OPPORTUNITIES IN BRAZIL'S TRANSITION TO A SINGLE-USE PLASTIC-FREE FUTURE

EXECUTIVE SUMMARY

OCEANA

WWF

SYSTEMIQ

EXECUTIVE SUMMARY
NOVEMBER 2024

Current Landscape

Plastic pollution has escalated into a global crisis that demands immediate and decisive action. Its environmental and human health risks must be addressed with solutions that encompass the entire life cycle of plastic. Only through comprehensive global efforts can we achieve a 90% reduction in poorly managed plastic waste by 2040[1].

In Brazil, the annual production of single-use plastic items created solely for short-term use and disposal reaches about 500 billion. Of these, 87% are packaging, while 13% are disposable products like cutlery and plastic bags[2]. With low or no recyclability, this linear production model leaves a substantial footprint: Brazil discards an estimated 1.3 million tons of plastic waste each year, accounting for nearly 8% of all plastic entering the world's oceans[3].

Despite these alarming statistics, Brazil's solid waste management infrastructure remains underdeveloped, and the '*Política Nacional de Resíduos Sólidos*' ('National Solid Waste Policy' – PNRS) has had limited success in implementation. Bill 2524/2022, currently under consideration in the National Congress, seeks to confront these challenges by reformulating Brazil's patterns of plastic production and consumption and establishing guidelines for a circular economy. A key provision of the bill calls for the gradual elimination of disposable plastic items[4] - an essential step toward reducing non-recyclable plastic waste, encouraging the adoption of more sustainable materials, and promoting a circular economy.

This study evaluates the opportunities and socio-economic impacts of phasing out specific single-use plastic products in Brazil, examining both positive and negative outcomes. The analysis compares business-as-usual with alternative scenarios, starting with an assessment of the current socio-economic landscape, including the production of single-use plastics, employment in the sector, and the industry's economic contributions. The proposed alternatives focus on replacing disposable plastics listed in Article 5 of Bill 2524/2022 (see Figure 1) with sustainable materials or reusable systems. This assessment considers the impacts on waste generation, greenhouse gas (GHG) emissions, and economic factors related to the labor market.

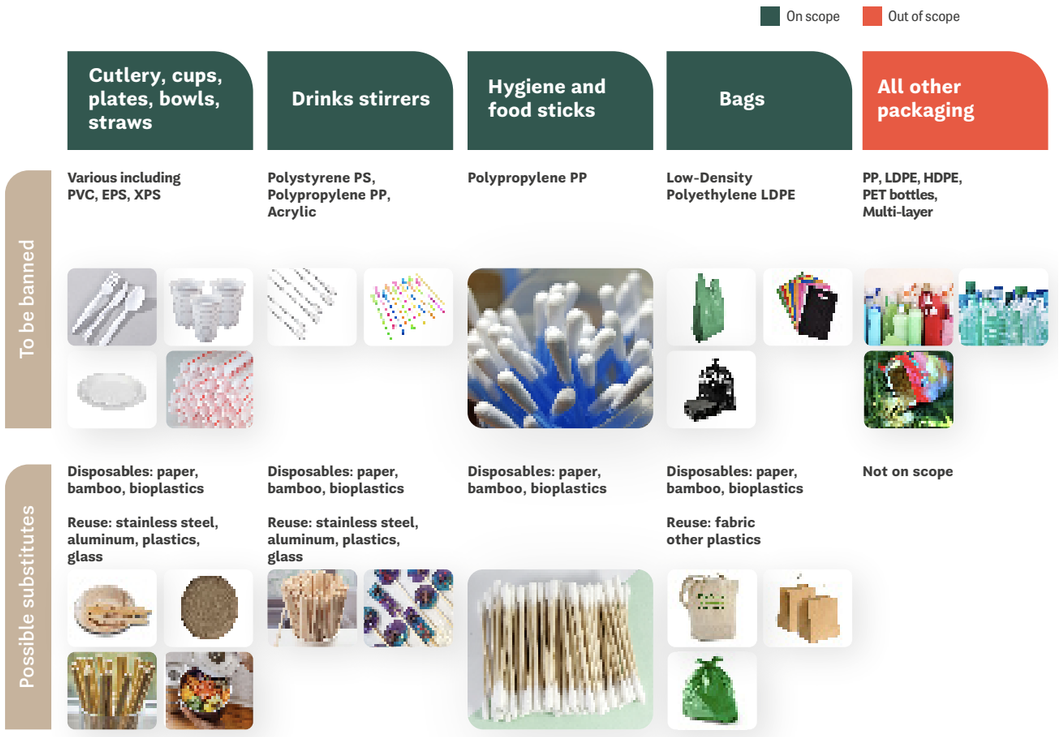
1 Systemiq, 2024. Plastic Treaty Futures.

2 Oceana, 2024 - *Fragmentos da Destruição: Impactos do Plástico na Biodiversidade Marinha Brasileira.*

3 Same source as above.

4 **Disposable plastics are products composed entirely or partially of plastic polymers, created for short-term use and immediate disposal, without design, planning, or marketing considerations for repeated use throughout their life cycle. Typical examples include single-use bags, straws, and cups, which contribute significantly to plastic pollution because of their low recyclability and persistent environmental impact.**

FIGURE 1 – This study examines the specified products based on Article 5 of Bill 2524/2022.



Methods

Two complementary modeling approaches were employed: the Projection Model and the Economic Model. Additionally, a qualitative analysis was conducted through expert interviews with professionals in the plastics industry, circular economy, and alternative materials industries. These interviews helped validate the study's hypotheses, results, and implications.

The findings reveal that phasing out specific disposable plastic items directly reduces pollution, decreases non-recyclable waste generation, and mitigates environmental impacts. This transition not only addresses critical environmental challenges but also creates economic opportunities, by generating value to the Brazilian economy.

MAIN CONCLUSIONS

Positive environmental effects

Plastic pollution poses a serious threat to human health, biodiversity, ecosystems, and food security. Eliminating non-recyclable single-use plastic items — a core principle of the circular economy — is critical to reducing waste and preventing plastic leakage into the environment. Despite accounting for a small share of overall plastic production, disposable items have an outsized impact, significantly contributing to the spread of microplastics across ecosystems.

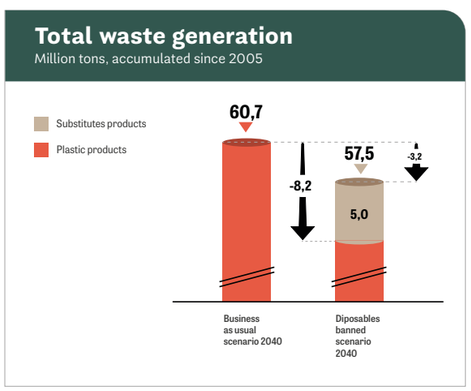
Transitioning from single-use plastics to reusable, recyclable, or compostable alternatives could prevent the generation of 3.2 million tons of solid waste and reduce greenhouse gas emissions by 18 million tons of CO^2 equivalent cumulatively between 2025 and 2040.

During this period, single-use plastic waste generation is projected to decline by 8.2 million tons, considering that most of this waste would not be recycled and would likely leak into the environment. While replacing plastics with alternative materials such as paper, glass, aluminum, or compostable options would still generate some waste, this transition would result in a net reduction of 3.2 million tons (see Graph 1).

As illustrated in Graph 2, greenhouse gas emissions are projected to decrease by 18 million tons compared to the Business-As-Usual (BAU) scenario — equivalent to the annual emissions of approximately 3.9 million passenger cars[5].

The findings highlight a significant reduction in environmental impact, driven by the phase-out of single-use plastics, material substitution, enhanced production practices, and overall system transformation.

GRAPH 1 – Mismanaged waste accumulated between 2025 and 2040, in millions of tons.



GRAPH 2 – GHG emissions accumulated between 2025 and 2040, in millions of tons of CO2 equivalent.

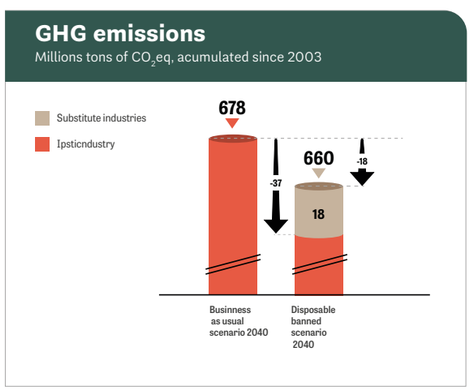


Photo: Pexels/Enginakyurt

5 According to the U.S. Environmental Protection Agency (EPA), an average passenger car emits approximately 4.6 metric tons of carbon dioxide (CO_2) per year.

SOCIO-ECONOMIC EFFECTS

Brazil's processed plastics industry has experienced declining competitiveness in recent years, a trend exacerbated by rising imports. Eliminating specific disposable plastic items is not expected to have a significant impact, as the sector's downturn is primarily driven by other economic factors. While there was a temporary increase in processed plastics over the past two years, longer term historic data shows a steady decline in production and an increase in share of imported plastics. **Disposable plastic production accounts for only about 6.8% of the total output of Brazil's plastics transformation industry, representing 15,000 to 24,000 direct jobs.**

In the absence of disposable plastic products, demand is projected to shift toward alternative materials such as glass, aluminum, paper, or compostable materials for both reusable and disposable items. Preliminary projections estimate a cumulative net reduction of 13,000 direct jobs by 2040, balancing job losses in the plastics sector with job creation in the substitute materials sector.

However, this difference is substantially reduced when indirect jobs are included. Based on an economic model using the input-output matrix, the net job loss across the economy is estimated to be approximately 1,000 positions.

Photo: Getty Images/Double d

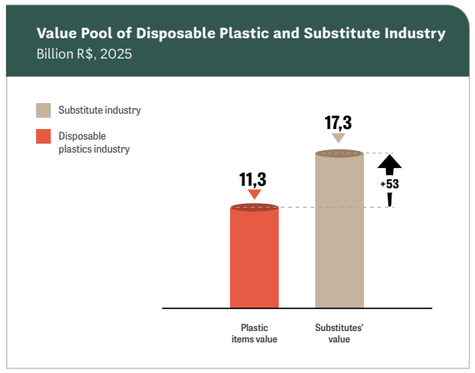
SOCIO-ECONOMIC EFFECTS

The economic impact analysis of phasing out specific single-use plastic items highlights a shift in demand toward alternative products and materials. A value generation analysis[6] reveals that replacing disposable plastics with alternatives like paper, aluminum, and reusables could lead to a 53% increase in economic market value (see Graph 3)**.**

Results from the economic model, based on the input-output matrix, further indicate that reallocating demand from plastic products to alternatives could positively impact the Gross Domestic Product (GDP), adding 403.3 million reais to the Brazilian economy, using 2015 data as a reference.

While alternative products offer higher market value potential for companies, challenges around consumer affordability remain[7]. Nonetheless, this significant potential for value creation underscores the economic opportunities within the substitute materials sector. Striking a balance between affordability and market growth will be essential to support a successful large-scale transition.

GRAPH 3 – Market Value Generated (in billions of reais per year).



6 Value generation refers to a market's total value, indicating the sector's overall revenue potential.

7 Interviews with experts on the circular economy, plastics, and the substitutes industry.

CHANGE IS REAL: SUSTAINABLE ALTERNATIVES ON THE RISE

Industries and companies are already shifting from plastics to more sustainable products and systems, driven by rising consumer awareness and market demand. This transition is creating new employment opportunities, with emerging sectors absorbing much of the workforce previously engaged in the plastics industry. While phasing out single-use plastics may have minimal effects on employment within the plastics industry, emerging alternative businesses and industries are well-positioned to absorb a significant portion of these jobs. In Brazil, we already see examples of companies producing disposable items like plates, cups, and cutlery that are now investing in sustainable materials, reducing their reliance on plastic. Pulp and paper companies are expanding into packaging, startups are innovating with compostable products, and some companies are focusing on reusable systems, such as cups and bottles. This trend reflects how the industrial sector is evolving its business models to align with circular economy principles and shifting market demands.

To ensure the effective transition away from single-use plastic items, this shift must be complemented by robust public policies and complementary initiatives. To ensure the effective transition away from single-use plastic items, this shift must be complemented by robust public policies and complementary initiatives.

The transition toward alternatives to single-use plastics is not only feasible but also presents significant growth potential for market solutions and new technologies.

While scaling up production for substitute products may pose economic challenges, these obstacles can be mitigated through appropriate incentives. Government support can strengthen the competitiveness of small and medium enterprises, enabling them to expand and compete with larger industries that already benefit from tax breaks and subsidies.

Through strategic support and economic incentives, we can further enhance the competitiveness and viability of these alternatives and new solutions, promoting sustainable, long--term market growth. Such measures will contribute to a successful transition by reducing the severe socio-environmental impact of plastic pollution.

Photo Cover: Aline Massuca
Translation: Todd Harkin, Harkin Translations