

# MONEY WITH NO PLASTIC

Manifesto for the end of bank cards and payment machines in the Brazilian Payments System



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## ACCOMPLISHMENT



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Report conducted by O Mundo Que Queremos with the support of InfinitePay, CloudWalk payments platform

# MANIFESTO

**The world continues to use a huge amount of plastic, although scientists have been warning us for at least a decade about the impacts of this material on the environment. The durability which makes plastic so convenient for the industry is the same thing that leads to its biggest concern:**

**It does not degrade naturally and can be found everywhere. Microplastics can be found at the bottom of the oceans and even in a drop of breast milk**

Plastic also nurtures the climate crisis. More than 99% of its components derive from the fossil fuel industry, according to the NGO Center of International Environmental Law (CIEL). In other words, plastic is toxic throughout its entire life cycle – from oil and gas wells drilling, through its refinement and distribution, to the generation of waste that has impacts on the environment, human health and animal life.

Everyone knows that this is a global issue, but the lack of action takes place. The United Nations (UN) is preparing a global treaty, already endorsed by at least 175 countries, in order to reduce plastic pollution.

The United Nations Environment Programme (UNEP) estimates that it is only possible to reduce plastic pollution by 80% up to 2040 if countries and companies make substantial changes.

This evolution can begin in several areas, and the payments ecosystem is one of the most promising to do so, since the technology to get rid of plastics from the majority of its services is already available. This is an opportunity for the big markets and can give Brazil a head start in this transition, as we have one of the most sophisticated financial systems worldwide.

Most of our transactions are conducted through the internet, which puts us ahead of many countries, including the most developed ones. In Brazil, even in the most remote countryside, it is possible to find business places that use cards as a payment method. Furthermore, we innovated the Brazilian Payments System with “PIX”, which does not require physical bank cards and quickly became one of the most used payment methods by Brazilians.

Despite all these advantages, we are still not moving towards the decrease of plastic consumption in the sector. Credit and debit cards and the payment machines (Point of Sale – POS) that read them also contain plastic material in their compositions. The good news is that we can already put an end to them, thanks to technology.

We have what it takes to start eliminating plastic materials from the payments market. Then, we can expand these cleaner technologies that do not use plastic cards to every other sector. This is a thought that needs to be considered by the financial sector that can change the way we use money and plastic in the coming years. We are living in a time of climate emergency.

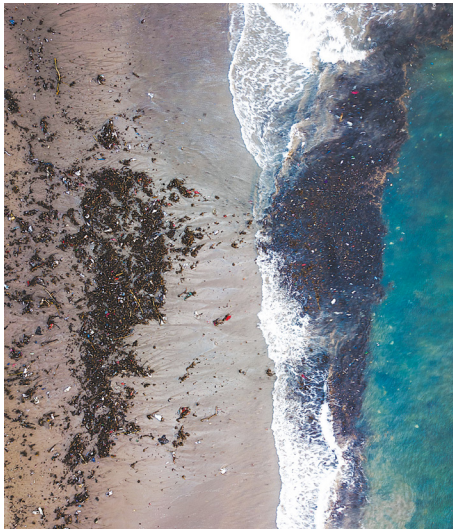
**Steps towards the future need to be done now. Are you going to be part of this or not? Let's build a future – and also a payments market – without plastic materials together**





# THE PLASTIC PROBLEM


According to the Organization for Economic Cooperation and Development (OECD), **the world produces 430 million metric tons of plastics per year** and only 9% of them are recycled. The organization estimates that the social and environmental costs of this unrestrained production reach US\$ 1.3 trillion. Forecasts for the future are not encouraging either: if we continue at the same pace, plastic production can be tripled by 2060. According to NGO Oceana, an international organization that studies the subject, more plastic was produced in the previous decade than in the entire last century. **In case nothing changes, the NGO CIEL estimates that there will be more plastic than fish in the ocean by 2050.**



***“Plastic waste is now a ubiquitous pollutant that can be found even in the world’s most remote areas. Plastic debris has been found floating on the sea surface, melting on Arctic ice and accumulating at the deepest parts of the ocean.”***

A Plastic-free Ocean, Oceana

The generation of plastic waste in Brazilian cities was 13.7 million tons in 2022, or **64 kilograms per person throughout the year**, according to data from the Brazilian Association of Public Cleaning and Special Waste Companies (Associação Brasileira de Empresas de Limpeza Pública e Resíduos Especiais - Abrelpe). The major part of this garbage ends up in the oceans. NGO Oceana estimates that **Brazil dumps at least 325,000 tons of non-biodegradable plastic into the oceans every year.**

Once discarded, plastic turns into microplastics that affect the entire marine ecosystem. “In Brazil, more than 3,700 animals that ingested plastic waste have already been necropsied. One in ten animals that ingest plastic dies”, says the report [A Plastic-Free Ocean](#) .



We are already eating plastic and it causes harm to our health. The chemical substances present in plastic and its composition have already been associated with the emergence of diseases such as cancer and diabetes, in addition to malformations in fetuses.



A [study published in the Environmental Science and Technology journal](#) [↗](#) indicates that **humans consume 39,000 to 52,000 microplastic particles per year**. If we take into consideration that microplastics can also be inhaled, this number increases to 74,000.



Another study from the [University of Wageningen](#) [↗](#), (Netherlands) shows that the daily intake of microplastic fragments, hidden in the food diet of adults and children, can reach 100,000 units. **Throughout an entire year, that would be the equivalent to the microplastic fragments present in a credit card.**

# PLASTIC IN THE FINANCIAL SYSTEM

The financial system is becoming more and more advanced, but despite all technologies available, plenty of plastic is still in circulation. According to a survey carried out by Statista, a global provider of market and consumer data, [the number of credit, debit and prepaid cards in circulation worldwide will reach nearly 30 billion by 2023](#) [↗](#).

With estimates based on data from Brazil's Central Bank, around **450 million credit and debit cards and 95 million payment machines were produced in the past 10 years**. This represents a plastic volume of more than 15,000 tons.





According to a survey carried out by Serasa across the country, approximately 70% of Brazilians who use a credit card have three or more cards. Not to mention all the other cards that a person has, such as bus ticket, health plan, cell phone chip and so on. If we take all these types of cards into consideration, the numbers would surpass billions. However, we will only focus on payments market impacts throughout this report.

The trend is that these impressive numbers will continue to grow as more people get access to the banking system. In 2022, Brazil recorded the opening of more than 3.8 million companies, according to the Map of Companies<sup>(1)</sup>. That same year, more than 20 million payment machines were distributed in Brazil, an increase of 494% compared to the total amount in 2012.



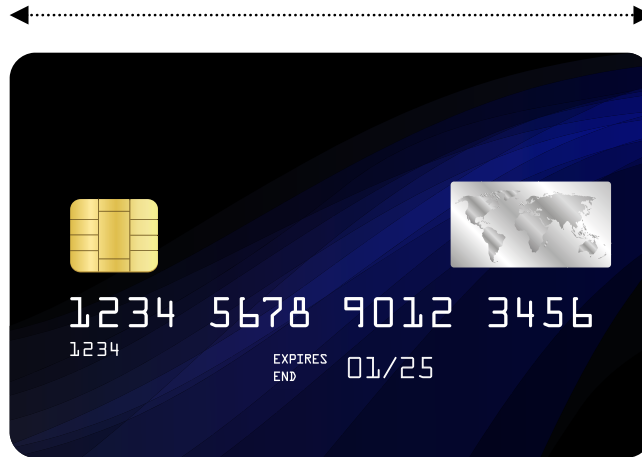
Made of PVC plastic, each bank card or payment machine discarded in the environment can take about 600 years to decompose. That's what experts estimate, but the real time could be much longer. The natural degradation of plastic has never been observed since this type of material began to be produced in the nineteenth century. In other words, almost every plastic material that has ever been produced by the world's industry is out there somewhere, whether in a product stored in a closet, in a landfill, in the sea or in the stomach of an animal. Or even after being transformed into microplastic, it can be found in our own body, as it is mixed in sand, water, breast milk, and in the tissue of plants or animals we eat.

*(1) The Map of Companies is prepared by the Ministry of Development, Industry, Trade and Services (Ministério do Desenvolvimento, Indústria e Comércio - MDIC) in partnership with the Federal Data Processing Service (Serviço Federal de Processamento de Dados - Serpro).*

## MONEY WITH NO PLASTIC

Furthermore, each bank card produced implies at least the use of paper and/or plastic packaging, carbon emissions during transportation and who knows how many paper invoices were printed after delivery.

The weather damage is huge for just  
a plastic card about 8.5cm long



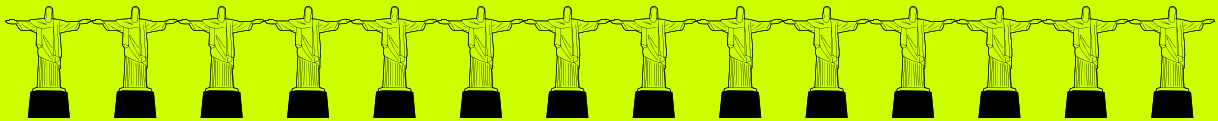
The payment machines used to read cards have an even greater environmental impact. They have other chemical components, such as battery and plates, classified as electronic waste. Considering the 95 million devices distributed in the last ten years in Brazil, there are more than 28,000 tons of electronic waste. When discarded and handled incorrectly, these materials are harmful to the environment because they can contaminate the soil and watercourse. **Brazil is the 5th largest producer of electronic waste worldwide and produces 2 million tons of this material per year**, according to the United Nations University. According to the survey, only 3% of this waste is recycled.



## THE DIMENSION OF THE PROBLEM

# 15,900

tons of plastic generated in the production of 450 million bank cards and 95 million payment machines in the last ten years\*. This weight corresponds to **14 times** the weight of Christ the Redeemer\*\*



\* Considering the average weight being 5g for credit cards and 140g for payment machines.

\*\* The weight of "Christ the Redeemer" is 1,145 tons, according to the Rio de Janeiro's City Hall



### ONE LAP AROUND THE EARTH

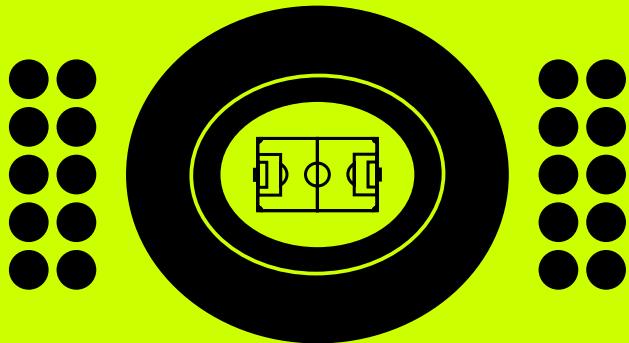
Lined up, the bank cards produced would be able to complete a little more than one lap around our planet on the Equator

\* The average circumference around the Earth at the Equator is approximately 40,075 kilometers \*\* The total number of bank cards plus the total number of payment machines multiplied by their respective sizes (cards: 8.5 cm/devices: 16 cm) is equivalent to 53,450 km

# 20

## MARACANÃ STADIUMS

The area occupied by bank cards and payment machines produced in the last 10 years is equivalent to 20 times that of the Jornalista Mário Filho Stadium, known as "Maracanã"



\* Area occupied by bank cards (approximately) = 450 million x 46 cm<sup>2</sup> = 2.07 km<sup>2</sup>

\* Area occupied by payment machines (approximately) = 95 million x 125 cm<sup>2</sup> = 1.1 km<sup>2</sup>

\* Total area, considering cards plus devices (approximately) = 3km<sup>2</sup> or 3,000,000 m<sup>2</sup>

\*This area is equivalent to 20 Maracanã stadiums, as the total area occupied by the stadium is approximately 147,000 m<sup>2</sup>

\*Every disclosed information on Maracanã Stadium was taken from the city of Rio de Janeiro's website: <http://www.riocidademaravilhosa.com.br/oquefazer/turistico/maracana/>



# THE RECYCLING CHALLENGE

The selective waste collection and recycling of plastic are crucial strategies on solid waste management around the world, but they still face many challenges and are not able to solve the problem by themselves. First of all, for any plastic to be considered recyclable, it needs to be disposed of in a place where the waste can be collected, sorted and reprocessed, in order to transform it into another product. In Brazil, several locations lack appropriate infrastructure such as sorting and recycling facilities, efficient waste collection systems and consumer awareness.

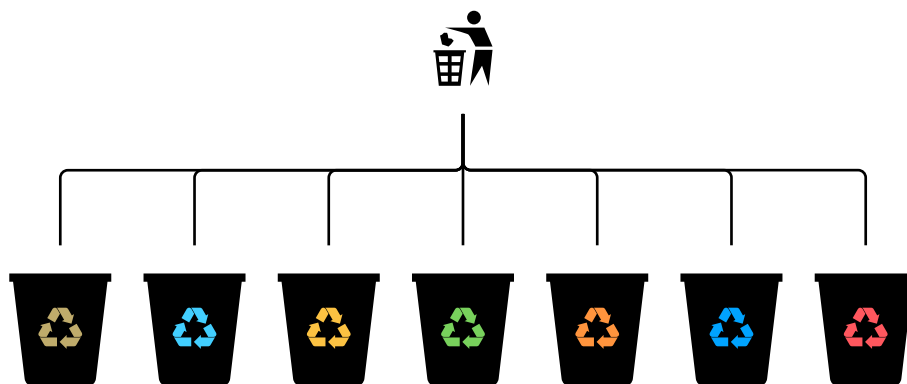


Despite the relevance of the work of waste pickers, they face significant challenges such as precarious working conditions, exposure to hazardous materials, social exclusion, and lack of legal recognition, economies of scale and capacity to process complex materials (e.g. electronic waste).

Plastics are difficult to recycle for several reasons. One is the diversity of types, which means that not all plastics can be mixed and processed together. For plastics produced with other materials, the process can be even more complex. Overall, recycling is expensive and requires advanced technologies, which makes the cost-effectiveness to be less attractive, especially since the market demand for recycled plastic is still low in relation to the amount of material that is discarded (a brand-new product is cheaper in several cases).

**“Collecting recyclable materials or sending them for recycling is not enough to stop this flow of pollution. The amount of plastics has to be reduced at the sources. Companies need to step up and take on their role in this vital cycle, to reduce the amount of disposable plastics by offering plastic-free options to their customers.”**

#### A Plastic-free Ocean, Oceana



When it comes to credit cards or payment machines, the recycling rate in Brazil is still very low and the price of recycled material is higher, thus making its implementation a lot more challenging in the market.



Bank card disposal still faces another problem: fear and lack of information. People still believe that by using the appropriate disposal their data may be exposed, which leads them to dispose of it incorrectly

As being aware of the problem, some initiatives are emerging to encourage the collection and proper disposal of both bank cards and payment machines already produced. However, we just need to remember the number of new cards that are still produced in Brazil to understand that initiatives like this are not enough to solve the problem. They help to deal with the plastics available now.

Although the only way to avoid the damage caused by plastic waste is to eliminate its use whenever possible, as in bank cards. One of the challenges in order to solve environmental problems is the need to change people's lifestyle by reducing a few conveniences of modern life. Fortunately, that is not the case. Initiatives to get rid of plastic and electronic waste increase at the same pace as our convenience.

***“Today we have an international debate sponsored by the United Nations, which has been working on a global treaty against plastic pollution, and it is a consensus that plastic that can be avoided, should be avoided. Therefore, we must optimize our methods of production and consumption to avoid plastics that can be replaced by other materials that do not impact the environment. In the case of credit and debit cards, for example, we already have the technology to stop using them. Any alternative that avoids their production is very welcome”***

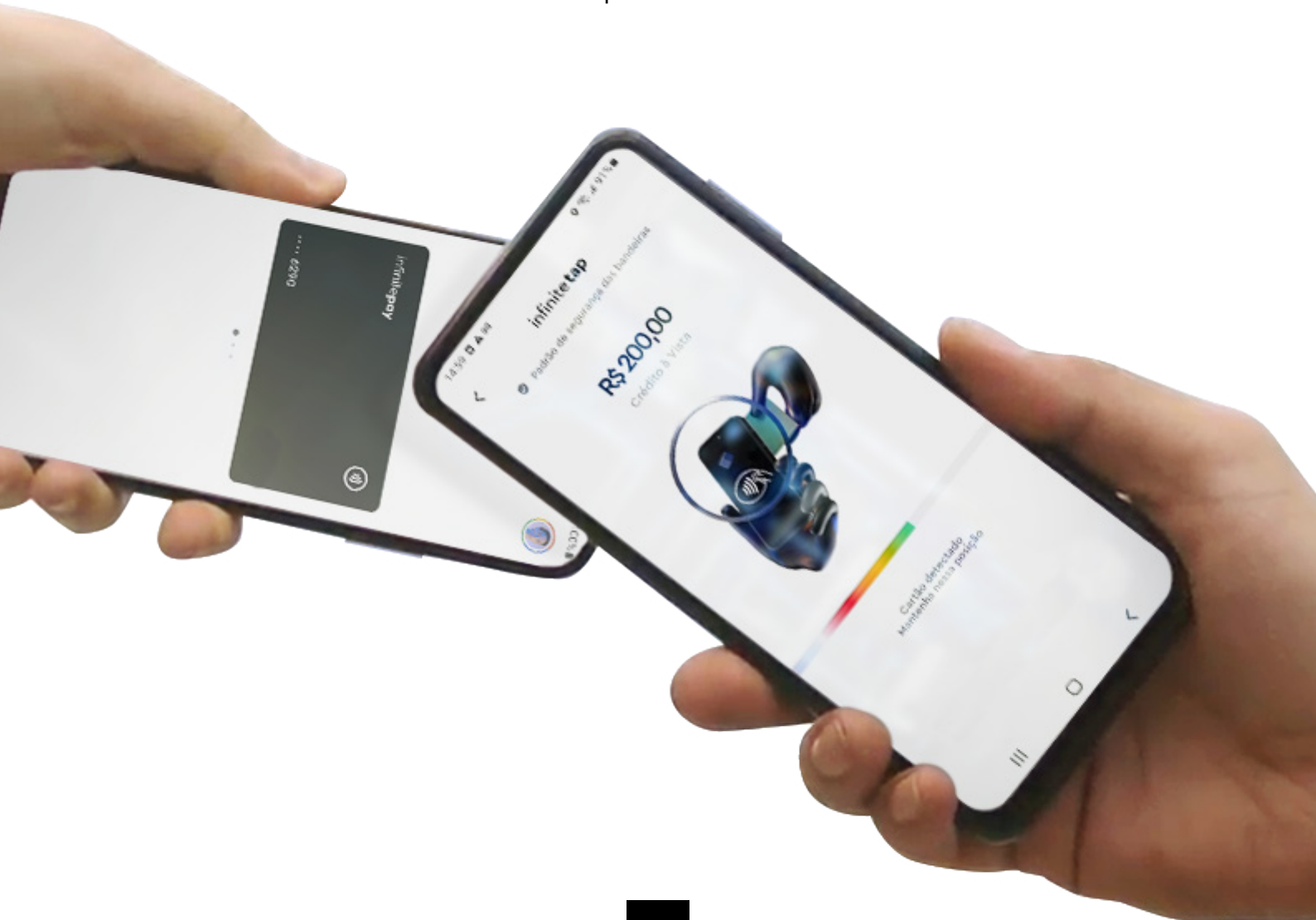
Walter Waldman, researcher in the area of microplastics and professor at the Department of Physics, Chemistry and Mathematics at the Center for Science and Technology for Sustainability at the Federal University of São Carlos (UFSCAR), Sorocaba campus




# HOW CAN WE HAVE A “CLEANER” MONEY?

**Gradually eliminating payment machines and bank cards should be one of the milestones of the main technological revolution underway in Brazil’s payment market.**

The “Tap to Pay” solutions allow smartphones to receive payments through NFC technology, eliminating the payment machines during the process. In addition, it is already possible to access a digital card, which allows you to buy and pay for purchases 100% digitally, without any use of plastic. According to the latest report by UBS Investment Bank, this system is gaining a prominent position among small and medium-sized companies in Brazil.



Brazilians are willing to adopt these technologies - they just need to be accessible. In 2022, approximation payments, a new feature that arrived in our market not long ago, grew 187%, according to the Brazilian Association of Credit Card and Services Companies (*Associação Brasileira das Empresas de Cartões de Crédito e Serviços – Abecs*), reaching R\$ 572.4 billion. Even for on-site purchases, more than 40% of payments were made using cards and other approximation devices. For 2023, the association is expecting that payments made by these technologies will reach 60%. Among the proposals of the report [Turning the tap: how the world can end plastic pollution and create a circular economy](#) , launched by the United Nations Environment Programme (UNEP), is the decrease (or elimination) of problematic and unnecessary plastic uses. The payment machines and bank cards can be faced as unnecessary plastic, since technology already allows the same services to be provided without the use of these materials.



Environmental sustainability is still in its early stages of development for the payments sector, but we are facing a great opportunity to decouple money from plastic.

**IT'S TIME TO TAKE ADVANTAGE OF IT!**



**O MUNDO**<sup>®</sup>  
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