companies have already started to engage in several different ways, the issue is complex, and solutions will need to be carefully tailored to specific regions or products. Based on interviews with seven leading companies from consumer-oriented sectors,[9] independent research, and analysis of best practices, this report outlines what kinds of actions businesses are currently taking, and draws lessons from them and the progress achieved. It aims to help businesses create effective engagement strategies, and to design concrete actions along the plastic life cycle to further those strategies.

2. Plastic pollution threatens nature, people, and livelihoods

Plastics have become increasingly entwined in our lives and economic systems over the past 60 years, with plastic production surging from 1.5 million tonnes in 1950 to 335 million tonnes in 2016.[10] Over the next 20 years, plastic production is expected to double.[11] In spite of all the merits of plastics — including its role as a lightweight packaging material that enables products to be efficiently transported and kept safe from microorganisms — inadequately designed and managed plastic can often have a sizable and adverse economic impact on industry, a health impact on society, and an environmental impact on a range of ecosystems, which could all in turn have varying extents of impact on livelihoods.

Much of this impact, in terms of greenhouse gas emissions, land degradation, and resource depletion, for instance, is inherent in fossil resource extraction, and therefore unavoidable if we continue to depend on virgin, fossil-based materials. Furthermore, acute events like oil spills can damage both ecosystems and economies. But the problems do not stop with the sourcing of plastic. Take the marine tourism sector, for example. This sector has been devastated by the proliferation of marine litter. Apart from the fact that declining, dirty beaches dissuade tourists from making return visits, the potential health impact associated with poor waste management (e.g., open dumping) is well established.[12] The specific effects of unmanaged plastics and microplastics on human and animal health are not yet fully understood. It is suspected that inhaled or ingested microplastic may create an even higher risk of respiratory issues and epigenetic consequences than is currently understood.[13] It is also known that microplastics are present in 12 of the 25 most important species and genera that comprise marine fisheries,[14] and animals are adversely affected by larger pieces of plastic and suffer from body toxicity, suffocation, and digestion issues; the aggregate effect of these occurrences is still being determined. Environmental damage to marine ecosystems, meanwhile, is estimated to be USD 13 billion per year.[15]

As much as

32%

of all plastic packaging does not end up within a collection system, let alone get recycled.

Inadequate waste management systems are a major cause of plastics pollution

Recycling and leakage statistics paint a stark picture of our progress in terms of plastic pollution. Globally, only 14% of plastic packaging is collected for recycling, and as much as 32% of all plastic packaging does not end up within a collection system, let alone recycled, according to the Ellen MacArthur Foundation.[16] While ocean-based

FIGURE 1: Waste management systems archetypes

2015 SHARE OF PLASTIC WASTE VOLUME BY COUNTRY ARCHETYPE, PERCENTAGE



	Mechanical Recycling	*Incineration*	*Landfill*	*Unmanaged*
INDUSTRIAL	**15%**	**35%**	**45%**	**5%**
TRANSITIONAL	**5%**	**15%**	**30%**	**50%**
EARLY STAGE	**8%**	**–**	**15%**	**77%**

Source: "How Plastics Waste Recycling Could Transform the Chemical Industry." McKinsey & Company, December 2018.

occurrences of plastic pollution have received a lot of attention, much less attention has been paid to the fact that 80% of plastic pollution in the ocean stems from land-based sources.[17]

Leaked uncollected waste is mainly the result of inadequate waste management. This problem is twofold. First, adequate infrastructure that enables collection is often not provided. For instance, while most high-income countries have a collection rate close to 100% for general waste, low-income countries achieve only 39% on average.[18] This leaves citizens without the means to correctly dispose of their waste. Second, even when the infrastructure is in place, people end up not using it properly: as many as 62% of England's residents and nearly 50% of Americans, for instance, are given to dropping trash in the streets from time to time.[19] Moreover, with consumption patterns changing and on-the-go consumption increasing, new challenges in collection continue to arise.

Even if municipal solid waste is collected, the odds of it finding its way back to nature are still quite high, since as much as 33% of it is mismanaged and deposited in open dumps.[20] Thirty-seven percent is brought to landfills, which are variable in their construction and management and therefore in their effectiveness at containing waste. In non-sanitary and poorly managed landfills, waste — especially plastic items, which tend to be light — can be blown or washed away. Meanwhile, a growing number of the world's largest cities are already running out of landfill capacity, and rapid urbanization rates are creating similar challenges for many smaller cities around the world. Landfill capacity in the United States is expected to decrease by over 15% in coming years, resulting in an estimated 10-15 years of remaining capacity by 2021.[21] In the Philippines, some experts found that the scarcity of new landfill sites for the growing amount of garbage is the gravest waste-management problem in the country.[22] As Figure 1 illustrates, these numbers vary sharply from region to region. Furthermore, while the effects of this crisis are acutely obvious in places lacking waste management, the polluting plastics are often brought to these places by the global trade of goods, and therefore finding solutions should be the concern of high-income countries as well.

A fragmented landscape with geographical disparity adds to the complexity

Around the world, waste management systems are influenced and shaped by varying factors. These include land availability and population density, and the widely diverging policies — or lack thereof — of regional, country, and local authorities that impact which materials are accepted in local and nationwide recycling systems, as well as a suite of other aspects of the waste management cycle. These inconsistencies in waste management policy and the differing actions and incentives of different stakeholders around the world represent structural barriers that make a single way of reworking current material management systems difficult.

Figure 2 illustrates this with the help of two packaging formats (PET bottles and flexible plastic packaging) in three fundamentally different waste management systems (the US, Germany, and the Philippines). Not only did PET bottles represent the largest application of rigid plastics in packaging at 18.8 million metric tons in 2018, but with 4.6 percent growth per year, PET is also one of the fastest-growing resins in rigid packaging.[23] Plastic beverage containers also show up prominently in oceans, on beaches, and in other littering hotspots.[24] Despite their relatively high recycle value and the fair availability of collection and recycling infrastructure, recycling rates for PET have either leveled off or, in many places, not taken off at a meaningful scale.[25] Meanwhile, flexible plastic packaging is expected to continue its steady growth in consumer goods at 4.3% per year until 2022.[26] From resealable cereal bags to single-use detergent sachets, the applications are broad for this type of packaging. Within the flexible packaging segment, subcategories like stand-up pouches are growing even faster, at 6% per year.[27] This is the result of the format's user convenience, strong retail performance, and favorable barrier properties.

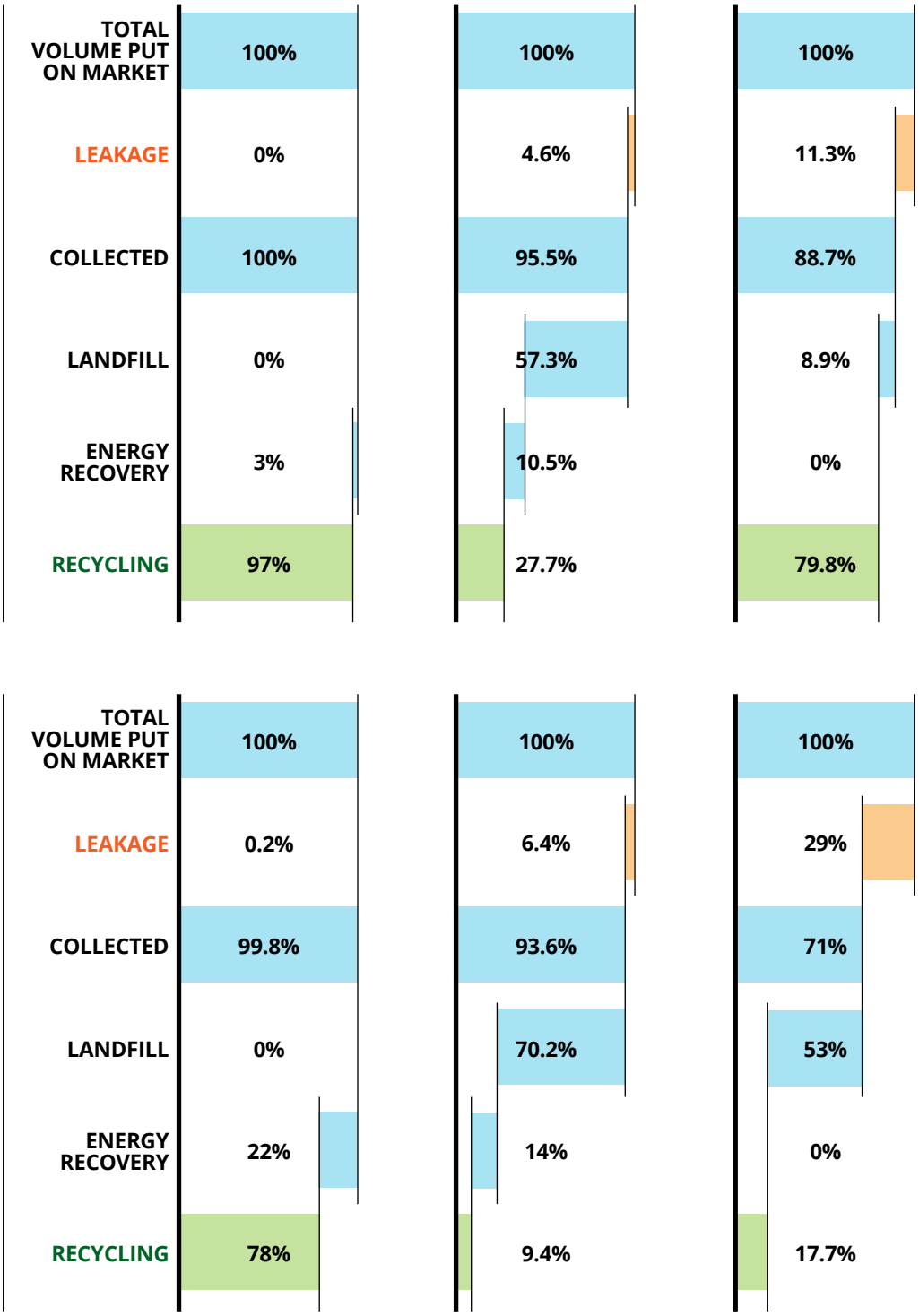
Figure 2 highlights considerable regional differences for both types of packaging. Leakage rates range from 0 to almost 30%. Whereas Germany and the Philippines have recycling rates of 80% or higher, in the US less than 30% of all PET bottles are recycled, even though the collection rate is close to 100%. Meanwhile, in the Philippines, 10% of all bottles are never collected, and as such never even enter the recycling system. This is mainly because the relative economic value of a PET bottle is much higher in the Philippines than in the US, where 60% of all PET bottles end up in landfills. The same economic reasoning, however, does not explain the differences in PET bottle recycling rates between the US and

The inconsistencies in waste management policy and the differing actions and incentives of different stakeholders around the world represent structural barriers that make a single way of reworking current material management systems difficult.

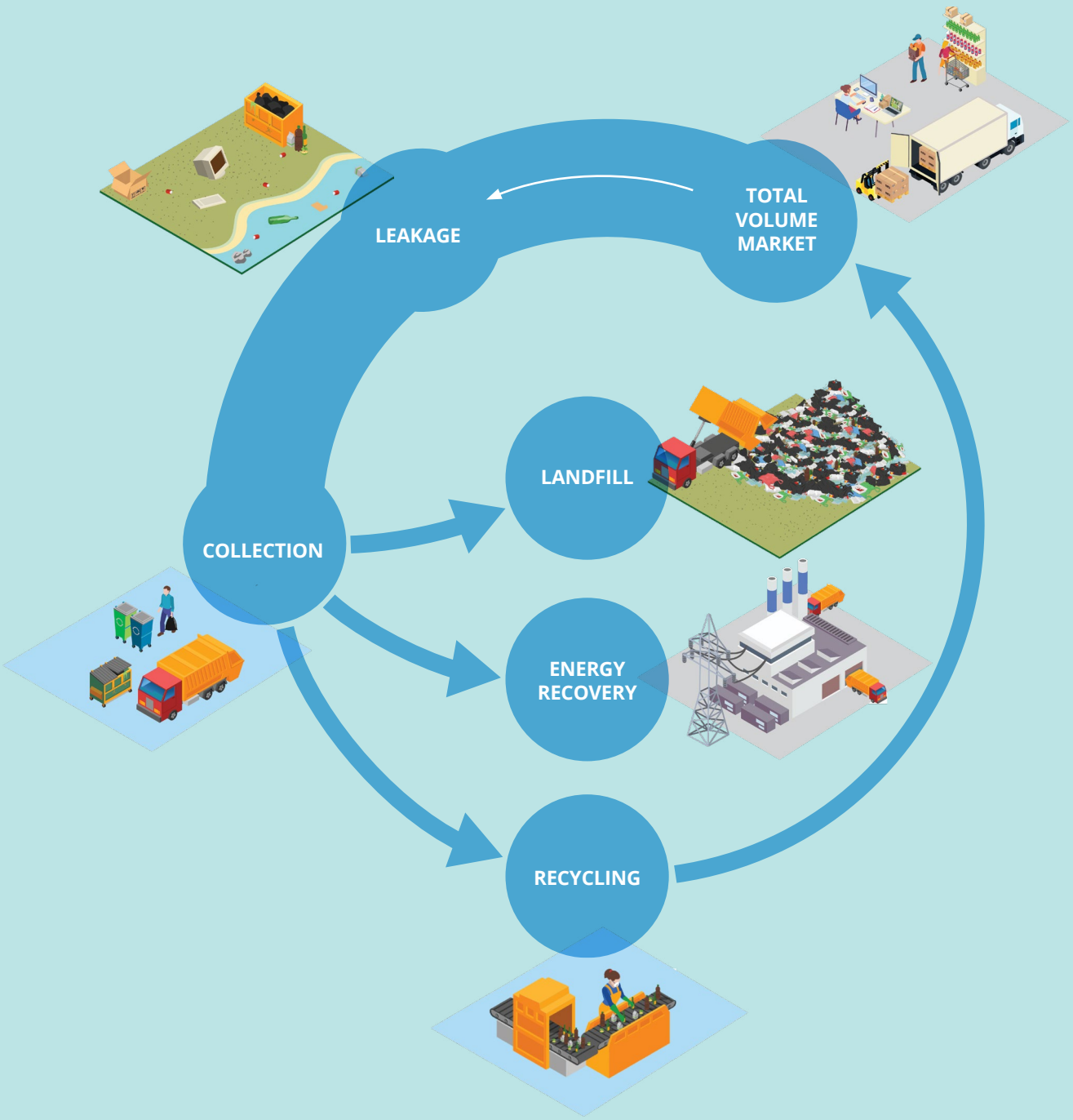
FIGURE 2: Distribution of destinations for PET and flexible packaging

PET bottle

Flexible plastic packaging



FLOW OF PET AND FLEXIBLE PACKAGING FROM FIGURE 2



Germany. The high recycling rate of Germany (97%) is the result of a successful balance between policy measures (such as bottle deposit schemes) and the behavioral changes of retailers and their customers.

The situation is entirely different, however, if we consider flexible plastic packaging (FPP), as can be seen in Figure 2. It is clear that FPP is not well accommodated in most recycling infrastructures. Only in Germany is there some degree of sorting capacity, but even so a significant fraction (~22%) ends up in energy recovery. In the US, most flexible packaging finds its way into a landfill. In the Philippines, since the economic value is not high enough, a large fraction of it (~30%) is never collected or leaks after having been collected. In the event of collection, the material (an overwhelming majority of it) won't be recovered but more likely will end up in a landfill or illegally burned.[28]

The plastics and packaging landscape is also highly fragmented in terms of players and processes in the market. While the top five resin producers hold 33% and the top 10 hold 50% of total market share,[29] the top 15 packaging players account for only 15% of their market.[30] When it comes to retailers (e.g., supermarkets), the market is even more fragmented, with the top 10 retailers accounting for only 6.1% of the market share.[31] The lack of standards and coordination across these different players along the value chain has allowed a proliferation of materials, formats, labeling, collection schemes, and sorting and reprocessing systems that collectively hamper the development of effective markets.[32] Furthermore, packaged products end up in every single household, whether in the middle of a megacity or in the farthest reaches of the countryside. This high degree of fragmentation leads to misaligned objectives in different parts of the plastics life cycle.

It does not need to be this way. Chapter 3 lays out a vision for a future without plastic pollution. Chapters 4, 5, 6, and 7 offer inspiration and guidance for companies wishing to engage on the topic and contribute to a solution.

PLASTICS AND PACKAGING FRAGMENTATION

THE **TOP 5** RESIN PRODUCERS HOLD **33%** ...

... AND THE **TOP 10** HOLD **50%** OF TOTAL MARKET SHARE

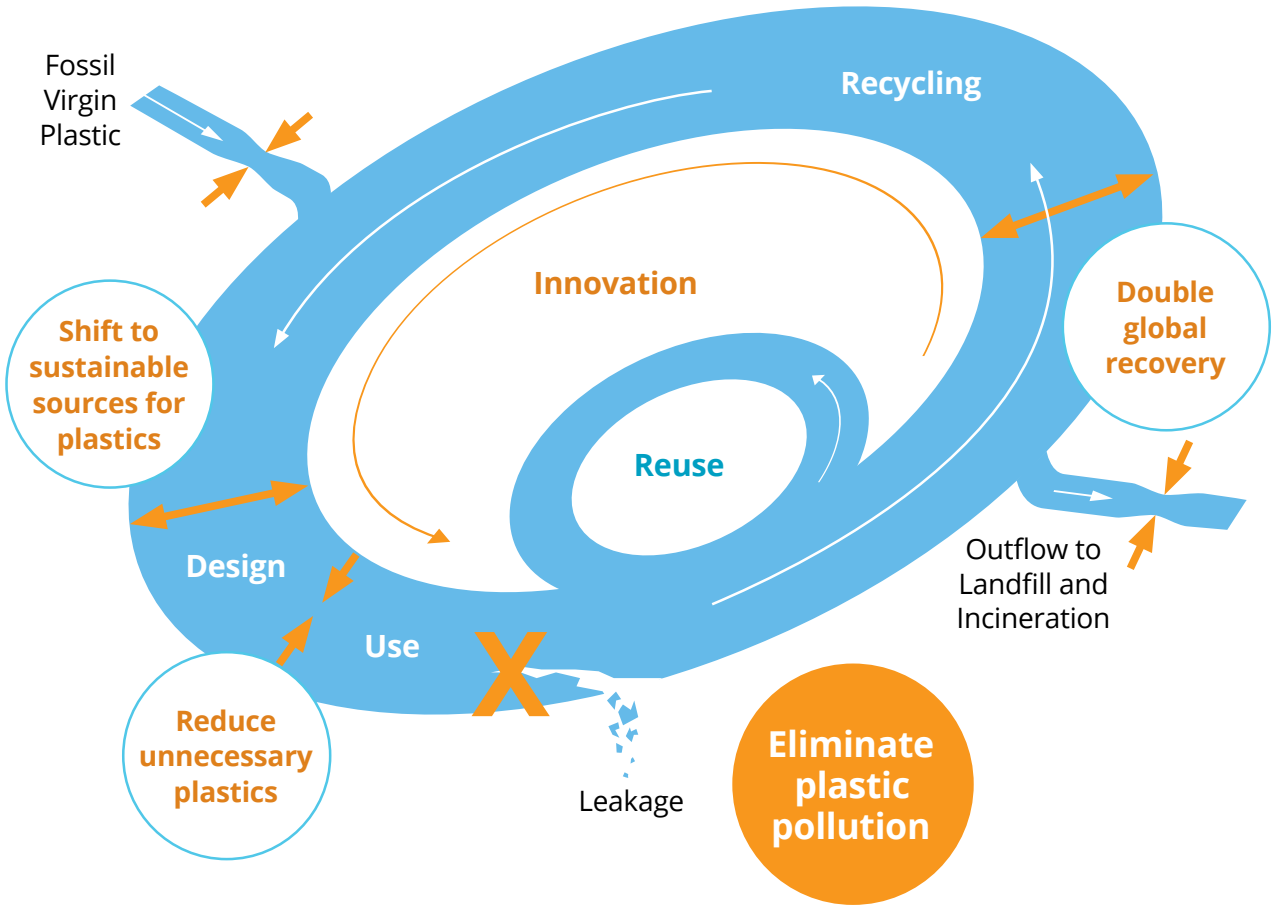
THE **TOP 15** PACKAGING PLAYERS HOLD **15%** (TOTAL MARKET SHARE)

THE **TOP 10** RETAILERS (E.G., SUPERMARKETS) HOLD **6.1%** (TOTAL MARKET SHARE)

3. A future without plastic pollution

WWF, through its strategy of *No Plastic in Nature*, calls for a 100% reduction of plastic pollution into ecosystems. Earlier research has estimated that a reduction of plastic pollution by nearly half is an ambitious but achievable goal.[33] *No Plastic in Nature* is an aspirational goal that challenges us to realize a complete solution to this crisis, and recent analysis indicates it could be achieved by 2030.[34] We therefore envision an economy and a society that has zero tolerance for plastic litter and all harm caused to the environment by plastic. In addition to ensuring adequate waste management provisions in all geographies, three further strategies could contribute to this vision: 1) eliminate unnecessary plastics, 2) double global plastic recovery, and 3) shift to sustainable sources for the remaining plastic, as shown graphically in Figure 3 below. Furthermore, measuring and transparently reporting on progress is paramount if this

FIGURE 3: Proposed solutions



challenge is to be met. Without a method to track progress, it will not be possible to evaluate and make the necessary adjustments to strategies and action plans, and there will also be the danger of spending time and resources on ineffective approaches. Currently, there is a lack of standardized, agreed-upon methods to measure success against. WWF believes that eliminating this gap is necessary for achieving the goal of *No Plastic in Nature*.

Eliminate unnecessary plastic

Unnecessary plastic is plastic that, if not used, would not create adverse environmental or social trade-offs. Some opportunities to avoid unnecessary plastics are straightforward, like drinking directly from the glass instead of using a straw. Others require rethinking how products are designed, delivered, and consumed. Much of the recent focus — of policymakers, consumers, and businesses alike — when it comes to the reduction of plastic usage has been on the very short-use plastics such as disposable plastic cutlery, straws, cups, plastic bags, etc. While estimates vary quite substantially and are geography-specific, between 40 and 60% (by weight) of all plastics are designed for a usage period shorter than two years, and a considerable share of those even for usage of less than a day.[35] What is needed is a rethink on how we design, deliver, and consume products that currently rely on such short-term plastic. Since non-durable plastic is twice as likely to be dumped, reducing it is a very effective measure by which to eliminate plastic in nature.[36]

Having said that, it will be important that this redesign navigate important trade-offs to ensure a net environmental and social gain. For example:

- Plastics are light and strong. Replacement with other materials could result in increased weight, and therefore increased use of transportation fuel and emission of greenhouse gases.
- Plastics have barrier properties that keep food fresh and safe to eat. Increased food waste and associated environmental impact are risks of material substitution.
- Plastic is used to keep medical devices and medications sterile. There is a high human and resource cost to losing this functionality.

Double global plastic recovery

Every piece of plastic that is not recovered represents a lost opportunity. Plastic packaging material with a value of USD 80-120 billion annually is lost after a short first-use cycle that does not end in recovery.[37] Doubling plastic packaging recycling recovery (from 14% to 28%) could bring down the proportion of plastic waste littered or dumped from its current 32% to 27%, and landfilled volumes from 40% to 33%.[38] This would create a cascading value system in which material could be used multiple times. Extending the life of our natural resources requires a setup that allows us to recapture these materials for reuse — initial research shows that even tripling the plastic collected for recycling is feasible under a global effort.[39] Moreover, meaningful expansion requires the development of recycling infrastructure to also cover plastics that are currently either not recovered or hardly so, and are relatively more prone to leakage.

Shift to sustainable sources for remaining plastic

Plastics and other materials that are currently derived mainly from fossil resources are integral to our economy, but this reliance on oil, natural gas, and coal has been shown to have serious and lasting consequences on the environment.[40, 41] Identifying alternative material sources is therefore an essential part of building a sustainable material system. Recycled content offers an obvious contribution to this effort. In today's conventional mechanical recycling processes, however, plastics cannot be recycled infinitely due to material degradation. Furthermore, due to a number of factors including regulation and high contamination rates, the available quality of recycled plastic is currently inadequate for demanding applications such as food. A parallel pathway of responsibly sourced biobased plastics[42] and alternatives complements recycled sources. Importantly, sourcing recycled content will also catalyze investment in the recovery of post-consumer plastic.

Note on compostable and biodegradable plastic

Compostable plastic (which will break down and become part of usable compost soil conditioner, under controlled conditions, in a time frame comparable to that of other compostable materials)[43] can be valuable in targeted applications that are coupled with proper infrastructure.

Biodegradable plastic (whose definition does not include a time frame or specified environmental conditions for breakdown)[44] can also provide value in certain applications, such as agricultural film. Allowing plastic pollution to continue to enter the environment (biodegradable or not), however, will have a serious impact on our planet. Biodegradability is therefore not a viable solution to litter or marine debris on its own — plastic does not belong in nature. Furthermore, the biodegradation of plastic outside proper infrastructure does not ultimately support circularity, as the material is not recovered.

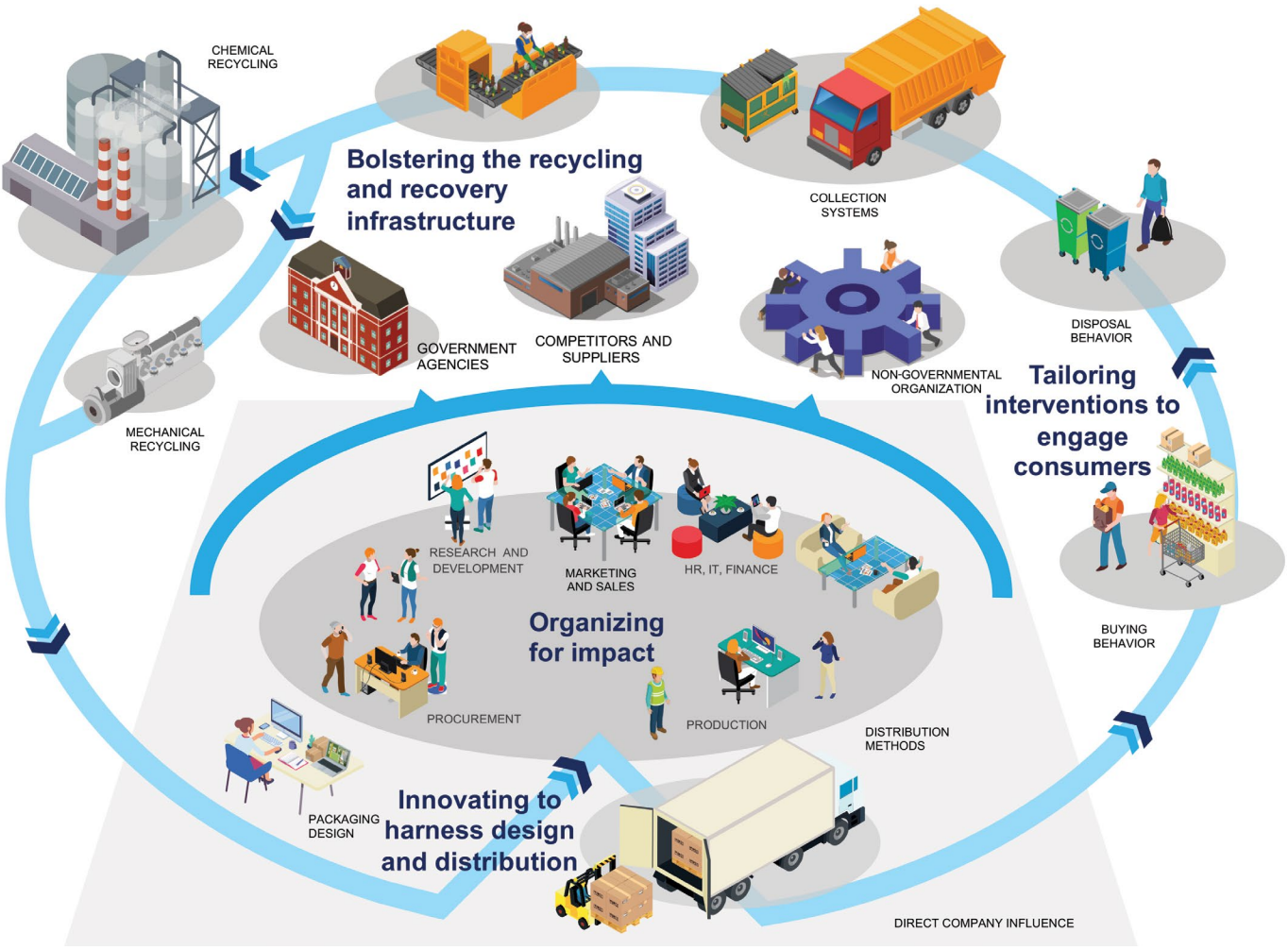
Context should be used to judge when compostability or biodegradability is the best option for extracting value from materials. For example, in food service and controlled venues, compostable materials may offer the best value proposition, as they are often contaminated with food particles and can be recovered in the same waste stream as food waste.

Biobased plastic describes the feedstock from which the plastic is made. It can be compostable, biodegradable, or neither. Drop-in biobased plastics are identical to their conventional counterparts and can therefore be recycled in the same stream with no complications. The value of these drop-in biobased plastics is based on their renewable nature when sourced responsibly.

Oxo-degradable plastic additives have drawn a great deal of attention, but evidence indicates that plastics with these additives do not truly biodegrade, but instead fragment into microplastics, which continue to impact the environment.[45]

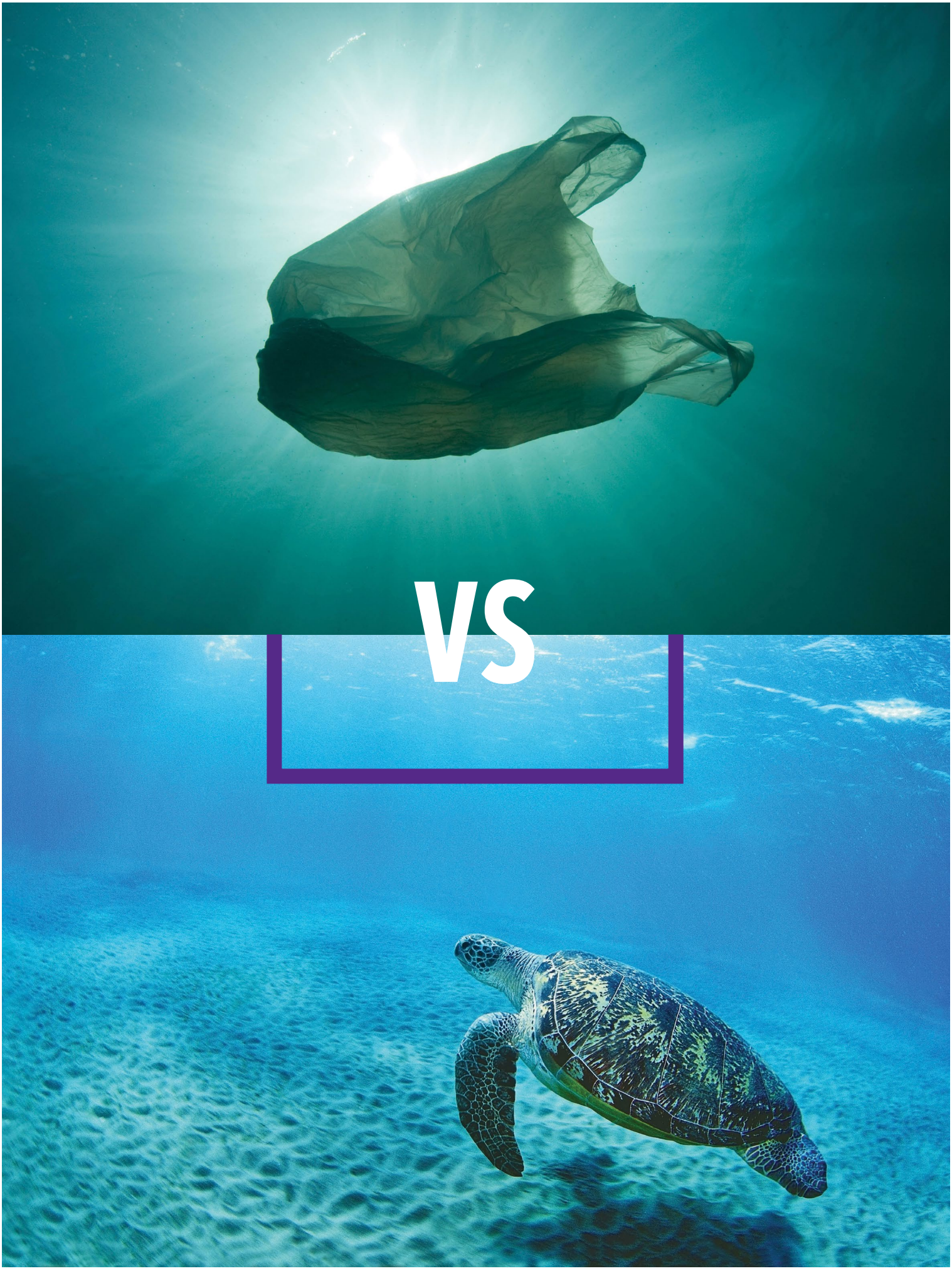
The second half of this report highlights what kinds of actions businesses are undertaking and attempts to draw lessons from each experience to inspire action on a grander scale, so that we not only continue our current progress but aspire even higher and actually bring a swift and final end to all plastic pollution. Companies across consumer-oriented sectors like FMCG, retail, and tourism are responding to the call of the public, NGOs, and policymakers. Their active contribution towards fewer plastics in the environment is based on doing things differently in the following four ways: ensuring they maximize their impact by organizing themselves accordingly (strategy, organizational design, and collaboration); using designs of packaging and distribution models to improve recycling and recovery rates and to ensure robust end markets for recycled material; tailoring interventions to influence consumer behavior; and working toward improving and innovating the existing collection and recovery infrastructure and growing it further. Their involvement in these four crucial areas provides a helpful blueprint for companies that wish to similarly engage to bring about a better-performing plastics cycle. The chapters that follow provide a detailed description of each of these four areas.

FIGURE 4: Four areas of focus for business intervention



SIDEBAR 1: FMCG companies and retailers setting goals across the plastic life cycle

FMCG	Reduction of packaging material	100% recyclable, reusable, compostable packaging material	Increased use of recycled material, support recycling
The Coca-Cola Company		By 2030	25% for plastic bottles; 37% for glass bottles
Unilever	Halve waste associated with the disposal of products by 2020 (per consumer use, 2010 base)	By 2025	25% by 2025
Henkel AG & Company	Weight reduction by 20% per sales unit by 2020	By 2025	9% recycled aluminum in Europe by 2020 33% rPET in bottles by 2020 35% recycled plastic for CPGs in Europe by 2025
Nestlé S.A.	140,000 tons from 2015 to 2020	By 2025	Share of rPET in bottles to 25% by 2025 in Europe
Mars, Incorporated		By 2025	100% of pulp/paper-based packaging from certified, verified, or recycled sources by 2020
PepsiCo, Inc.	Drinkfinity initiative introducing pods leading to 65% less plastic	By 2025	Several brands have 100% rPET (e.g., Naked Juice)
Danone	Reuse or alternative delivery models where relevant by 2025 Take action to eliminate problematic or unnecessary plastic	By 2025	100% rPET for Evian® brand by 2025 50% recycled material for water and beverage bottles by 2025 on average 100% rPET bottles introduced in all major markets by 2021 25% recycled material on average — across all packaging — by 2025
Johnson & Johnson		90+% by 2020	
Mondelēz International, Inc.	65,000 tons by 2020	By 2025	100% recycled paper or paper from sustainable sources by 2020
The Procter & Gamble Company	20% per customer use (2010 base)	By 2030	Double recycled resin in plastic packaging
The Kraft Heinz Company	50,000 tons by 2022	By 2025	100% rPET for Heinz tomato ketchup PET bottle by 2022
L'Oréal S.A.	100% of new products improved between 2013-2020, aligned with the Sharing Beauty With All program	By 2020	40% PET-PCR by 2020
McDonald's Corporation	Reduce packaging where possible through light weighting design or eliminating packaging	Guest packaging renewable, recycled, or certified by 2025	Offer recycling to guests in 100% of restaurants by 2025
Starbucks Corporation	Re-use cups in store	Greener cup by 2022	Double the recycled content in cups Double the number of stores with access to cup recycling (2016 base)
Lidl Stiftung & Co. KG	20% own brand by 2022	By 2025	50% by 2025
Kaufland	>20% own brand by 2025	For own brands by 2025	
Aldi	30% by 2025 for private label	By 2022 for private label	100% wood/paper/tissue from certified sources or recycled materials by 2020
Tesco PLC	Halve weight by 2025 compared to 2007 levels	By 2025	
Carrefour S.A.	Remove unnecessary packaging (e.g., cardboard around toothpaste tubes)	By 2025	>50% of recycled plastic for brand juice, soda, and water by 2022
The Edeka Group	Smart branding leading to 50t plastic reduction per year	For private label by 2025	
REWE	Several plastic packaging reduction initiatives (e.g., bananas)	For private label by 2030	100% for water bottles
Walmart, Inc.	Several packaging optimization initiatives (not quantified)	By 2025 (for U.S., U.K., Canada, Japan)	
The Kroger Co.	10m pounds plastic packaging reduction by 2020	On selected products and sub-brands	20% by 2020
JD.com, Inc.	10 billion boxes by 2020	80% by 2020	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4. Organizing for impact

In order to drive change, companies need to set themselves up for success. Many of the companies interviewed indicated that effectively reducing plastic pollution requires significant preparation and organization across the entire company. For example, many companies found that an effective sustainable plastics strategy needs to be systematically anchored within the organization as part of the company's overall strategy. And while it is important that it be placed within an overarching framework, the local business units and individual brands must also be allowed a certain degree of flexibility to accommodate specific, often local conditions and customer needs.

However, the significant data gaps that exist on this issue mean that companies must often make decisions with less than perfect information. Interview participants acknowledged that it is often a "learn as you go" process and not everything can be planned and prepared for in advance. "To be effective, you can't wait until everything is planned, you need an overarching strategy but the ability to still be agile and move quickly," explains Elaine Strunk, Director, Global Sustainability at McDonald's Corporation (McDonald's). Strunk continued, "With consistently changing landscapes, the desire to see changes happen quickly, and the need for solutions that do not yet exist, it is important to have clear communication with leadership and implementation teams about how and why we are moving forward, emphasizing progress over perfection. In addition, it is critical to demand better studies and systems for collecting data, and to update business strategies to reflect the latest science."

Strategy & goal-setting

PACKAGING SUSTAINABILITY STRATEGIES REQUIRE AN ORGANIZING PRINCIPLE

To guide themselves through these journeys, companies often adopt a clear guiding statement to create a consistent set of objectives. McDonald's, for example, adopted circular economy as a guiding strategic principle for packaging, so that end-of-life management was incorporated into the decision-making process before new packaging was brought to market. In another instance, at Royal Caribbean Cruises Ltd. (RCL), the guiding principle is: "Waste on board is ours. We own it, and we need to deal with it." According to Eddie Segev, Associate Vice President, Environmental Stewardship at RCL, this started as early as 1992 with the "Save the Waves" program, which paved the way to the sustainability culture that is now embedded onboard. Segev added, "Sustainable tourism is not a niche area that is associated with additional costs." The principle needs to be simple and concrete enough to be understood by all, yet sufficiently broad to allow for adjustments as the context changes (e.g., scientific knowledge, consumer attitudes, or policy framing). It must also work for local and brand-specific execution.

SUCCESSFUL PROGRAMS ARE THE RESULT OF A STRONG STRATEGIC FOCUS

Companies interviewed recount that at the beginning of their respective plastic reduction journeys, they searched for critical areas that they could impact, but found this to be surprisingly complex. For instance, in 2014, McDonald's developed a sustainability strategy that was broad-based and aimed at tackling a whole range of topics that were important but not always closely connected to one another. As the strategy advanced over the years, McDonald's redefined its focus in order to create deeper impact. While the strategy still addresses many of the same areas, the company has carefully assessed where it needed to be positioned to make the biggest impact, and established a framework with clear, time-bound goals. "After creating five concrete goals, including one around packaging and recycling, we were able to generate more overall impact," explains Elaine Strunk from McDonald's. "We call this strategy 'Scale for Good', as it focuses on areas of our business where we can both improve internally as well as leverage our scale to create meaningful impact within the broader industry." Procter & Gamble (P&G), meanwhile, identified five focus areas for investment and improvement along the packaging journey: package design, access to collection, inspiring participation, improving separation, and increasing end markets for recycled content. Which focus area they addressed depended on the current state of each material type. L'Oréal defined its "Packaging & Environment Policy" as far back as 2007 through the "3R" eco-design approach — respect consumer, biodiversity, and environment; reduce packaging size and weight; and replace materials with a high environmental footprint, such as fossil-based materials, with recycled materials or those from renewable sources. "Once McDonald's goals were established, early baselining and data gathering was critical to identify the size of the challenge and to prioritize opportunities," explains Strunk.

According to the Science Based Targets initiative, corporate sustainability leaders support the setting of science-based targets, seeing them as instrumental in increasing innovation (63%), building competitive advantage (55%), and increasing investor confidence (52%).

STRONG GOALS HELP

Rigorous goals help drive progress on complex issues, as demonstrated by the Science Based Targets initiative (SBTi) on climate. According to the SBTi, corporate sustainability leaders support the setting of science-based targets, seeing them as instrumental in increasing innovation (63%), building competitive advantage (55%), and increasing investor confidence (52%).[46] While SBTi does not guide goals on the topic of plastic, strong goals can drive progress. "We set these ambitious goals with a plan for how we would get there, but not knowing the exact actions we would need to take. We need to innovate and develop solutions that do not yet exist to meet our goal," says Strunk, explaining the ambition levels of McDonald's goals. That is why, as part of the journey to delivering 100% guest packaging that comes from renewable, recycled, or certified sources, McDonald's is setting up intermediate steps that are very well-defined. Its aim, for instance, is the intermediate goal to deliver fiber-based packaging that will come from recycled or certified sources where no deforestation occurs by

Organizing for impact

STRATEGY & GOAL-SETTING

1. Packaging sustainability strategies require an organizing principle
2. Successful programs are the result of a strong strategic focus
3. Strong goals help

INTERNAL ALIGNMENT AND GOVERNANCE

1. A shared framework with plenty of freedom delivers superior outcomes
2. Make sustainability "business as usual"
3. Transparency helps prioritize efforts

EXTERNAL STAKEHOLDER ENGAGEMENT AND COLLABORATION

1. Collaboration with external parties should be focused and proactive
2. High-performing collaborations have representation from all stakeholders in the plastic cycle, and insights are shared across the board

CONCRETE POINTS OF GUIDANCE

1. Define goals that deliver impact and know what you're striving for
2. Set the frame for action centrally and leave selection of solutions and execution to the business units, brands, and market organizations
3. Be strategic in prioritizing partnerships, and share knowledge to gain scale

2020. The Coca-Cola Company (Coca-Cola), too, is setting up — and tightening every year — very specific goals for itself, and is doing so within select areas such as packaging and recycling, human rights, and climate protection.

Internal alignment and governance

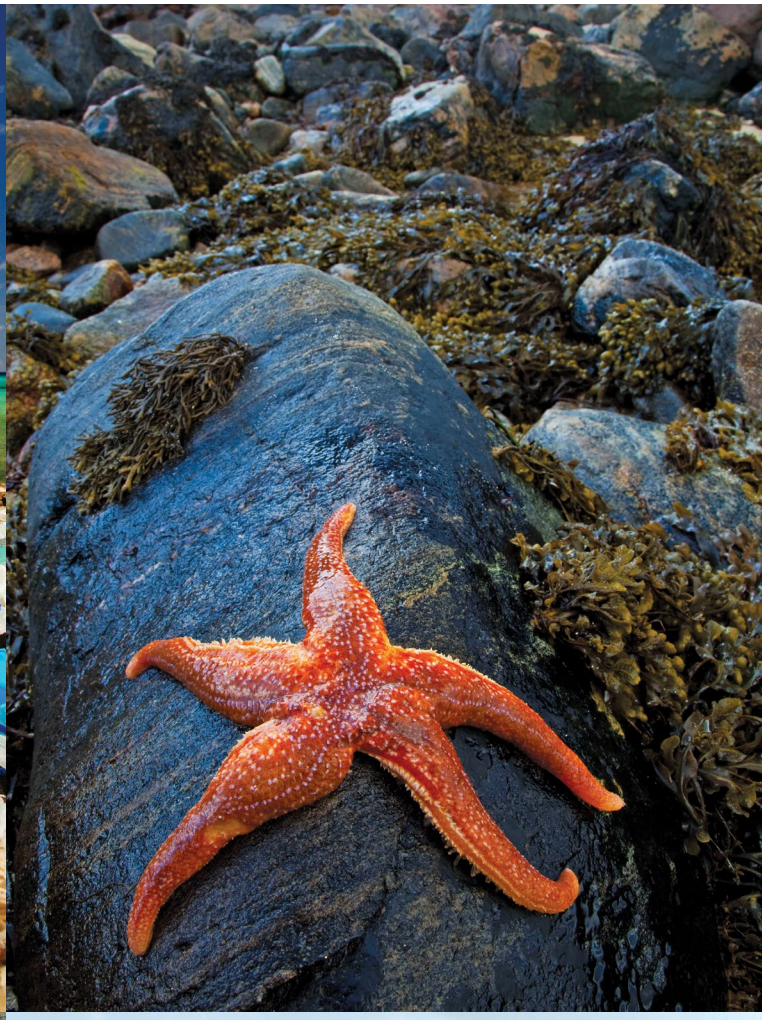
Strategy alone is not enough. The interviewed companies highlighted finding the right ownership balance between the central sustainability function and the businesses, brands, or regions as key to reaching their sustainability outcomes, building transparency, and driving progress. To ensure an effective rollout, it was crucial, it was universally felt, that all relevant organizational divisions were involved in the project, and that roles, responsibilities, and governance structures were clearly articulated. Company-level goals generate strong alignment. Likewise, role modeling and active and vocal support from leadership help businesses meet objectives.

A SHARED FRAMEWORK WITH PLENTY OF FREEDOM DELIVERS SUPERIOR OUTCOMES

In pursuing impact across the company, global organizations often set goals and provide tools for local market organizations. Within this central framework, markets, brands, and business units can tailor their particular approach to their specific circumstances. McDonald's calls this "freedom within a framework." Such a framework, set by the global team, consists of goals with reporting requirements and comes with tools and resources. It is up to each McDonald's market to tailor its approach, e.g., toward local collection infrastructure or regulation. Accountability and freedom are built into this framework as essential elements. RCL applies a similar approach in which the corporate center sets the overall goals, but each of its brands is responsible for detailing an approach and implementation plan matching their specific value propositions. Several companies support this freedom with tools developed at the center. Coca-Cola, for example, has created five geographical archetypes that provide a suitable match for each of its geographies and from which local leadership can quickly draw relevant knowledge and insights for tailored action.

MAKE SUSTAINABILITY 'BUSINESS AS USUAL'

Danone has integrated its environmental goals with its business goals. It has done so by reshaping its organization, dedicating cross-functional teams (procurement, research and innovation, quality, legal, etc.) to three strategic resources: milk, water, and plastics. On plastic, the cycle team's scope of work covers material choices and sourcing (including bio and recycled resins), packaging design, and waste management modeling (collection, sorting, and recycling). This has resulted in sharper and more comprehensive ambition setting that is truly embedded in and aligned with the organization. According to Danone, this setup has unlocked solutions that are more adaptable and that can be delivered faster — overall, a better use of these strategic resources with an end-to-end approach. Within L'Oréal, meanwhile, sustainability is assessed by each department when a new product is designed or improved, and tracked quarterly with a tool called SPOT (sustainable product optimization tool). This tracking of performance through a specially created methodology and tool is a commitment going up to the head of each brand. "We have the total support of the CEO and executive committee, and this in turn accelerates



getting organizational buy-in," explains Philippe Thuvien, L'Oréal's Director, Packaging and Development. This methodology has combined sustainability targets from the whole value chain of the product (end-to-end scope).

TRANSPARENCY HELPS PRIORITIZE EFFORTS

Several interviewed companies conduct a self-assessment of their value chains to identify what they are doing well and where action is needed, and communicate openly about it. Creating a clear, shared understanding of the state of sustainability in different regions, for various products and focus areas, allows these organizations to prioritize their efforts. It helps to create a portfolio of improvement initiatives and to set an agenda and long-term strategy. It also prevents ad-hoc interventions and can proactively be reported to the outside world. Often these insights need to be organized and simplified to turn them into workable tools for business units or markets. Coca-Cola, for example, encourages its businesses to study the five waste system archetypes it developed centrally, see what applies to them, and, based on these archetypes, pull in the most helpful set of tools and support (which have been developed centrally and provided when needed for ease of use). Being transparent about new developments and what risks they might create for business is also important to stakeholders, e.g., suppliers. Both P&G and Danone inform their organizations upfront about the risk that a particular change may incur. RCL, too, states that because of their openness — education, marketing, collaboration, and partnership — their clientele better understands the environmental initiatives.

External stakeholder engagement and collaboration

The interviewees mention that given the complexity of the challenge and the variety of players involved, setting up collaborations is essential to progress. Collaboration can take various forms (e.g., innovation labs, direct investments, joint ventures) and be created for various reasons (e.g., R&D boost, expertise, raw materials). Interviews show that successful partnerships are built on three key elements:

- A clear business case — with a well-defined value proposition and business upside potential
- A mutually beneficial value-sharing model
- A seamless operating model — management is aligned, and each party's responsibilities have been articulated and accepted

COLLABORATION WITH EXTERNAL PARTIES SHOULD BE FOCUSED AND PROACTIVE

Creating a lasting impact to help reduce the environmental footprint of plastics use and disposal is impossible to do on one's own, according to most of the companies interviewed in this report. "Scale and capacity can improve the economics of any solution, and Starbucks understands we can have much greater positive impact through partnership and collaboration with the industry," confirms Rebecca Zimmer, Global Director of Environment at Starbucks Corporation (Starbucks). Since opportunities for collaboration have multiplied in recent years, selecting the right collaborations is crucial to maintaining

focus and securing the right capabilities. Unilever reviewed its existing collaborations and now focuses on those with the greatest likelihood of creating impact. "One of the biggest challenges is to understand which collaboration is going to yield what and whether this is what we are looking for," states Louis Lindenberg, Unilever's Global Packaging Sustainability Director. "We need to have a proactive approach and strategy for collaborations." P&G proactively pursues collaborations based on the results of the gap analyses they have conducted in five prioritized focus areas for each region and packaging type. Lidl, a leading German grocery retailer with a presence in Europe and the US, recently took its cooperation with a waste management company to another level by acquiring it, a move that was considered a game changer in the retail industry.[47] The newly acquired company handles around 2 million metric tonnes of recyclables per year, including old corrugated containers, PET, and other grades of plastic.[48]

HIGH-PERFORMING COLLABORATIONS HAVE REPRESENTATION FROM ALL THE STAKEHOLDERS IN THE PLASTIC CYCLE, AND INSIGHTS ARE SHARED ACROSS THE BOARD

The differentiation of partners plays an important role in ensuring that there is a wide spectrum of views and various roles within a partnership. McDonald's calls its approach a three-legged stool, since it involves engaging with suppliers, employees, and owner-operators. RCL works with local recycling companies and local governments to ensure that its residual flows can be recovered. In such collaborations, an open mind-set works very well to accelerate and overcome the challenges faced. In fact, companies are collaborating on common objectives when it comes to such issues. Take P&G, for instance — after developing a technology to recycle polypropylene (PP) and retain virgin-like properties, it decided to license it to PureCycle. The recycled PP will be available to various players, not only contributing to those organizations' own commitments to use recycled content, but also improving the viability of the recycling business. This way, the availability of high-quality recycled PP can be secured, and P&G can rely on a more stable supply.

Concrete points of guidance to consider

Define goals that deliver impact and know what you're striving for — Focus on sustainability dimensions that the business choices you make can influence. Ground sustainability criteria in a robust understanding of the plastics system and your business' role in it. Be selective so that the organization can focus.

Set the frame for action centrally and leave selection of solutions and execution to the business units, brands, and market organizations — Scale up sustainability efforts consistently by rallying around a common set of goals, providing the necessary tools and offering freedom of action in local markets. Regularly report on the progress achieved in reducing plastic pollution to ensure accountability and staff engagement and motivation.

Be strategic in prioritizing partnerships and share knowledge to gain scale — Do not over-commit to too broad a set of partnerships; focus on those that help remove key barriers to success. Be bold in cooperating with competitors for the sake of market-wide benefits.


VS

5. Innovating to harness design and distribution

Designing everyday items such as food packaging involves meeting many requirements regarding food safety, material costs, handling costs, ease of use, convenience, brand identity, and communication. Combining these requirements often results in unique packaging applications and material combinations that may be challenging to recover and recycle. In this chapter, we distinguish between two types of design requirements: reducing the amount of virgin plastic used and increasing collection and recovery rates using design. In a "one planet" mind-set, we should take on both these sets of requirements. McDonald's and Starbucks are trying just that with their "NextGen Cup Challenge."[49] They are sourcing inspiration from outside the organization through a first-of-its-kind competition that challenges designers to create the "next-generation fiber cup to be recoverable on a global scale, while maintaining the performance standards we know and trust."[50]

Design for less virgin plastic

Until recently, the primary packaging sustainability strategy pursued by most companies was focused on designing for raw material reduction. As the core design strategy was light-weighting, this contributed to a shift toward material combinations and packaging formats that were less recyclable — both in absolute terms and in terms of commonly available recycling infrastructure. Companies are now redirecting this historical focus from "less materials" to "less virgin" materials.

REUSE CAN REPLACE DISPOSABLE PACKAGING

Revisiting the design requirements of packaging includes revisiting the distribution model. This, in turn, opens up new opportunities. In its pursuit of reuse, for instance, McDonald's in a few of its restaurants near Munich, Germany is testing reusable cups with a deposit scheme. The cups are used by multiple restaurants to make it as convenient as possible for consumers to participate.[51] L'Oréal developed a new packaging and distribution method for Lancôme Absolue L'Extrait that consists of a refillable jar and recharges. This not only prevents the original jar from being disposed of, it also represents a reduction of 58% in packaging weight from the original product — a reduction that would have been difficult to achieve through a conventional lightweighting exercise.[52] Coca-Cola, meanwhile, is pursuing new business models that eliminate the need for packaging. One such example is the alternative distribution model with its Freestyle soda fountain, which uses printing technology to precision-dose syrups into one of 300 different flavor combinations. Consumers are encouraged to fill their own bottles with their favorite flavor, produced at a carbon-neutral facility. While they had to work through numerous logistics and service challenges, RCL staff succeeded in replacing single-dose toiletries on board with refillable bottles. Starbucks actively encourages its customers to use reusables rather than disposable cups, for example, by offering discounts for bringing one's own cup in some

markets, while charging a little bit extra for each disposable cup in other markets. Danone has a specific business model for water delivery in markets where safe drinking water is less easily available. They deliver in large 20 liter reusable jugs instead of disposable bottles, which results in a much lower plastic footprint. "We now take those learnings to markets which are dominated by disposable bottles," explains Igor Chauvelot, Danone's Director for Plastic Circular Economy & Global Category Sourcing. Products do not necessarily need the package as it is conceived today.

NON-VIRGIN CONTENT CAN AND HAS TO BE PRODUCED AT SCALE

When Coca-Cola introduced its PlantBottle initiative and started producing bottles made of 30% bio-MEG (one of the building blocks of PET plastic), it showed that non-fossil plastic could be produced at scale. When it comes to recycled content, "while we already have 100% recycled PET (rPET) bottles in four markets, the goal is to have 50% rPET in all markets by 2030," says Ben Jordan, Senior Director, Environmental Policy of Coca-Cola. P&G collaborated with Suez to introduce Head & Shoulders bottles developed with 25% beach plastic. For its Fairy bottle, P&G teamed up with TerraCycle, a global leader in recycling hard-to-recycle waste, to source and process sufficient ocean-bound and other post-consumer recycled plastic. Danone's Igor Chauvelot states: "As a company, we have a role to play in driving demand for recycled content. We are proactive in including rPET to support the next generation of recycling." Danone introduced bottles made of 100% recycled plastic to illustrate to consumers the importance of collection and recycling, and its own role in promoting them. These examples are not just hero products; they indicate that production on a large scale is feasible and already taking place. More importantly, these production runs increase the demand for recycled materials, which, in turn, generate demand further upstream for the collection of those waste types. This is also the intent of the "APR Recycling Demand Champion Companies" program: stimulating consistent, reliable demand, and strong demand pull.[53] Louis Lindenberg from Unilever states, "For many of the challenges in the plastic supply chain, a critical mass and scale is required to allow for the economics to work and for sustainable change to take place. We can accelerate that by sharing technology." The ability to scale up newly designed solutions needs to be secured early on. Retailers and FMCG companies are adding such additional requirements related to plastic pollution in the design brief to suppliers. Retailers Aldi and Lidl are explicit in their requirements to their suppliers when it comes to packaging, requiring information on biodegradability, compostability, and plastic-based components in packaging. Whereas the use of responsibly sourced biobased materials allows for the reduction of virgin materials, the application of recycled materials has the substantial added benefit of creating a market for waste plastics and hence an incentive to keep such plastics out of nature.

Design for collection and recovery

DETERMINING THE PACKAGE'S LIKELY DESTINATION HAS ITS BENEFITS

Although the final destination of the packaging is often unknown to the producer of the product, the producer usually does have an understanding of where it is likely to end up. Companies are rapidly increasing their engagement levels here — for example, P&G, in partnership with the Association of Plastic Recyclers (APR), is testing new package designs prior to market entry to ensure that they are compatible with the existing

Innovating to harness design and distribution

DESIGN FOR LESS VIRGIN-PLASTIC

1. Reuse can replace disposable packaging
2. Non-virgin content can and has to be produced at scale

DESIGN FOR COLLECTION AND RECOVER

1. Determining the package's likely destination has its benefits
2. Recyclability and recovery need to be part of the design brief for both packaging and products
3. Trade-offs between design requirements have to be made
4. The plastic palette can be simplified for easier recovery

CONCRETE POINTS OF GUIDANCE

1. **Use recycled plastic at scale**
2. **Design for recovery**
3. **Rethink the role of packaging**
4. **Simplify your packaging material palette to increase the value of waste**

recycling infrastructure. Therefore, designing for the place (and the corresponding waste management system) where a product will ultimately be sold and used is critical. While designing for recycling in a geography that does not have recycling capabilities might ultimately yield limited benefits, designing with place-based criteria in mind could help maximize the benefits. Danone, for example, was able to launch a 100% recycled content water bottle in Indonesia with all the resin sourced from the area itself. Factors to consider also include whether informal waste workers are active in the relevant geography, whether waste to energy facilities are active and present, what the relevant regulations and policies are, and how conditions in the geography are likely to change over time (including active initiatives and projects in the area).

RECYCLABILITY AND RECOVERY NEED TO BE PART OF THE DESIGN BRIEF FOR BOTH PACKAGING AND PRODUCTS

Companies interviewed realize that packaging adjustments need to be made as early as the design phase. Unilever found itself in a difficult situation when the packaging it used for some of its products was found to be undetectable by automated near infrared sorting equipment because of being colored with a carbon-black pigment. Unilever is now working with WRAP in the UK and other recyclers to run large-scale recycling facility trials to change the "black plastic" status to a recyclable one by using detectable pigment. "Once completed in the UK, we will expand to other markets and open the technology to the entire industry," says Louis Lindenberg of Unilever. This highlights how crucial it is that factors such as regional waste management infrastructure constraints, household disposal behaviors, and the expected journey of the packaging material are included in the design brief. P&G demonstrates that sustainability and innovation can go hand in hand. While improving injection molding technology, P&G engineers developed Influx, a technology that allows (among other benefits) packages to be made more recyclable by enabling caps and closures to be made from the same materials as the rest of the package.

TRADE-OFFS BETWEEN DESIGN REQUIREMENTS HAVE TO BE MADE

Changing packaging and products to reduce plastic pollution will conflict with other requirements such as shelf life, costs, and other functions. As such, prior to changing requirements, a detailed and transparent accounting of trade-offs is needed. Starbucks' strategy, for example, "has focused primarily on providing incentives and sustainable options for our customers while still meeting their needs and delivering an amazing experience and quality product," explains Zimmer. Meanwhile, L'Oréal found that an insistence on deploying high standards for food-grade quality and stable packaging would mean that its raw material costs would escalate. L'Oréal decided this was a consequence worth accepting. Another trade-off that L'Oréal has made is the level of packaging premiumization, and at what level to maintain it in certain markets, as premium packaging often comes with more complex material usage. For all industries, it is clear that requirements have changed, and what was necessary earlier may not be relevant any longer. It is important that these decisions and trade-offs be explicitly made by the company concerned. For example, packaging destined for online sales channels does not need the same marketing performance as pack formats that provide critical consumer communication while on the shelf. This could result in a rethink of primary and secondary packaging needs, and substantial sustainability benefits as well, such as with Amazon's

Amazon Certified Frustration-Free Packaging. That packaging is redesigned for e-commerce to both reduce unnecessary material and provide a better customer experience. Toys, for example, do not require complex display packaging when they are being purchased online.

THE PLASTIC PALETTE CAN BE SIMPLIFIED FOR EASIER RECOVERY

An increasing number of companies choose to drop certain problematic materials from their portfolios. L'Oréal, for example, has removed all PVC pack formats. Marks & Spencer is pursuing the use of a strongly simplified materials portfolio — bringing it down to as little as a single polymer — which it wants readied by 2025. Simplifying the material palette and having packaging formats consisting of one polymer makes them easier to recycle. It also means that you rely less on households to put their discarded packages in the right waste stream, in turn resulting in higher recycling rates. Another retailer, Lidl, shares design requirements with its suppliers to ensure more sustainable packaging that demands less virgin material and has better recyclability. In this context it actively asks suppliers to develop single material packaging. Unilever was one of the first companies to publish its plastic palette and, by doing so, set itself on a path toward continuous improvement. "We had already banned PVC; we're looking to move away from other rigid materials such as polycarbonates and are working internally and with industry to reduce the number of layers and move to more homogeneous specifications," says Louis Lindenberg of Unilever.

Concrete points of guidance to consider

Use recycled plastic at scale — Putting in the extra effort to procure high-quality recycled content now sets up the successful scale-up of plastic recovery in the future, and establishes critical supply chains.

Design for recovery — Understand the destination of the package and design for maximum recovery. Dare to make strategic trade-offs to achieve objectives based on a comprehensive analysis of the product, distribution, and user needs — for example, on shelf life, premium appearance, and packaging costs.

Rethink the role of packaging — Challenge not only the packaging itself, but the combination of the packaging, channel, delivery/go-to-market model, and user experience. Switching to reusable formats, for example, may only make sense when taking these additional elements into consideration.

Simplify your packaging material palette to increase the value of waste — Combine fewer materials in a single-pack format and consider reducing the number of materials across the portfolio, always considering trade-offs.


VS

6. Tailoring interventions to engage consumers

As established in Chapter 2, consumer behavior is a critical component in reducing plastic pollution. There is a set of tools that FMCG companies can apply by understanding the psychology behind individual behaviors, like buying and disposal behavior, to reduce the chances of their products contributing to pollution. They can design solutions keeping in mind the desired behaviors and focusing on making it easy and advantageous to do what's right. This is substantiated by a Eurobarometer survey as well, which concludes that 94% of the public in Europe thinks that companies should reduce packaging and 89% think that people should be educated on how to reduce their plastic waste.[54] A recent Nielsen global online study found that millennials continue to indicate the highest willingness to pay extra for sustainable offerings — almost three out of four respondents in 2015, up from approximately half in 2014.[55] Considering that the purchasing power of the current millennials is likely to continue growing, this trend is likely to continue into the future. This could encourage businesses that might otherwise shy away from engaging buyers around a sustainable product offering.

Not all consumers are at the same point in their decision-making at the time they interact with brand messaging — they may be contemplating a change in behavior, ready to take action and change, or trying to maintain a newly changed behavior.[56] Methods of tailoring interventions to the behavior stage of the user have been successfully applied to help people quit smoking and to encourage the use of sustainable transportation.[57]

Buying behavior

NUDGING CAN BE USED TO STEER BUYING BEHAVIOR

Increasingly, we see brands use designs based on behavioral science to drive a socially and environmentally beneficial consumer decision. This is based on the technique of "nudging," which is the use of any aspect of the "choice architecture" (e.g., product design, packaging design) that alters people's behavior in a predictable way, without closing any of their options or significantly changing their economic incentives.[58] Unilever, for example, was able to save over 1,500 tons of aluminum since launching its campaign to drastically reduce the size of its deodorants in 2014 — "enough to make over 1 million bicycles," explains Lindenberg. But for these new pack formats to become the "new normal," Unilever had to deliver the product in shelf-ready "Booster Trays." This way the company was able to explain to its customers that smaller, lighter, and thinner versions of deodorant were as effective as the older, larger aerosol cans. An example outside the packaging space where nudging was used to stimulate desired choices can be found in Flanders, Belgium. In order to cut meat consumption and sales in local supermarkets in favor of vegetables and fruits,

the government asked local supermarkets to decrease the portion size of sausages, place vegetarian spreads next to meat versions, and display the fruit and vegetables in central places. This led to an increase of ~25% in the sales of fruit and vegetables; it doubled the share of vegetarian spreads sold and decreased the amount of meat purchased by about 20% per individual.[59]

HEROES ALLOW FOR STRONG COMMUNICATION

Of the 12 brand identities based on Jung's personality archetypes and commonly used in marketing and advertising,[60] the hero brand archetype proves particularly useful for businesses that engage on the plastics agenda. White River Design, an award-winning brand-building and design company, captures the essence of it on its website:

The Hero's purpose in life is to improve the world. They inspire others to believe in themselves as much as the Hero believes in them. They inspire, motivate and cheerlead their customers to do more, be more and have more. The Hero wants to leave a legacy and doesn't mind sacrificing for it. This makes the Hero quick on its feet, making fast and smart decisions to save the world. Such a brand identity can serve multiple purposes on the plastics journey.

—White River Design's brand personalities website (https://brandpersonalities.com.au/personalities/the-hero/)

Here are a few more examples of how to further the plastics agenda through the use of hero brands.

Love, Beauty and Planet, introduced by Unilever in 2017, built its brand equity around its low impact on the planet, not only in terms of the bottles that were made of 100% recycled plastic, but also in terms of the use of organic and sustainably sourced ingredients and other sustainable features. P&G, meanwhile, turned one of its most important brands, Head & Shoulders, into a recycled content hero for awareness, with a limited-production run of its bottles from 25% beach plastic. P&G deliberately chose to make this bottle gray in color to emphasize the resin's origin, and supported this event with messaging about the importance of recycled content.

Hero products can also be used to communicate important messages about packaging disposal. Head & Shoulders used the recycled packaging format to inform its users that plastic is a valuable resource and that it should not end up on beaches. All the companies interviewed recommend embedding the selection of hero products in a larger brand activation strategy. Danone develops a portfolio of "manifesto brands" that reflect the company's commitment to delivering a positive food future. L'Oréal identifies which brands already have the necessary brand equity to communicate a sustainable story, and selects

Tailoring interventions to engage consumers

BUYING BEHAVIOR

1. Nudging can be used to steer buying behavior
2. Heroes allow for strong communication
3. Following good design practices, the introduction of sustainable packaging needs to be carefully crafted around early and continuous consumer feedback

DISPOSAL BEHAVIOR

1. Disposal behavior affects where these materials end up after use

CONCRETE POINTS OF GUIDANCE

1. Introduce new, sustainable packaging through hero products
2. Proactively acquire the support of your consumer base on the road toward less plastic pollution
3. Nudge consumers toward sustainable purchasing behavior and preferred disposal behavior

those to communicate facts about recycled content or other changes they may have introduced — one such example is Kiehl's. Some L'Oréal brands may include recycled material but do not communicate it very extensively. According to L'Oréal, this is especially true in certain Asian markets, where the current focus is often on premium products and packaging and less on sustainability. However, there, too, trends are changing. According to a report released by the China Chain Store and Franchise Association, more than 70% of Chinese consumers recognized a relationship between their personal consumption and the quality of the environment — a prerequisite for shifting closer to more sustainable purchasing behavior.[61]

FOLLOWING GOOD DESIGN PRACTICES, THE INTRODUCTION OF SUSTAINABLE PACKAGING NEEDS TO BE CAREFULLY CRAFTED AROUND EARLY AND CONTINUOUS CONSUMER FEEDBACK

Brands try to avoid any temporary price increases to subsidize new technologies or distribution model shifts, since these may create and then anchor an expensive perception around circular products. The interviewed companies mentioned that sustainable packaging should ideally match incumbents in two aspects — price and functionality. Most households are not ready to trade off the price they pay and the functionality they expect for the sake of improved sustainability. Lidl had the option of making a pack format more recyclable, but this would have come at the cost of removing a convenient handle that improved the transportability of the product. The retailer decided not to change the packaging to avoid alienating its customers by using different shelf appearances and convenience levels. An economical way of reducing risk when introducing new packaging and delivery concepts is to work iteratively with user tests and avoid costly mistakes due to lack of usability.[62] Tetra Pak collaborates with brands and consumers who are brand loyalists to collaborate and test new ideas at its Customer Innovation Center.[63] Retailers, especially, are in a great position to do this, since it is relatively easy to try out new solutions quickly and get feedback from users.

When the city of Copenhagen placed green footprints on the ground to point people toward the nearest trash bin in an effort to encourage binning, the reduction in littering in those areas was reported to be over 45%.

Disposal behavior

While buying behavior dictates what materials and packaging formats are entering the flow, disposal behavior affects where these materials end up after use. Coca-Cola, in its commitment to both collecting and recycling the equivalent of every bottle or can it will have sold globally by 2030, distributed 40,000 recycling collection bags at festivals across the Benelux region. The bags that were distributed through its Recyclage@Festivals campaign could each hold 25 bottles, far more than the average number of bottles drunk per

person at such an occasion — visitors were therefore enticed to recycle more than their regular consumption. In collaboration with Closed Loop Fund, The Recycling Partnership, and Keep America Beautiful, Coca-Cola also donated 1 million community recycling bins in the US, diverting 330 million tonnes from the landfill (as of May 2018).[64] And when the city of Copenhagen placed green footprints on the ground to point people toward the nearest trash bin in an effort to encourage binning, the reduction in littering in those areas was reported to be over 45%.[65] Other methods to improve correct disposal and collection rates include the increase of packaging waste value — for example, through deposit schemes, visible plastics taxes, or collection rallies with rewards. Several of the brands interviewed indicated that explaining to citizens how much and why recycling really matters to the brand helped them understand why it is important for them individually and or their households to recycle.

Concrete points of guidance to consider

Introduce new, sustainable packaging through hero products — Sustainable packaging can boost brands that already cite sustainability as part of their value proposition. An initial focus on a limited set of brands or products simplifies the message you need to convey. For instance, a pack format of 100% recycled material typically makes for a more compelling story than explaining you have 15% across the product portfolio. This initial focus also allows you time to figure out the complexities of scaling up a recycled content supply chain across all brands or product lines.

Proactively acquire the support of your consumer base on the road toward less plastic pollution — Be transparent and communicate your sustainability vision and resulting activities proactively. Pursue faster feedback cycles from consumers and use early buy-in to prevent alienation of your loyalty base.

Nudge consumers toward sustainable purchasing behavior and preferred disposal behavior — Shift sales to better-packaged products by changing the design of products, packaging, and distribution methods to influence consumers' buying behavior. Use similar tactics to increase recovery rates and thereby the supply of recycled resin.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7. Bolstering the collection and recovery infrastructure

A growing number of companies are now working on improving the materials they use, rethinking their use of plastics, and improving general awareness about recycling among the public. This does not eliminate the need for adequate infrastructure for collection and disposal. "Waste infrastructure is our biggest and most intimidating challenge," stated one of our interviewees. The key challenge is overcoming the lack of control that brands and retailers have over this stage of the plastics journey.

A powerful intervention that companies can promote to stimulate the development of waste management technology and capacity is to increase their use of recycled materials — as discussed in Chapter 5. Companies that are successful at increasing the recycled plastic content of their packaging and products often have to go the extra mile to procure high-quality recycled content by investing in technology, a collaboration, or some other type of intervention to increase the supply of recycled plastic. Companies are making more meaningful contributions directly in collection, recovery, and even by building entirely closed-loop systems. Coca-Cola has made this explicit through its commitment to collecting and recycling the equivalent of every bottle or can it sells globally by 2030.

Experts found that the employment of schemes such as extended producer responsibility (EPR) can be an effective and relevant tool in this area.[66] EPR schemes can be mandatory or voluntary and have many variations, but usually pool together contributions from companies active in a market to pay for waste collection and processing. These schemes have enjoyed varying degrees of success, but when executed well, they have the power to overcome the common problem of fragmented efforts. Effective governance and transparency are key[67] — as they are for all effective collaborations.

Collection of consumer packaging waste

WASTE COLLECTION IMPROVEMENT REQUIRES A LOCAL APPROACH

Waste collection improvement requires a local approach. Ultimately, all waste is disposed of (or mismanaged) locally, and local factors like governance model, population density, and physical geography determine its fate. "For efforts to be sustainable, you must invest time and resources in understanding the local landscape in order to design an approach that will work over the long term. This was a critical part of our Waste to Worth effort in the Philippines and is paying dividends today," says Jack McAneny, Director of Sustainability of P&G. The power of local approaches is illustrated in the following examples.

- Marks & Spencer supports the MetalMatters recycling campaign that addresses 350,000 households in Leeds with interactive recycling games and competitions for shoppers at its store.[68] MetalMatters, an off-the-shelf program, tracks impact through increased metal capture and the resulting ROI, and is focused on expanding community by community.
- Danone, through its Danone Ecosystem Fund, finds solutions to local challenges by empowering informal waste collection by waste pickers. "We optimize their operations, remove the middleman, and improve social and safety factors," explains Igor Chauvelot, Danone's Director of Plastic Circular Economy & Global Category Sourcing. "On top of that we have a better supply of good quality feedstock to produce the recycled PET we use back in our bottles."
- In the Philippines, Unilever has introduced a pilot project (now launched at scale) called Misis Walastik[69] to increase the recovery of post-consumer flexible packaging plastics. Waste sweepers collect flexible packaging weekly, take it to the collection point, weigh it, and receive coupons that can be used to redeem Unilever products in designated stores across a number of barangays. Such regional solutions are necessary because the issue of plastic pollution is global, but waste happens at a local level.

COLLABORATIONS ARE ESPECIALLY HELPFUL FOR IMPROVING COLLECTION IN MARKETS WHERE THE REGULATORY FRAMEWORK FOR WASTE MANAGEMENT IS WEAK OR INADEQUATELY ENFORCED

In Indonesia, PRAISE, an alliance of Coca-Cola, Danone, Indofood, Nestlé, Unilever, and Tetra Pak, aspires to support the development of sustainable and integrated packaging waste management solutions in the country. PRAISE piloted its Waste Bank scheme in South Jakarta, where residents brought their collected packaging waste to the Waste Bank center to have it weighed, valued, and exchanged for credits in a "Bank Book," which could then be used to pay children's school fees or buy products at the local minimart. The Waste Bank system has now been rolled out across the country, and there are more than 10,000 village and neighborhood collection centers.[70] P&G is helping to catalyze the development of waste management infrastructure by partnering with groups like Waste to Worth and the Asian Development Bank. The pilots P&G is launching were designed after a detailed study of waste streams was conducted to gain an understanding of the local landscape. This particular collaboration, for example, will provide solid waste management infrastructure in Angeles City, Philippines.

Bolstering the collection and recovery infrastructure

COLLECTION OF CONSUMER PACKAGING WASTE

1. Waste collection improvement requires a local approach
2. Collaborations are especially helpful for improving collection in markets where the regulatory framework for waste management is weak or inadequately enforced

MATERIAL RECOVERY

1. Plastic recovery accelerates with dedicated investments

CLOSED SYSTEMS

1. Closed systems offer a higher degree of control

CONCRETE POINTS OF GUIDANCE

1. **Collaborate in local markets on collection infrastructure to increase material supply**
2. **Invest in material recovery technology to create access**
3. **Identify where closed or controlled waste systems could deliver more value for you**

Material recovery

PLASTIC RECOVERY ACCELERATES WITH DEDICATED TECHNOLOGY INVESTMENTS

Here are three concrete examples.

- In 2017, L'Oréal signed an agreement with Carbios, a listed green chemistry company with a strong focus on research and development. The goal is to further secure its supply of recycled resin through a broader consortium, and commercialize new recycling technologies based on enzymatic and biological processes. L'Oréal is also forging a partnership with LOOP Industries, which develops depolymerization technology to process PET and polyester into virgin-quality resin. Moreover, L'Oréal is investing in part of the waste supply by partnering with Suez to develop collection and processing technologies. "Collaborating with a partner with local and global expertise is the most effective way for L'Oréal to succeed in getting the tangible results it is striving for," Philippe Thuvien from L'Oréal points out.
- Polyethylene in multi-layered packaging poses a particularly complex challenge for companies like Unilever that rely heavily on single-portion sachets in emerging markets. Unilever developed CreaSolv®[71] sachet recycling technology with the Fraunhofer Institute for Process Engineering and Packaging (Fraunhofer IVV) to help eradicate sachet littering by increasing the value of the recovered material: "Our aim is to develop a closed-loop system for sachets, so we can use them in future packaging," explains Louis Lindenberg of Unilever.
- In collaboration with other partners across the supply chain, P&G is pursuing a plastic film recovery pilot. As part of the Material Recovery for the Future project, and in conjunction with JPMascaro, this project will enable curbside recycling (at scale) of flexible film packaging. While the output material (rFLEX bales) will be a new item for the recycling market, end markets in durable goods such as plastic lumber, construction materials, outdoor furniture, etc., have already been identified. The aim is to ultimately use it for higher value applications when technologies mature and the supply chain has had a chance to scale up. "We want to share new technology around recycling and recovery, since we are not a recycler at heart and we benefit from more scale — it helps us achieve our vision," states Jack McAneny from P&G.

Controlling every part of the journey has made the shift to refillable packaging or the move from single-use to reusable more seamless. Such (semi) closed systems offer a great opportunity to control the material flow, thereby increasing collection and recovery rates.

Closed systems

To gain full control as a branded company, the creation of a closed system, where input and output can be controlled, can also be an avenue through which to generate high-value material streams. RCL separates waste at source

and processes it further on board. This is the responsibility of each crew member, with dedicated teams coaching the crew. RCL also selects a recycling company at each landing location that recovers waste to the highest degree possible. In the event that such a partner is not available, RCL is able to carry the waste for several days to another location or it helps develop a local partner. "We use our commercial power to provide them with enough resources (waste and capital) to develop additional recycling capabilities," says Eddie Segev from RCL. "This is very challenging, as waste vendors are often controlled by local authorities, whether port or city." On the procurement side, RCL is also able to control what comes on board, and they work with local suppliers to do so. Controlling every part of the journey has made the shift to refillable packaging or the move from single-use to reusable more seamless. Such (semi) closed systems offer a great opportunity to control the material flow, thereby increasing collection and recovery rates. Quick-service restaurants offer a similar opportunity for the on-premises flow. McDonald's has also identified this by setting specific targets to recycle guest packaging and collect recycling in all its restaurants. "McDonald's restaurants across 12 of our top 16 markets have introduced programs and partnerships to reduce litter and increase recycling in their communities, sometimes with dedicated staff behind the counter to separate the guest packaging," explains Strunk. They try to leverage their scale as much as possible by using the reversed internal logistics to accumulate waste in the distribution centers. Retailers already use reverse logistics for their secondary packaging after the products have been put on the shelves. They separate it in the store and back-haul it to their distribution centers, which allow them to sell it as high-quality secondary material.

Concrete points of guidance to consider

Collaborate in local markets on collection infrastructure to increase material supply — Stimulate the supply of recovered materials by boosting collection. Develop collaborations locally to tailor programs to local laws, sensibilities, and the logistical situation on the ground.

Invest in material recovery technology to create access — Improved access to recycled material requires mature, scaled-up recovery technologies. Map your capabilities and affinities against a heatmap of technology and infrastructure development needed to identify the most impactful plays. From early-stage investment and incubation to infrastructure investment and off-take agreements that attract additional capital, find the role that provides the best business case, including long-term access for your organization.

Identify where closed or controlled waste systems could deliver more value for you — Identify which packaging flows make it worth your while to control the full waste system. From dispensing and using to disposing and reinserting into the economy, you can control these stages to create higher-value density and higher-quality waste streams — delivering higher value for the environment and for your organization.


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8. Conclusion

Like many environmental issues, plastic pollution is an exceptionally complex problem that threatens the future of our planet. Plastic does not belong in nature, and its overwhelming presence in the world's ecosystems causes adverse environmental, economic, and social impact. WWF believes that a "one planet" perspective is key to recognizing and implementing strategies that can achieve ambitious conservation goals, by taking the full system effects of solutions into account and engaging a broad range of stakeholders.

The plastic pollution crisis is one of shared responsibility. Every participant is accountable for pursuing and effectively coordinating his/her piece of the global solution. We believe that the private sector has a unique and powerful role to play, since the actions of business can influence consumer behavior and policy, and help drive necessary changes to local waste management infrastructure. Businesses can develop highly effective and adaptable strategies to ultimately eliminate unnecessary plastic, double global plastic recovery, and shift to sustainable sources for remaining plastic use. Competitive advantage and a strengthened social contract offer powerful rationales for taking action on plastics packaging.

A united, ambitious approach to plastic pollution over the coming years is urgently needed, and committed action from business is one key to a holistic solution. Combined with improvements to waste management systems, policy changes, and increased public awareness, the dedicated engagement of the private sector can make plastic pollution an issue of the past.

A united, ambitious approach to plastic pollution over the coming years is urgently needed, and committed action from business is one key to a holistic solution. Combined with improvements to waste management systems, policy changes, and increased public awareness, the dedicated engagement of the private sector can make plastic pollution an issue of the past.

ENDNOTES

1 Jambeck, J. R., R. Geyer, C. Wilcox, T. R. Siegler, M. Perryman, A. Andrady, R. Narayan, and K. L. Law. "Plastic Waste Inputs from Land into the Ocean." Science 347, no. 6223 (February 13, 2015): 768–71. **https://doi.org/10.1126/science.1260352**.

2 "Stemming the Tide: Land-Based Strategies for a Plastic-Free Ocean." Ocean Conservancy & McKinsey Center for Business and Environment, 2015. **http://www.oceanconservancy.org/our-work/marine-debris/stop-plastic-trash-2015.html**.

3 "Animal Cruelty." Plastic Soup Foundation, n.d. **https://www.plasticsoupfoundatio rg/en/files/animal-cruelty/**.

4 Dias, B. F. de S. "Marine Debris: Understanding, Preventing and Mitigating the Significant Adverse Impacts on Marine and Coastal Biodiversity." CBD Technical Series, no. No.83 (2016). **https://www.cabdirect.org/cabdirect/abstract/20173021219**.

5 A. Ray, "Waste Management in Developing Asia: Can Trade and Cooperation Help?" J. Environ. Dev., vol. 17, no. 1, pp. 3–25, Mar. 2008.

6 Amit, Ray. "Waste Management in Developing Asia: Can Trade and Cooperation Help?" The Journal of Environment & Development 17, no. 1 (March 2008): 3–25. **https://doi.org/10.1177/1070496507310742**.

7 Single-use plastics, or disposable plastics, are used only once before they are thrown away or recycled. These items include plastic bags, straws, coffee stirrers, soda and water bottles, and most food packaging.

8 "One Planet Solutions." WWF, n.d. **https://wwf.panda.org/knowledge_hub/all_publications/one_planet_solutions/**.

9 The companies interviewed are McDonald's Corporation, Unilever, Danone, The Procter & Gamble Company, Royal Caribbean Cruises Ltd., The Coca-Cola Company, Starbucks Corporation and L'Oréal S.A.

10 Statista (2016) Production of plastics worldwide from 1950 to 2017. Visited on 10.02.2019

11 "The New Plastics Economy: Rethinking the Future of Plastics." The Ellen MacArthur Foundation & McKinsey Center for Business and Environment, January 2016. **https://newplasticseconomy.org/publications/report-2016**.

12 Rushton, Lesley. "Health Hazards and Waste Management." British Medical Bulletin 68, no. 1 (December 1, 2003): 183–97. **https://doi.org/10.1093/bmb/ldg034**.

13 Frank J. Kelly, and Bruno Tassin. "Microplastics in Air: Are We Breathing It In?" Current Opinion in Environmental Science & Health 1 (December 13, 2017): 1–5. **https://doi.org/10.1016/j.coesh.2017.10.002**.

14 Fonseca, Maria, Esther Garrido Gamarro, Jogeir Toppe, Tarub Bahri, and Uwe Barg. "The Impact of Microplastics on Food Safety: The Case of Fishery and Aquaculture Products." FAO Aquaculture Newsletter, September 2017.

15 Raynaud, Julie. Valuing Plastic: The Business Case for Measuring, Managing and Disclosing Plastic Use in the Consumer Goods Industry. Nairobi: United Nations Environment Programme (UNEP), 2014. **https://wedocs.unep.org/handle/20.500.11822/9238**.

16 "The New Plastics Economy: Rethinking the Future of Plastics." The Ellen MacArthur Foundation & McKinsey Center for Business and Environment, January 2016. **https://newplasticseconomy.org/publications/report-2016**.

17 "Stemming the Tide: Land-Based Strategies for a Plastic-Free Ocean." Ocean Conservancy & McKinsey Center for Business and Environment, 2015. **http://www.oceanconservancy.org/our-work/marine-debris/stop-plastic-trash-2015.html**.

18 Kaza, Silpa, Lisa Yao, Perinaz Bhada-Tata, and Frank Van Woerden. What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050. Urban Development. The World Bank, 2019. **https://doi.org/10.1596/978-1-4648-1329-0**.

19 "The Big Litter Inquiry: The Public's Voice on Litter." London: Keep Britain Tidy, 2013.

20 Kaza, Silpa, Lisa Yao, Perinaz Bhada-Tata, and Frank Van Woerden. What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050. Urban Development. The World Bank, 2019. **https://doi.org/10.1596/978-1-4648-1329-0**.

21 Musulin, Kristin. "US Landfill Capacity to Drop 15% over next 5 Years | Waste Dive." Waste Dive, May 8, 2018. **https://www.wastedive.com/news/us-landfill-capacity-decrease-SWEEP/523027/**.

22 Castillo, Alicia L., and Suehiro Otoma. "Status of Solid Waste Management in the Philippines." Proceedings of the Annual Conference of Japan Society of Material Cycles and Waste Management 24 (2013): 677. **https://doi.org/10.14912/jsmcwm.24.0_677**.

23 "New Product Development Stimulates Market Growth for PET Packaging." Smithers Pira, 2018. **https://www.smitherspira.com/news/2016/march/pet-packaging-market-growth**.

24 "A Mediterranean Full of Plastic: Research on Plastic Pollution, Impacts and Solutions." Madrid: Greenpeace Spain, 2017.

25 "The New Plastics Economy: Rethinking the Future of Plastics." The Ellen MacArthur Foundation & McKinsey Center for Business and Environment, January 2016. **https://newplasticseconomy.org/publications/report-2016**.

26 Smithers Pira (2017) The Future of Flexible Packaging to 2022 (Abstract)

27 "Strong Growth for Stand-up Pouches." Packaging Europe, December 1, 2017. **https://packagingeurope.com/api/content/bca31f76-d6a4-11e7-806e-121bebc5777e/**.

28 "Stemming the Tide: Land-Based Strategies for a Plastic-Free Ocean." Ocean Conservancy & McKinsey Center for Business and Environment, 2015. **http://www.oceanconservancy.org/our-work/marine-debris/stop-plastic-trash-2015.html**.

29 Market share of capacity in the total polyethylene market in 2018 from "ICIS Supply and Demand Database." ICIS, n.d. **https://www.icis.com/explore/services/analytics/supply-demand-data/icis-supply-and-demand-database/**.

30 2015 annual reports for the following companies:

"Annual Performance Summary 2015." International Paper, n.d. **http://s1.q4cdn.com/597881801/files/doc_financials/2015/IPA0007_04192016_10K-FINAL ONLINE_with-10K-Form.pdf**.

"2015 WestRock Annual Report." WestRock, n.d. **http://s21.q4cdn.com/975972157/files/doc_financials/annual/westrock_2015_annual_report_web.pdf**.

"Ball 2015 Annual Report." Ball Corporation, n.d. **http://phx.corporate-ir.net/External.File?item=UGFyZW50SUQ9NjE0MjI0fENoaWxkSUQ9MzI4MzIzfFR5cGU9MQ==&t=1**.

"Tetra Laval Annual Report 2015/2016." Tetra Laval, n.d. **https://tlcomprod2.azureedge.net/static/documents/tetralaval-2015-2016.pdf**.

"Stora Enso's Annual Report 2015." Stora Enso, n.d. **http://www.storaenso.com/annualreport**.

"Annual Report 2015." Amcor, n.d. **https://assets.ctfassets.net/f7tuyt85vtoa/62pWvNF85OCgG22Wyc22WA/49a5ea9dc9ae3283ace7c49f51760f25/2015-Annual-Report.pdf**.

"SK Annual Report 2015." Smurfit Kappa, May 2, 2016. **https://www.smurfitkappa.com/investors/-/media/files/smurfit-digital-marketing-platform/publications---global/financial-reports/2015-skg_plc_annual_report.pdf**.

"2015 Annual Report." Reynolds American Inc., n.d. **http://www.annualreports.com/HostedData/AnnualReportArchive/r/NYSE_rai_2015.pdf**.

"Annual Report 2015." Crown Resorts, September 8, 2015. **https://www.crownresorts.com.au/CrownResorts/files/c5/c5b9b374-3ab2-410a-8735-9a3266f461fa.pdf**.

"2015 Annual Report." Sealed Air, April 8, 2016. **http://ir.sealedair.com/static-files/13095e21-36c0-44c4-b53c-d642fd06fb03**.

31 Market share of global retail market in 2016 (Statista)

32 "The New Plastics Economy: Rethinking the Future of Plastics." The Ellen MacArthur Foundation & McKinsey Center for Business and Environment, January 2016. **https://newplasticseconomy.org/publications/report-2016**.

33 "Stemming the Tide: Land-Based Strategies for a Plastic-Free Ocean." Ocean Conservancy & McKinsey Center for Business and Environment, 2015. **http://www.oceanconservancy.org/our-work/marine-debris/stop-plastic-trash-2015.html**.

34 Hundertmark, Thomas, Mirjam Mayer, Chris McNally, Theo Jan Simons, and Christof Witte. "How Plastics Waste Recycling Could Transform the Chemical Industry." McKinsey & Company, December 2018. **https://www.mckinsey.com/industries/chemicals/our-insights/how-plastics-waste-recycling-could-transform-the-chemical-industry**.

35 Cook, Ed, Emma Burlow, Sam Reeve, Edward Kosior, Bernie Thomas, Brian Riise, John Gysbers, and Jennings, Pat. "Eliminating Avoidable Plastic Waste by 2042: A Use-Based Approach to Decision and Policy Making." Resource Futures and Nextek, June 13, 2018. **https://doi.org/10.13140/RG.2.2.16460.92800**.

36 Analysis of potential impact based on the current state scenario of 'The New Plastics Economy'

37 "The New Plastics Economy: Rethinking the Future of Plastics." The Ellen MacArthur Foundation & McKinsey Center for Business and Environment, January 2016. **https://newplasticseconomy.org/publications/report-2016**.

38 Currently 14% is collected for recycling (excluding energy recovery), 14% for energy recovery, and 40% is landfilled while 32% is leaked. A doubling of recovery to 28%, assuming similar distribution, would result in 12% energy recovery, 33% landfill and 27% leakage. The actual number would depend on a number of factors, including technology selection and investment, and any policy-based (dis)incentives attached to each pathway

39 Hundertmark, Thomas, Mirjam Mayer, Chris McNally, Theo Jan Simons, and Christof Witte. "How Plastics Waste Recycling Could Transform the Chemical Industry." McKinsey & Company, December 2018. **https://www.mckinsey.com/industries/chemicals/our-insights/how-plastics-waste-recycling-could-transform-the-chemical-industry**.

40 Butt, N., H. L. Beyer, J. R. Bennett, D. Biggs, R. Maggini, M. Mills, A. R. Renwick, L. M. Seabrook, and H. P. Possingham. "Biodiversity Risks from Fossil Fuel Extraction." *Science* 342, no. 6157 (October 25, 2013): 425. **https://doi.org/10.1126/science.1237261**.

41 Hoel, Michael, and Snorre Kverndokk. "Depletion of Fossil Fuels and the Impacts of Global Warming." *Resource and Energy Economics* 18, no. 2 (May 1, 1996): 115–36. **https://doi.org/10.1016/0928-7655(96)00005-X**.

42 Responsibly sourced biobased plastics are made from feedstock that is produced in a way that protects the future of our natural resources and the rights of people. Detailed information from: Simon, Erin, and Alix Grabowski. "Methodology for the Assessment of Bioplastic Feedstocks." Bioplastic Feedstock Alliance, n.d. **http://bioplasticfeedstockalliance.org/bioplastics/BFA_Methodology_for_Assessment_of_Bioplastic_Feedstocks.pdf**.

43 "Part 260 – Guides for the Use of Environmental Marketing Claims." Federal Trade Commission, n.d. **https://www.ftc.gov/sites/default/files/attachments/press-releases/ftc-issues-revised-green-guides/greenguides.pdf**.

44 "Composting." Biodegradable Products Institute. **https://www.bpiworld.org/Composting**.

45 "Over 150 Organisations Back Call to Ban Oxo-Degradable Plastic Packaging." *European Bioplastics* (blog), November 22, 2017. **https://www.european-bioplastics.org/over-150-organisations-back-call-to-ban-oxo-degradable-plastic-packaging/**.

46 The Science Based Targets initiative champions science-based target setting as a powerful way of boosting companies' competitive advantage in the transition to the low-carbon economy. It is a collaboration between CDP, World Resources Institute (WRI), the World Wide Fund for Nature (WWF), and the United Nations Global Compact (UNGC)

47 "Lidl with Tonsmeier Group Expand on Environmental Services." Industry Europe, July 10, 2018. **https://industryeurope.com/api/content/ab89124c-8426-11e8-8aff-12408cbff2b0/**.

48 Slow, Elizabeth. "Lidl to Acquire German Waste Business." Letsrecycle.Com, June 7, 2018. **https://www.letsrecycle.com/news/latest-news/lidl-german-waste-business/**.

49 Yum! Brands, The Coca-Cola Company, Closed Loop Fund, and WWF are also partners in the NextGen Cup Challenge

50 "NextGen Cup Challenge." OpenIDEO. Accessed February 2, 2019. **https://www.openideo.com/challenge-briefs/next-gen-cup-challenge**.

51 "RECUP." **https://recup.de/**.

52 3 non-rechargeable jars compared to 1 rechargeable + 2 recharges

53 "APR Recycling Demand Champion Companies." The Association of Plastic Recyclers. Accessed February 2, 2019. **https://www.plasticsrecycling.org/recycling-demand-champions/demand-champion-companies**.

54 "Special Eurobarometer 468: Attitudes of European Citizens towards the Environment." European Commission, October 1, 2017. **https://doi.org/10.2779/84809**.

55 "The Sustainability Imperative." The Nielsen Company, October 12, 2015. **https://www.nielsen.com/us/en/insights/reports/2015/the-sustainability-imperative.html**.

56 Prochaska, James O., and Wayne F. Velicer. "The Transtheoretical Model of Health Behavior Change." American Journal of Health Promotion 12, no. 1 (January 9, 1997): 38–48. **https://doi.org/10.4278/0890-1171-12.1.38**.

57 Mundorf, Norbert, Colleen A. Redding, and Andrea L. Paiva. "Sustainable Transportation Attitudes and Health Behavior Change: Evaluation of a Brief Stage-Targeted Video Intervention." International Journal of Environmental Research and Public Health, Sustainable Transportation and Health, 15, no. 1 (January 18, 2018): 150. **https://doi.org/10.3390/ijerph15010150**.

58 Thaler, Richard H., and Cass R. Sunstein. Nudge: Improving Decisions about Health, Wealth, and Happiness. Yale University Press, 2008.

59 Kurz, Verena. "Nudging to Reduce Meat Consumption: Immediate and Persistent Effects of an Intervention at a University Restaurant." Journal of Environmental Economics and Management 90 (July 2, 2018): 317–41. **https://doi.org/10.1016/j.jeem.2018.06.005**.

60 "The 12 Brand Archetypes All Successful Businesses Are Built On." Sparkol (blog), September 1, 2015. **https://www.sparkol.com/en/Blog/The-12-brand-archetypes-all-successful-businesses-are-built-on**.

61 Li, Yan, Lei Zhang, and Min Jin. "Report on Consumer Awareness and Behaviour Change in Sustainable Consumption." 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns (10YFP). China Chain Store & Franchise Association and School of Environmental and Natural Resources of Renmin University of China, May 26, 2017. **http://www.oneplanetnetwork.org/sites/default/files/en_report_on_consumer_awareness_and_behavior_change_in_sustainable_consumption_in_china-final.pdf**.

62 "2017 UX and User Research Industry Survey Report." UserTesting, 2017. **http://downloads.usertesting.com/white_papers/UT_WP_IndustrySurveyReport_2017_Final.pdf**.

63 "Tetra Pak Launches Marketing Services to Help Brands Fast-Track Food and Beverage Product Innovation." Tetra Pak, September 30, 2015. **https://www.tetrapak.com/about/newsarchive/marketing-services-to-help-brands-fast-track-food-and-beverage-product-innovation**.

64 "Coca-Cola Donates 1 Millionth Community Recycling Bin in the U.S." The Coca-Cola Company (blog). Accessed January 22, 2019. **https://www.coca-colacompany.com/stories/coca-cola-donates-1-millionth-community-recycling-bin-in-the-u-s**.

65 Jespersen, Simon Maaloe. "Green Nudge: Nudging Litter Into The Bin." INudgeyou (blog), February 16, 2012. **https://inudgeyou.com/en/green-nudge-nudging-litter-into-the-bin/**.

66 Extended Producer Responsibility: Updated Guidance for Efficient Waste Management. Paris: OECD Publishing, 2016. **https://doi.org/10.1787/9789264256385-en**.

67 Extended Producer Responsibility: Updated Guidance for Efficient Waste Management. Paris: OECD Publishing, 2016. **https://doi.org/10.1787/9789264256385-en**.

68 Editorial staff. "Leeds Launches Largest Single Local Authority Metal Matters Campaign," March 14, 2017. **http://www.recyclingwasteworld.co.uk/news/leeds-launches-largest-single-local-authority-metalmatters-campaign/152754/**.

69 "Toward Circularity of Post-Consumer Flexible Packaging in Asia: Exploring Collection and Recycling Solutions." Gone Aventurin, November 20, 2018. **https://assets.ctfassets.net/f7tuyt85vtoa/Zt4soYnJWUKoWCi8uu8iW/a48a9e1b94a28e2c0e52c6f89fa32363/2017-11-20-Flexibles-Report.pdf**.

70 **Praise Indonesia**. McKinsey.org, a non-profit founded by McKinsey & Company, has partnered with PRAISE to optimize waste collection, for example by educating households about waste separation, improve the efficiency of TPS3R sorting facilities, through training and incentivization, and secure demand, by working with companies who have committed to use recycled materials

71 CreaSolv® is a registered trademark of CreaCycle GmbH

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WWF leads and owns the broader *No Plastic in Nature* and "one planet" initiatives.

Unless stated differently, all company examples were provided during the interview sessions.

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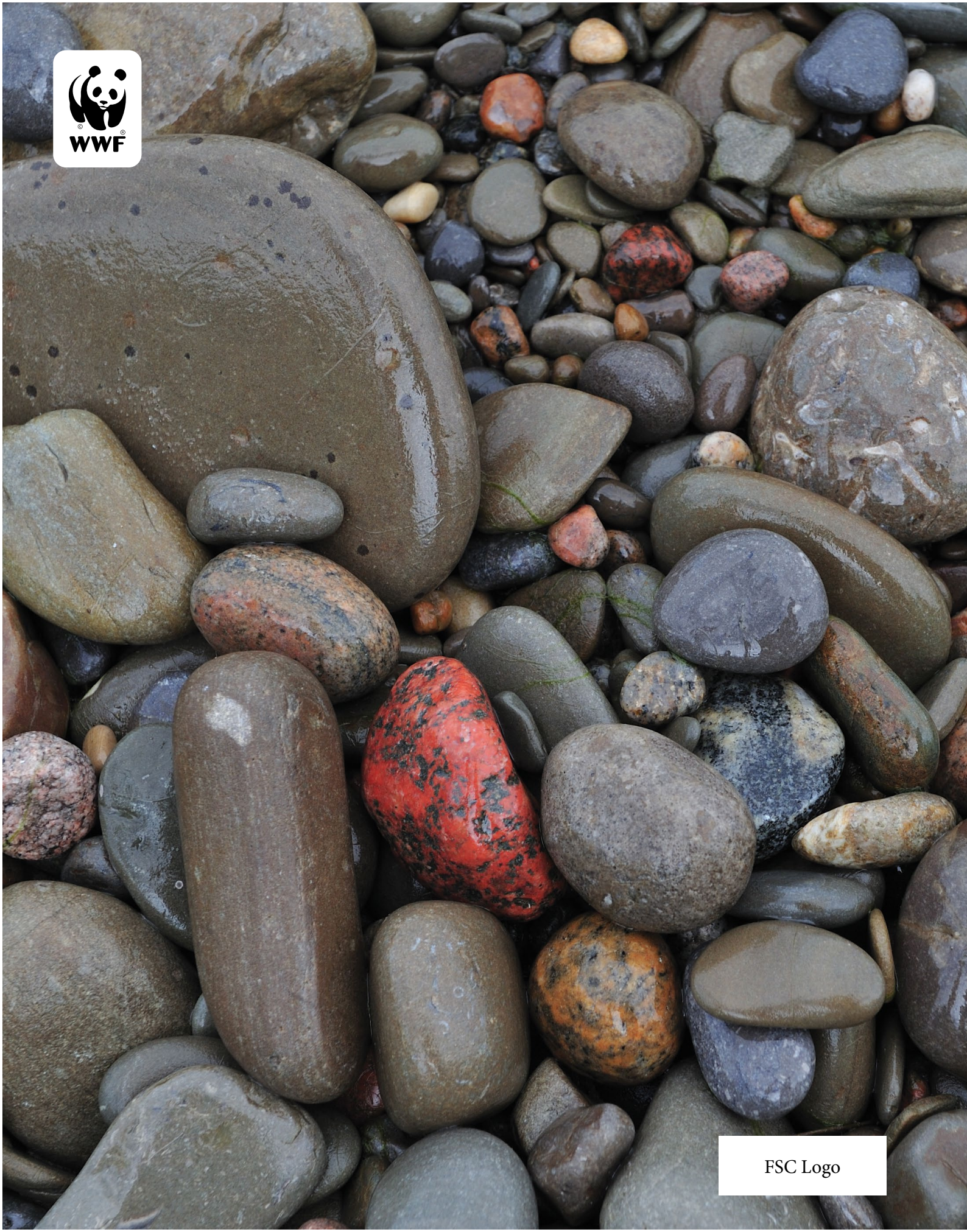
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