

The plastics crisis: From information to action



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The global plastics crisis represents one of the most urgent and complex socioenvironmental challenges of our time. At first, plastic was defined as a symbol of industrial progress and the convenience of modern life and has since profoundly transformed forms of production and consumption over the last century. Its omnipresence in packaging, clothing, utensils, automobiles, medical equipment, among others, has consolidated the use and structural dependence on a material that, although useful in certain segments and sectors, has become one of the greatest drivers of global environmental degradation.

Observed in all ecosystems on the planet, from the bottom of the ocean to the most remote regions of the continents, the symbol of plastic has transformed into one of a linear and unsustainable economy. Produced mainly from fossil derivatives, such as oil and gas, plastic is at the center of the dynamics that intensify climate change. In addition, its persistence in the environment – with decomposition that can take centuries – makes plastic pollution a constant threat to ecosystems, biodiversity, and human health. Microplastics have already been detected in the air, in drinking water, in food, and even in the human body, highlighting the systemic risks associated with this chain.

However, this crisis does not affect all equally. The geography of plastic production and disposal reveals profound inequalities regarding peripheral communities and black, indigenous, and traditional populations, especially in the Global South, who are disproportionately impacted by their proximity to petrochemical hubs, landfills, incinerators, and other polluting businesses. This unequal distribution of risks and damages exposes a scenario of environmental racism and highlights injustices that are inherent to the current development model. At the same time, recyclable waste pickers continue to be invisible in public policies and formal waste management systems. The plastics crisis is therefore also a crisis of rights, justice, and recognition. Given this context, in recent years, scientific advances, social mobilizations, and international agreements – such as the ongoing negotiations for a global treaty on plastics – have been pushing for a transition to more sustainable models. For this reason, it is necessary to think about engagement actions in the fight against plastic pollution.

The present issue is the result of a university outreach course offered by the Center for Research on Organizations, Society, and Sustainability at the University of São Paulo - NOSS/USP in partnership with the Global Alliance for Incinerator Alternatives - GAIA and Break Free From Plastic - BFFP, through the School of Arts, Sciences, and Humanities at USP. The course, which shares the same name as the present issue, “The Plastics Crisis: From information to action”, had two editions offered in 2024, with 180 participants completing the classes. Based on the perception of people’s interest in the topic, considering that nearly 1,000 people enrolled in the course, NOSS/USP proposed to organize the present issue as a form of scientific dissemination to reach even more people on the topic. The group has developed several actions with this intent and, in 2022, launched the “Rethinking Plastic” collection, consisting of a web series with three episodes and an educational video aimed at young audiences (which can be accessed through the group’s [YouTube channel](#)). Moreover, NOSS/USP has a series of texts available through the [USP Open Books](#) portal.

This 21st issue of the journal *Diálogos Socioambientais* aims to articulate scientific, popular, and community knowledge that mobilizes the reader to move beyond information and into action, an invitation to build collective and interdisciplinary responses to the plastics crisis. To achieve this goal, articles have been brought together that address the plastics crisis from different fields of knowledge and practical experiences. These reflections range from the impacts of plastic pollution on climate change and human health to “zero waste” community experiences. The articles were organized into the following sections: **current affairs**, represented by most of the articles, in which various aspects of the topic in question are discussed; **young researchers**, dedicated to texts by undergraduate students and master’s and doctoral students, whose work is in progress; **engagement**, which congregates articles by people who are at the forefront or discuss the role of civil society and social movements in the topic; **interview**, with reports of conversations with people related to the topic; and **arts**, focused on artistic productions that dialogue with the topic, suggested by researchers from the project or guests of this issue.

Opening the **current affairs** section of the issue, the article “*Plastics, life cycle approaches and the law*”, by Rosalind Malcolm, Matthew Peacock, and Samuel Winton, proposes a conceptual switch: rethinking plastic governance from a systemic perspective, based on industrial ecology and focused on circularity. Criticism of the current linear model is the starting point for proposing new legal and institutional guidelines, highlighting the potential of the Global Plastics Treaty as a catalyst for this change.

This necessary systemic transformation is further explored in the following article, “*Shifting focus to plastic pollution: Tackling plastics’ climate impacts, fossil fuel lock-ins, and global policy gaps*”, by Daniela Duran, which broadens the scope of the debate by addressing the connections between plastic production, the climate crisis, and fossil fuel dependence. The author argues that reducing primary plastics production is essential not only to curb pollution but also to achieve the climate goals of the Paris Agreement, challenging the predominance of strategies focused on waste management.

The consequences of this production chain for human health are detailed in the article “*Plastic and human health*”, by Thais Mauad, Regiani Carvalho-Oliveira, and Luís Fernando Amato-Lourenço. The text reveals how the omnipresence of plastics – and, in particular, micro and nanoplastics – affects our bodies, worsened by the toxicity of chemical additives that are widely used in these materials. The article reinforces the urgency of more restrictive regulations on chemicals and the reduction of plastic production as health protection measures.

Moving beyond the scope of health, the impacts of plastics are literally embedded in the geology of the planet, as shown in the article “*Plastic rocks: Interactions between plastic pollution and geology*”, by Gerson Fernandino and Carla I. Elliff. The interaction of plastic waste with geological formations and its incorporation into rocks raises reflections on the human legacy on Earth and its possible mark on the geological record on the Anthropocene.

Regarding possible responses to the vast problem presented, so-called “green” solutions are also scrutinized. In the article “*Bioplastics, biodegradable plastics, and other fake solutions*”, Ítalo Braga Castro criticizes the confusion between technical terms and misleading environmental marketing that diverts focus from the actual reduction of plastic pollution. The author warns consumers to adopt a critical point of view when observing the labeling of these materials and demand regulated certifications.

At the other end of the chain, the limits of recycling in Brazil are analyzed by Tainá Ângela Vedovello Bimbati, Fábio Luiz Cardozo, and Sylmara Lopes Francelino Gonçalves Dias in “*The limits of plastic recycling and its challenges in Brazil*”, an article that is part of the **young researchers** section of the issue. The text indicates that, although promising, recycling faces serious technical and structural obstacles, especially penalizing recyclable waste pickers – a fundamental and often invisible link in the waste chain.

These recycling challenges are particularly critical when it comes to waste generated by healthcare services, as shown in the article in the same section “*Healthcare plastic waste: A global synthesis of estimates across scales and contexts*”, by Nathalia Silva de Souza Lima Cano and Melissa M. Bilec. Based on a broad global review, the authors highlight the complexity of managing this type of waste and support the incorporation of circular economy principles in the healthcare sector.

Bringing these reflections into the scope of the **engagement** section, we begin with a discussion on consumer responsibility, which is sometimes used to divert attention from the source problem – production. This is the central point in “*The blame falls on the consumer, but who controls plastic production?*”, by Iran Magno, Jemilli Viaggi, João Malavolta, Julia Catão, and Paula Johns. Taking stock of the “Stop the Plastic Tsunami” campaign and Bill 2524/2022, the authors argue that only with robust regulation and government action will it be possible to contain the escalation of plastic production and pollution in Brazil.

The perspective of community mobilization takes center stage in the next article, “*From information to action: Lessons from the Santa Tereza Zero Waste project in Belo Horizonte, MG*”, by Juliana Gonçalves and Marcelo Alves de Souza, which demonstrates how the participatory construction of local solutions, based on active listening and expanded governance,

can promote effective changes in waste management. The challenges in this transformation are significant, but the article indicates possible paths.

Community action is also present in coastal contexts, as shown in the article “*Plastic tides: Marine litter challenges for artisanal fisheries*”, by Laura Develey, Nicole R. Guerrato, and Leandra R. Gonçalves. Through the voices of artisanal fishers from Bertioga, the article highlights the direct and indirect impacts of marine litter on fishing and highlights the importance of co-constructed solutions that consider local knowledge.

The perspective of waste pickers is brought to light in a sensitive and pragmatic way in the **interview** carried out by Isabella de Carvalho Vallin: “*How does plastic affect waste pickers?*”, with Valquiria Candido da Silva, a leader in the São Paulo chapter of the National Movement of Recyclable Waste Pickers, who describes her trajectory and the main challenges faced by the category when dealing with plastics. The report highlights the urgency of listening to those who experience the reality at the end of the chain and creating policies that value and support these workers.

Closing the issue with the **arts** section, the article “*The omnipresence of plastic in everyday life: A photovoice exercise in a peripheral community in São Paulo*”, by Jutta Gutberlet and Sylmara Lopes Francelino Gonçalves Dias, presents an exercise carried out with graduate students from the University of São Paulo in the Jardim Keralux neighborhood. The article reveals, through the unique perspective of the participants, with photos and stories, how plastic pollution is intertwined with structural inequalities and environmental injustices, while also pointing to the potential of participatory methodologies in the construction of critical knowledge with the local population.

By highlighting connections between socioenvironmental inequalities, public policies, and corporate responsibility, this issue reaffirms the journal’s commitment to dialogue between science, social movements, and transformative policies. The texts gathered here invite collective action, the engagement of multiple actors and the construction of concrete paths to address the plastics crisis with justice and equity.

We hope that this issue will contribute to strengthening networks for research, practice, and resistance that have been confronting the effects of this crisis on a daily basis – transforming information into action.

