

**Written Testimony of Erin Simon**  
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**on**  
**“Evaluating Material Alternatives for Single-Use Plastics”**  
**for the**  
**Subcommittee on Chemical Safety, Waste Management,**  
**Environmental Justice, and Regulatory Oversight**  
**of the Senate Committee on Environment and Public Works**

**October 26, 2023**

Mr. Chairman, Mr. Ranking Member, and members of the Subcommittee, thank you for the opportunity to testify on the topic of evaluating material alternatives for single-use plastics. My name is Erin Simon, and I am the Vice President and Head of Plastic Waste and Business at World Wildlife Fund (WWF). For over sixty years, WWF has been working to help both people and nature thrive. As the world’s largest science-based conservation organization, our international network of offices works across 100 countries to deliver on this mission through our efforts to conserve and restore nature; to reduce humanity’s environmental footprint; to ensure the sustainable use and management of natural resources; and to help address the biggest global environmental challenges, including the increasingly pressing challenge of plastic pollution. WWF works at every level, collaborating with governments, local communities, and some of the world’s biggest companies to deliver innovative solutions that protect both nature and the people who depend upon it.

**The Challenge of Plastic Pollution**

The topic of today’s hearing is a critically important one. Plastic pollution has quickly become a top global environmental issue and a top environmental concern for many Americans. In response, there has been a groundswell of initiatives in recent years, led by companies, cities, states, and civil society organizations such as my own that are working to reduce and ultimately prevent plastic waste. Congress, as we can see with the example of this hearing today, has also been taking action with hearings, legislation, and convening stakeholders to work together on this issue.

Plastics were a hallmark of 20th century innovation, and they are a part of many of our most innovative products. But our failure to effectively address the issue of *plastic pollution* has produced one of the 21<sup>st</sup> century’s greatest challenges. We need to deploy that same level of innovation to solve this problem and build a circular economy – from production, to use and reuse, to disposal. Doing so can produce one of our greatest victories for people and the planet, and create a truly sustainable, healthy future for all.

Most acute is the issue of single-use plastics – those that are produced, used once, and then discarded – and the mountains of waste that result from them. It is no longer economically, socially, or environmentally sustainable to prioritize the production of single-use plastic products. For those single-use products that cannot be easily eliminated, we need to find alternative materials, consumption models, or formats.

We can't afford to wait. While we are just skimming the surface of our understanding of the magnitude of this crisis, there are a few things we know for certain. We know plastic pollution is negatively impacting wildlife and habitats. More than 2,000 species around the world have been found to encounter plastic pollution in their natural habitats, and it is estimated that up to 90% of seabirds and 52% of sea turtles have mistakenly eaten plastic.<sup>1</sup> We also know that plastic is harming some of the world's most important marine ecosystems, like coral reefs and mangroves. And we know that plastic is everywhere. It can be found in nearly every corner of the planet – from your city sidewalk to the depths of the ocean. This places a significant toll on local economies, public health, and vulnerable communities who are already disproportionately impacted by plastic pollution.

When many of us think of how plastic harms nature, we picture bags drifting across our most treasured landscapes, fishing nets washing up on beaches, or microplastics seeping into our drinking water. But unfortunately, most plastics start harming our planet and our communities long before they become trash. Over 99% of new plastics are made from fossil fuels. This means that from the moment they're made, these conventional plastics are impacting the well-being of both communities and nature.

I recently visited a region of Louisiana described by some as Cancer Alley – a 184 mile region winding along the Mississippi River with over 378 industrial and petrochemical facilities, many of which produce the chemicals needed to develop plastics. Because of their exposure to toxins and pollutants, residents of Cancer Alley face significantly higher asthma and cancer rates. I witnessed the vibrancy of the communities and landscapes in Cancer Alley and heard residents' pride in caring for their land, which their families have owned for generations. I also saw massive petrochemical production plants merely feet away from homes, community health centers, and even schools – and learned that these plants produce pollutants at rates hundreds of times higher than EPA's recommended limits. Over lunch, residents shared their concerns with me, including the cumulative impacts of proximity to so many different plants, the lack of disaster preparedness plans, and the constant fights to stop more plants from being built.

For the communities in Cancer Alley, the problems created by plastic are very much local. But this is also now a global issue. It is estimated that 11 million metric tons of plastic waste enter

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<sup>1</sup> "Impacts of Plastic Pollution in the Oceans on Marine Species, Biodiversity and Ecosystems" World Wildlife Fund (2022) [https://www.wwf.de/fileadmin/fm-wwf/Publikationen-PDF/Plastik/WWF-Impacts\\_of\\_plastic\\_pollution\\_in\\_the\\_ocean\\_on\\_marine\\_species\\_biodiversity\\_and\\_ecosystems.pdf](https://www.wwf.de/fileadmin/fm-wwf/Publikationen-PDF/Plastik/WWF-Impacts_of_plastic_pollution_in_the_ocean_on_marine_species_biodiversity_and_ecosystems.pdf)

our oceans every year – the equivalent of one dump truck per minute.<sup>2</sup> Much of this is from unnecessary, single-use products, which have negative impacts on people and nature throughout their brief lifecycle, which is why in the end, the best alternatives to plastics are quite often reduction and reuse.

We must mend the broken and complex system that has gotten us to where we are today, built on high demand for unnecessary virgin plastic and ineffective waste management. To address the plastic crisis at the scope and scale necessary, we need holistic systemic change and smart plastic policy on both the national and global levels. We need an all-in approach – from policymakers to industry leaders, from cities to individual consumers – so the plastics and materials that we manufacture and use can be recycled into valuable products that we use again.

Plastic is a versatile material that brings much value to our lives. It creates the packaging that keeps our food fresh and our medications safe. It supports construction and textiles and technology. Plastic can and will continue to play a role in a circular economy. But plastic has no place in nature, where it too often ends up. We currently rely on plastic most commonly as a single-use resource in a linear system where products and packaging are created, used, and thrown away. Transitioning from a linear to a circular economy will require a multi-faceted approach that protects our environment, our communities, and our economies.

A truly circular economy – one that is regenerative and restorative – calls for a complete reanalysis of the way we create, use, source, design, and dispose of products and packaging. This requires a paradigm shift in the fundamental way we view our production and consumption systems, starting by eliminating the single-use plastic and materials we don't need and making prevention of waste the highest priority. This means avoiding introducing new materials – especially those that cannot easily be recycled or reused – into the system wherever possible. For all the materials we do need, we need to prioritize reduction and reuse – whether that means avoiding single-use plastic bags and cutlery at restaurants and supermarkets or offering reusable coffee cups at a cafe. This step should be taken carefully, given that every material has environmental tradeoffs.<sup>3</sup> The materials we need should be evaluated comprehensively and produced with sustainable inputs such as responsibly sourced biobased plastic, including Forest Stewardship Council (FSC) certified or recycled paper, and recycled glass and aluminum. Finally, we need supporting infrastructure and policy. This includes improving our material systems to collect, reuse, recycle, and compost all plastic that is produced, as well as creating opportunities for incentives and mechanisms in addition to Extended Producer Responsibility (EPR).<sup>4</sup>

### **Material Alternatives to Plastic: Available Options and Key Considerations**

As we're all working to reduce our use of plastic and improve our ability to reuse, recycle and compost it, we will still require some new plastic to meet critical health and safety needs. But

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<sup>2</sup> "Breaking the Plastic Wave: Top Findings For Preventing Plastic Pollution" The Pew Charitable Trusts (2020) <https://www.pewtrusts.org/en/research-and-analysis/articles/2020/07/23/breaking-the-plastic-wave-top-findings>

<sup>3</sup> For more information see [WWF Position: Biobased and Biodegradable Plastic](#)

<sup>4</sup> For more information see [WWF Policy Guidance: Circular Economy for Packaging in the United States](#)

we don't need to make new plastics from fossil fuels. Plastics can be made from alternative feedstocks such as seaweed, sugarcane, or other plants. Transitioning to a bioeconomy involves shifting to an economy where goods are made from responsibly produced biomass. Such biobased materials can serve a strong complementary role in replenishing materials in a circular system, and businesses and governments have an important role to play in reducing consumption, supporting circularity, and enabling biobased alternatives for fossil-derived materials. Biobased plastics offer the opportunity to decouple from fossil resources, reduce greenhouse gas emissions, and contribute to a resilient local economy, but only if they are produced in accordance with best practices. To realize their sustainability benefits, it is imperative that biobased materials be sourced and managed responsibly, and have a better impact on climate, water, and biodiversity on a more socially equitable basis than fossil resources.<sup>5</sup>

WWF is leveraging expertise from across its network and uniting corporate leaders, policymakers, and relevant experts to create shared sustainability standards for sourcing and advance science-based knowledge. WWF has collaborated with industry leaders through the Bioplastic Feedstock Alliance (BFA) for over a decade to provide thought leadership on the responsible sourcing of biobased plastics and the role of biobased plastics in circular systems.<sup>6</sup> This multi-stakeholder forum enables the world's leading consumer brands, including LEGO Group, McDonalds, Nestle, PepsiCo and Procter & Gamble, to engage more deeply on this topic and advance knowledge of biobased plastics. Providing guidance on how to evaluate the sustainability of biobased feedstocks helps ensure that claims of biobased content are backed by responsible sourcing practices, and that biomass is grown, processed, and delivered in a way that protects our natural resources.

Alternative materials to replace plastic cover many types of material, including paper, metal, glass, and biobased materials. We must be thoughtful and thorough when considering the use of plastic alternatives and assess when producing and using an alternative material, as opposed to reduction or reuse, is the right strategy. Because all materials have environmental impacts, it is necessary to consider the tradeoffs of switching to an alternative material. We can also take steps in the way we source and use alternatives to ensure they are responsible choices that result in environmental and social benefits compared to conventional plastic.

As we transition to a future economy no longer dependent on fossil-derived energy and materials, we can reduce the carbon intensity of materials used in packaging, textiles, the automotive industry, and a wide range of other industrial and consumer goods applications. However, the bioeconomy relies on agriculture and forestry industries, both of which can have serious social and environmental impacts if not carried out responsibly and sustainably. This is why careful decision-making and responsible sourcing are necessary for the production and management of biomaterials, considering the increasingly important issues related to food security, land competition, water, climate change, biodiversity loss, safe labor practices, and overall environmental and social performance.<sup>7</sup> For example, when considering paper, it's

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<sup>5</sup> For more information see [Position Statement: A Call for Science-Based Policy on Plastic Alternatives](#)

<sup>6</sup> For more information and resources see the Bioplastic Feedstock Alliance [website](#)

<sup>7</sup> For more information see [Methodology for the Assessment of Bioplastic Feedstocks](#)

important to consider the impacts on forests and other critical ecosystems. Responsibly sourced paper, which either comes from recycled content or Forest Stewardship Council (FSC)<sup>8</sup> certified forests, ensures that the sourcing of paper supports healthy forests. For metal and glass, it is important to consider that these materials have intensive impacts at raw material extraction, making their circularity important to their overall sustainability performance.

Aluminum has many environmental impacts including the high energy intensity of ore processing and the biodiversity impacts from bauxite mining. Aluminum uses a large amount of electricity in extraction, so recycled aluminum uses 95% less energy to produce than primary aluminum. This material can be recycled indefinitely with only process losses as a limiting factor and it still retains its properties.

Not all biobased plastics are biodegradable and not all biodegradable plastics are biobased. Biobased plastic is plastic derived from plants or other biomass. Biodegradable plastic is plastic that can be digested by microorganisms. The definition of biodegradable does not include a specific timeframe or specific environmental conditions for breakdown. Compostable plastic is a subset of biodegradable plastic and is divided into commercially and home compostable sub-categories. Compostable plastic breaks down and becomes usable, non-toxic soil conditioner under controlled conditions, in a timeframe comparable to that of other compostable materials. There are credible certifications available to verify the compostability of materials. Because there is a beneficial recovery option for compostable materials, and also more concrete definitions, it is more meaningful for claims about materials to reference compostability instead of biodegradability.

Both biobased and biodegradable plastics should be considered within the context of the circular economy. Neither alone will solve the plastic waste crisis, as biobased plastic faces the same end-of-life challenges as conventional plastic, but biobased plastic addresses unavoidable material loss and degradation during recycling operations and should be used as part of a larger system of increased circularity. Biodegradable plastic may provide specific benefits for targeted applications, for example for agricultural films, where there is a high likelihood of release into the environment. For both biobased and biodegradable materials, metric-based decision-making must be employed to thoroughly evaluate the full range of impacts of a specific material and its feedstock to understand both impacts and benefits and facilitate informed decision-making.

Biobased plastics may offer environmental advantages over their fossil-based counterparts, depending on the specific feedstock used in their production, method of production, product lifetime, and end of life treatment. Feedstocks must be evaluated on their regional specific impacts, advantages, and trade-offs with appropriate mitigation actions to ensure sustainability; generalizations will not lead to the desired result of sustainable biomass production systems.

Some biobased plastics are compatible with existing recycling streams, while others are not. For example, PLA can contaminate mechanical recycling streams, but drop-in biobased plastics (biobased plastics that are fully recyclable--they can be “dropped in” to existing infrastructure with no changes to technology or machinery) such as bio-PET or bio-PE can be recycled with conventional plastic. It is imperative that biobased plastics, like all materials, be paired with the proper collection programs and infrastructure for successful recycling or composting.

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<sup>8</sup> For more information see the Forest Stewardship Council (FSC) website <https://fsc.org/en>

Biobased plastics may require more water for production than fossil-based plastic (driven by the feedstock growing phase) and may degrade during the recycling process just as fossil based plastics do, but they absorb atmospheric CO<sub>2</sub> while growing, and when sourced responsibly can foster stewardship and utilize renewable resources. Tradeoffs along the value chain and between different environmental factors are unavoidable. Therefore, the focus should not be on finding a perfect option to replace conventional plastic, but on maximizing environmental benefits and committing to continuous improvement of environmental performance over time.

Biodegradable plastic can be valuable when coupled with proper infrastructure, but it is not an end-all-be-all solution to plastic pollution. Compostable plastic may be appropriate for specific uses but will only be advantageous if collection and processing is sufficient to recover the material. This demonstrates that alternative materials can play a beneficial role in the circular economy when certain conditions are met to ensure environmental risks are mitigated.

The good news is that consumers are engaged on this issue and want to act. Recent public polling commissioned by WWF shows that 81% of the public wants to recycle more and 77% of people agree that we are making too many products out of plastic without a straightforward way to avoid it.<sup>9</sup> Individuals need the ability to make sustainable choices that fit with their everyday lives, and governments and business have the responsibility to be good stewards of our resources and ensure that consumers can access to products and services that allow them to live their values.

### **Alternative Systems are Central to the Solution**

The goal of WWF's No Plastic in Nature initiative is to stop the leakage of plastic into nature. To accomplish this, we need to create long-lasting, holistic systems change and work to align stakeholders from business, government, and the public around a common vision: to eliminate unnecessary plastic and improve the sustainability of plastic that is necessary. In doing so, we can achieve a future where plastic waste no longer finds its way into our oceans, our rivers, and our communities.

In 2019, WWF launched ReSource: Plastic, an activation hub to support companies that want to translate their plastic commitments into tangible change in their business practices. A key element was the establishment of an analytical tool, the ReSource Footprint Tracker, to measure corporate action and progress year over year.<sup>10</sup> Businesses are uniquely positioned to reduce waste within their own supply chains, and their voices are among the most influential ones advocating for significant policy advancements. Likewise, putting in place the right policies and creating an environment for corporate actors to implement sustainable practices, government stakeholders can help companies achieve their plastic reduction objectives and create a race to the top when it comes to private sector efforts to reduce and eliminate plastic waste.

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<sup>9</sup> "How Americans View the Plastic Problem" World Wildlife Fund (2021)

<https://www.worldwildlife.org/blogs/sustainability-works/posts/how-americans-view-the-plastic-problem>

<sup>10</sup> For more information see [Transparent 2022 Annual ReSource: Plastic Progress Report](#)

Reuse is a vital strategy that must be pursued in parallel with other approaches, such as responsible sourcing of biobased plastic and increased collection and recycling of plastic, to achieve a truly circular economy for plastics. It plays an important role in helping reduce the amount of material in the system and allows us to extend the life of our resources, keeping value in the system for as long as possible. When scaled effectively, reusable systems have the potential to offer a smaller material and emission footprint compared to the status quo. Policy is key to creating enabling conditions and scaling reuse systems. Policy can establish regulation, incentives, and funding mechanisms, as well as integrate reuse into existing legislation such as EPR. According to the Ellen MacArthur Foundation, reuse systems that replace 20% of single-use plastic packaging represent a \$10 billion opportunity, demonstrating the potential for reuse to achieve the ultimate triple bottom line: benefits to people, planet, and profit.<sup>11</sup>

There are three critical elements for reuse systems to succeed at scale. First, they must be environmentally sound. We need to consider the full lifecycle of plastic and avoid trading one issue for another. At WWF, we are proponents of the One Planet Perspective, which means that no solution should cause harm to another part of our planetary system. Next, reuse systems have to be economically sustainable. Solutions must achieve cost parity with single-use and have potential to achieve revenue growth to be a feasible business strategy. And lastly, reuse systems must be socially resilient. Reuse systems must be accessible, equitable, and inclusive, and they have to operate in the best interest of public health and safety. If reuse can meet the ambition across these dimensions, we can ensure that the reuse systems we are building are set up for success.<sup>12</sup>

We should first consider how we can reduce total resource consumption and material use. For the materials we do use, circularity should be ensured. Wherever possible, recycled and responsibly sourced biobased inputs should be preferred to virgin materials and materials should be recycled in high-quality closed loops. The good news is that in many cases we can reuse materials to limit the stress we're putting on our natural resources. Secondary materials – those that have already been used at least once in some form – could fundamentally change the way we manage our waste and materials usage. If a closed loop is not possible, cascade use is an option, meaning the material is used for a lower-value or less complex product.

### **Policy Solutions are Needed at All Levels**

WWF is also engaging in policy conversations around plastic circularity, and we have seen strong actions taken already, including at the state level. Following advocacy by corporate leaders, NGOs, and other stakeholders, Colorado enacted the United States' first full extended producer responsibility legislation in June 2022. The state is now leading the nation in implementing EPR for all packaging, which will make collection easy for consumers, incentivize best practices for sorting and processing, and pair producer responsibility with access to high

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<sup>11</sup> "The Reuse Innovators at the Forefront of the Plastic Crisis" World Wildlife Fund (2023) <https://www.worldwildlife.org/blogs/sustainability-works/posts/the-reuse-innovators-at-the-forefront-of-the-plastic-crisis#:~:text=Reuse%20systems%20are%20also%20cost,%3A%20benefits%20to%20people%2C%20planet%2C>

<sup>12</sup> For more information see [WWF Position: The Role of Reuse in a Circular Economy for Plastics](#)

quality materials. The EPR model in Colorado shows a path forward that other states can follow, and one which we hope will eventually be embraced across the nation.

In California, SB54 will require an analysis of necessary action to address the impacts of single use plastic packaging, establish measures to track progress on removing some of the most problematic packaging, and require that packaging be recyclable in practice. SB54 is the first legislation to require numeric amounts for source reduction by number and by weight by 25% by 2032, reflecting the fact that tracking and data are crucial to the creation of a circular economy.

And here in Congress, we have seen the passage of the Save Our Seas Act and Save Our Seas 2.0, and Members of this Committee have introduced the Recycling and Composting Accountability Act, the Recycling Infrastructure and Accessibility Act, the Break Free From Plastic Pollution Act, and the Protect Communities from Plastics Act. These efforts demonstrate the bipartisan recognition of this growing problem and the keen interest in addressing it. Later today, I'll be on a panel in this very room as part of a briefing with representatives of leading companies – The Coca-Cola Company, Walmart, and Mars, Inc. – talking about their ambitious efforts to promote reduction, reuse, and recycling. We will focus on identifying what policymakers in Congress can do to advance action and how to create an enabling environment that will reward the leadership in the private sector and help bring others along.

WWF hopes that the conversation this Subcommittee is leading through its series of hearings on plastic pollution, including today's, will help pave the way for Congress to develop and enact even more robust policies in this space – policies that call attention to the considerations and advantages of reduction, reuse, as well as material alternatives to plastics as we seek to address the problem of plastic waste and pollution.

## **Conclusion**

Ultimately, a circular economy is the only sustainable way forward. It begins with a reevaluation of our use and disposal of plastic that centers both environmental justice and human health outcomes. It will require the elimination of unnecessary plastic, substantial increases in the reuse, recycling, and composting, and a shift to sustainable inputs and new production and consumption models for the remaining, necessary materials.<sup>13</sup>

Though this reality may seem ambitious, there are policies and changes we can work toward today to create more efficient systems that will ensure current and future generations produce and consume goods with minimal impact. As we look to embrace a sustainable bioeconomy and circular economy, it is heartening to see strong support from the American public and significant private sector leadership, and to know we have the tools and knowledge at our disposal to deploy effective solutions. Congress can help by providing the economic incentives and policy landscapes that will speed their deployment. There is no time to waste if we want to achieve this shared vision of a more resilient future in which we protect human and environmental health and eliminate plastic in nature.

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<sup>13</sup> For more information see [WWF Position: The Role of Reuse in a Circular Economy for Plastics](#)

Thank you for the opportunity to testify today and thank you for the Subcommittee's leadership in moving this conversation forward. We are happy to assist in any way that we can as this dialogue continues.