

**MÉXICO
CITY**

**CLEAN
ENERGY
CHALLENGE**

**WHAT
DESIGN
CAN DO**

MEXICO CITY BRIEFING PACK

GLOBAL PARTNER

IKEA Foundation


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STARTUP
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THE GLOBAL CHALLENGE



WHAT DESIGN CAN DO TO PROVIDE CLEAN ENERGY FOR ALL

Fossil fuels are the biggest cause of climate change and are still our primary source of energy. Cities consume over two-thirds of the world's energy and contribute to more than 70% of global CO2 emissions. That's why What Design Can Do is focussing its second Climate Action Challenge on urban energy issues. Together with IKEA Foundation and many local partners we invite designers and creative entrepreneurs to rethink how we produce, distribute and use energy in our cities. Globally, carbon footprints could be further cut by favouring other forms of clean transport powered by and for people: walking, cycling and mass transit.

Everyone in the world should have access to enough energy to live a comfortable life, with access to clean water, nutritious food, shelter, healthcare, education and economic opportunities.

Many in the world have this, but at the cost of the climate. We need to end our reliance on fossil fuels, while also ending energy poverty by providing access to reliable and affordable energy to everyone.

To achieve this, we need to generate more energy overall, and it needs to be clean and green – meaning, renewable, passive, kinetic, anything but fossil fuels. We will also need to use energy more wisely: more efficiently, and with less waste. We have to think differently about how we source our energy and how we use it.

FIVE CITIES CHALLENGE YOU!



Cities, home to more than 50 percent of the global population, consume the majority of the global primary energy supply – and a lot of that still comes from fossil fuels. At the same time, cities emit 70 percent of the world's carbon—and that's likely even more when consumption-based emissions are accounted for.

Cities therefore offer a huge opportunity to transform the way we generate and use energy: to end dependence on fossil fuels, radically expand usage of renewable energy, conserve energy and secure clean energy for all.

We have worked closely with researchers, experts and designers in 5 globally influential cities to craft locally specific challenges informed by real stories, global key issues and local design capacity.

Across São Paulo, Mexico City, Delhi, Nairobi and Amsterdam we found that key elements of sustainable urban energy systems include clean and energy efficient transportation, waste management, building practices, food supply chains and public spaces.

We would like to mobilise the power of both local and global creative communities to take on the challenges in these 5 cities. Designers and creative thinkers from all over the world are encouraged to apply. So even if you don't live in one of the 5 cities, you can still make a difference!

THE DESIGN BRIEF

HOW CAN WE ENCOURAGE PEOPLE TO TREAT WASTE AS A RESOURCE IN HOMES AND WORKPLACES ACROSS MEXICO CITY?

Mexico City, an enormous sprawling city, has struggled with waste for many years. With the closure of its largest landfill, and new initiatives to promote recycling and waste-to-energy solutions, Mexico City is now in a position to be an example for the region. But behaviours and mindsets still have a long way to go. And there is lots that design can do here.

Building on political momentum from above and grassroots efforts from below, we are calling on designers to use their creative problem-solving skills to imagine new narratives, services, products, spaces and systems to encourage cleaner and greener waste handling behaviours across Mexico City.



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GLOBAL WASTE MANAGEMENT ISSUES



Every year, an estimated 1.3 billion tonnes of solid waste is collected worldwide. It takes a lot of energy to manufacture, transport and dispose of goods and the waste that these become. Decay of organic waste also emits methane, which contributes 5% of global greenhouse gas emissions. While it is possible for waste to be transformed into energy or resources, cities are struggling to effectively achieve this.

Population growth and increasing consumption mean cities are suffering from a worsening waste problem. With the amount of global municipal solid waste expected to rise to 2.2 billion tonnes by 2025, cities must think more wisely and creatively about how waste is produced, managed and transformed.

MEXICO CITY'S WASTE PROBLEM



Mexico City generates 12,920 tonnes of garbage every day, enough to fill the Azteca Stadium, the largest in the country. Half of this waste is produced in homes and almost 90% ends up in sanitary landfills, severely impacting the health of the people and the environment in the city and the region. Landfills also emit methane, a potent greenhouse gas, accounting for 5% of global emissions.

All this waste represents wasted energy: in a linear system, valuable resources are literally thrown away, causing more energy to be expended to extract or cultivate raw materials, manufacture and process these and transport, store and deliver them to consumers. Things that are thrown away after not being consumed or used (such as rotten food), or single-use disposable items such as plastic plates and food trays, also represent a waste of energy.

Mexico City is making an effort to recycle more. To that end, it closed its biggest landfill site, Bordo Poniente, in 2011. But doing so caused chaos, with waste piling up at illegal dump sites and on the streets, revealing the extent of disorganisation within the current waste system.

Waste collection is a system that emits a lot of greenhouse gases by itself: 2,400 diesel-powered garbage trucks circulate the city every day, collecting four tonnes of waste daily. The vehicle fleet is inefficient and obsolete: 70% are more than 15 years old.

MEXICO CITY'S WASTE PROBLEM

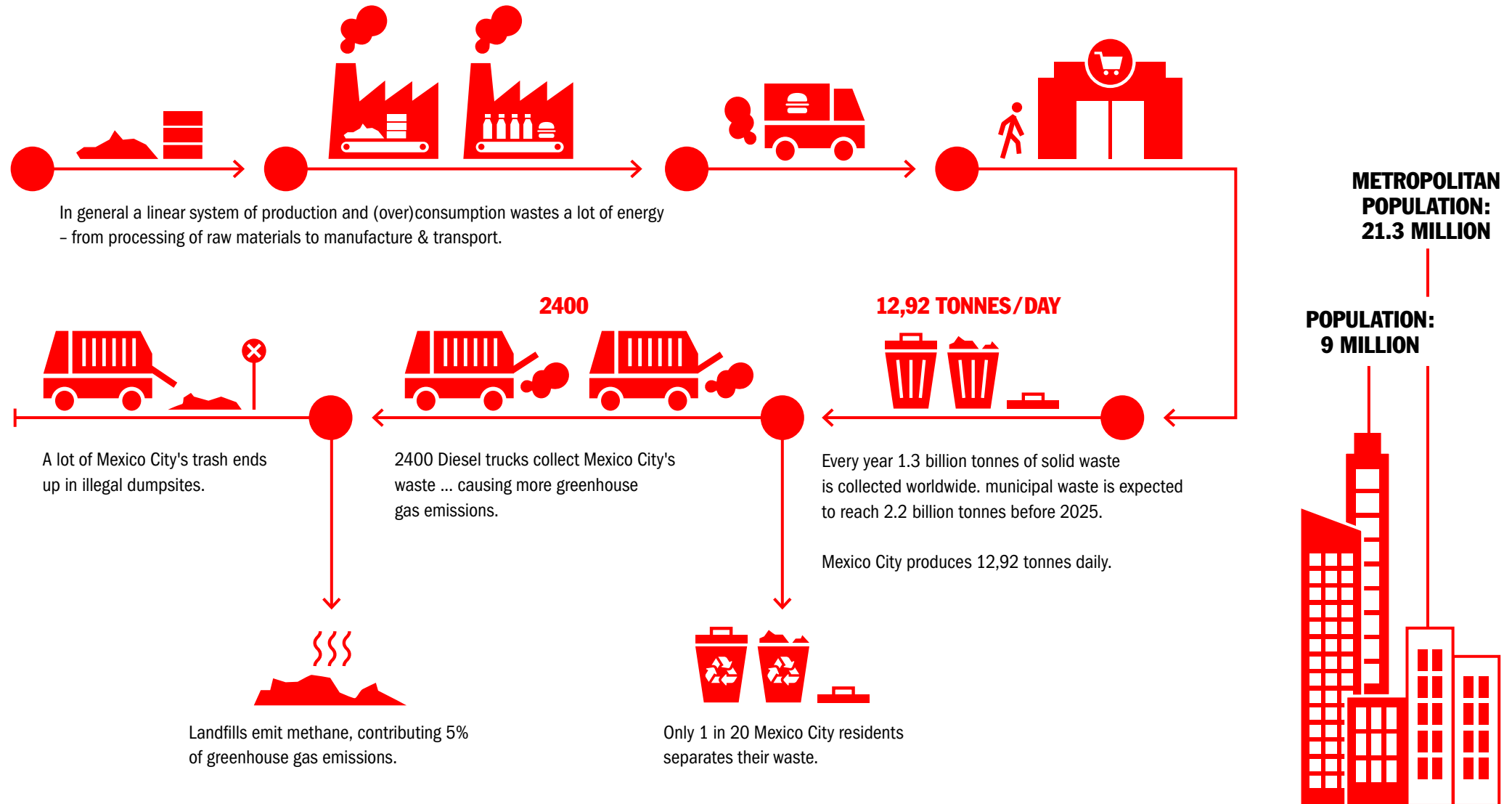


The 'official' system relies on some 10,000 'volunteers', who receive tips from people to take their garbage away and who sell on the recyclables they pick out of the waste. Thousands of waste-pickers, known as *pepenadores*, make a living from picking through the waste in the city. The closure of dumps with the aim of shifting towards more recycling impacted these waste-pickers' livelihoods. In 2016, Mexico City's Human Rights Commission officially recognised the right of informal waste-pickers to decent work.

It's important that residents understand why they are sorting their rubbish, and how to do this properly. This ensures that clean materials can be recycled and that remaining, non recyclable waste can be turned into energy.

But only one in 20 citizens currently separates their waste, with only 300 tons being recycled. Few public spaces have the three bins needed for the new separation system: green for organic, gray for recyclable inorganic and orange for non-recyclable. As much as 43% of waste is organic, and this contaminates the rest of the waste and emits more methane as it rots. Despite a new waste separation law, and fresh investment in new waste management infrastructure, household behaviours around recycling and reusing still lag behind. As a result, a lot of poorly sorted waste, underutilised waste, and most detrimentally, excessive waste remains. A lot still needs to be done to change mindsets and behaviours.

MEXICO CITY CLIMATE /WASTE PROBLEMS



A large pile of garbage, primarily plastic bottles and other debris, is contained within a metal cage structure. The cage is made of dark metal bars and is filled with a dense mass of colorful plastic waste. A large, crumpled white tarp is draped over the top of the cage, partially obscuring the sky. The scene is set outdoors under a clear blue sky.

**MEXICO CITY GENERATES
12,000 TONS OF GARBAGE EVERY DAY –
ENOUGH TO FILL THE AZTECA STADIUM,
THE LARGEST IN THE COUNTRY.**

PHOTO: EDDY GALEOTTI / SHUTTERSTOCK.COM

WHERE DESIGN CAN MAKE A DIFFERENCE



Mexico City ranks as the second biggest producer of waste among the world's megacities, with 12,920 tonnes produced daily, mostly from households. A lot of this ends up in illegal dump sites. A new garbage separation law is a step in the right direction, but it's small-scale and too many people still do not know which bins items should go into. Others, ignorant of the consequences of their actions, do not respect the system at all and simply throw their garbage onto the streets.

Consider how you could improve household attitudes and behaviours towards recycling and reuse. Think about how waste can be transformed to help people to see waste as a valuable resource, rather than simply trash. For example, look at how it can be converted into energy.



Rethink how waste is collected and transported: can it be localised to neighbourhoods, rather than city-wide? And explore how overall waste can be reduced through campaigns, products or services.

WHERE DESIGN CAN MAKE A DIFFERENCE



A COMMUNICATION CAMPAIGN THAT INCENTIVISES PEOPLE TO SORT THEIR WASTE AND HELP THEM UNDERSTAND WHAT HAPPENS TO IT

Imagine ways to motivate people to embrace the new waste separation system and help them feel a sense of ownership and duty in the grander scheme of waste.



A SYSTEM OR SERVICE THAT REDUCES THE AMOUNT OF WASTE CREATED

Think about how to encourage people to consume less stuff and recycle and reuse things they no longer want or need.



WASTE-TO-ENERGY PRODUCTS, SERVICES, SPACES AND SYSTEMS MANAGED AT STREET OR NEIGHBOURHOOD LEVEL

Consider creative ways to conveniently convert waste to energy in schools, offices, neighbourhoods and homes.



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A SERVICE, SYSTEM OR SPACE THAT CAN CONNECT URBAN ORGANIC WASTE TO URBAN FARMING OR RURAL AGRICULTURE

Explore supply and demand of organic waste and imagine a solution that connects the dots and promotes composting.



A SERVICE OR SYSTEM THAT CONNECTS CONSUMERS WITH INDUSTRY TO DRIVE THE CREATION OF A FULLY CIRCULAR ECONOMY

Rethink ways in which consumers can better understand the life cycles of their products to inspire them to play a role in the circular economy.



A SERVICE OR SPACE THAT BETTER CONNECTS THE INFORMAL SERVICE PROVIDERS (E.G. PEPENADORES AND TRABAJADORES VOLUNTARIOS) TO GREEN WASTE COLLECTION AND SORTING

Consider the integral role that informal workers play in clean waste management and how they can be more formally involved and recognised in a zero waste future.




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“MANY PEOPLE ARE RESPONDING BECAUSE THEY WANT TO HELP REDUCE POLLUTANTS, BUT THERE ARE STILL PEOPLE WHO DO NOT; THAT IS WHY WE HAVE TO CREATE CAMPAIGNS SO THAT THEY HAVE THE AWARENESS TO SEPARATE THEIR GARBAGE.”

**– JAIME SLOMIANSKI,
DIRECTOR OF THE AGENCY DE GESTIÓN URBANA
(AGENCY OF URBAN MANAGEMENT)**

WHAT'S BEING DONE



Mexico City is keen to show that it is committed to managing waste better, announcing its 'Basura Cero', or 'Zero Waste' plan in 2017. In the first year of this plan, the city recycled 119 thousand tonnes of organic material, and prevented 241,000 tonnes from going to landfill.

The city is pursuing two technologies to deal with its waste: bio waste management, and thermovaluation, which transforms organic waste into energy.

In April 2017, Mexico City's mayor awarded a contract to French company Veolia to build a thermal waste treatment plant that will handle 4,600 tonnes of solid waste daily to generate electricity to power 12 lines of the city's metro system. This will save 1 million tonnes of carbon emissions, equivalent to the emissions from 500 minibuses circulating in the city.

And in September 2017, mayor Miguel Angel Mancera announced a project to build a thermovaluation plant to decompose organic waste and transform it into electricity.

For citizens, a new federal district environmental standard orders waste to be separated into four types: organic waste; inorganic recyclable and non-recyclable; special handling and bulky. And the federal district has also set up Reciclatrón, a centre to recycle electronic waste.

The Ministry of the Environment has also set up the Mercado de Trueque or 'barter market': once a month, citizens can exchange their household waste for agricultural products. In the past five years, more than 1,000 tonnes of recyclable inorganic waste has been collected, with more than 220,000 people taking part.

Orgánicos



Inorgánicos



**“THE SEPARATION OF SOLID WASTE IS
SEEN AS AN ACTION OF CULTURAL HABITS,
ENVIRONMENTAL AWARENESS AND CO-
RESPONSIBILITY BETWEEN GOVERNMENT,
COMMERCE, BUSINESSES AND CITIZENS.”**

**– TANYA MÜLLER,
SECRETARY OF THE ENVIRONMENT OF MEXICO**

GET INSPIRED



LEARN FROM SOME INSPIRING LOCAL AND GLOBAL INNOVATORS WHO HAVE USED THE POWER OF DESIGN AND CREATIVITY TO ENCOURAGE CLEAN AND GREEN WASTE HANDLING BEHAVIOURS IN HOMES AND WORKPLACES

SYSTEMS TO INCENTIVISE RECYCLING AND COMPOSTING

- Mercado de Trueque: Residents who bring along recyclable waste can exchange it for vouchers (“puntos verdes”, or “green points”) that can be spent at nearby farmers’ markets.
- In Seattle, those who refuse to separate their garbage will find their bins tagged with a red sign for all to see in Seattle. The hope is that the tags will help serve as both a warning as well as an incentive to make composting a habit.
- Zero Waste Lab: a small lab in Amsterdam where residents can exchange household waste for vouchers that can be exchanged for goods or discounts in local stores.

SYSTEMS TO INCENTIVISE RECYCLING AND COMPOSTING

- The EVOBIN: An interactive system that shows users how to sort their waste.
- Gomi Guides (Recycle Guides in Japan) are comprehensive booklets that detail what goes in which bin across Japanese towns and cities.
- RUBICONconnect – the mobile and desktop application that allows you to set up direct payment, understand your waste and recycling collection schedule and the composition of your trash.



PHOTO: DAVE HAKKENS, PRECIOUS PLASTIC, INDONESIA, 2013

PRODUCTS AND SYSTEMS THAT HELP GIVE WASTE A NEW LIFE

- Precious Plastic is an open-source design machine to recycle plastic on-site and create new products from it.
- Basura Cero is an organisation that makes recyclable goods out of waste.

GRASSROOTS BEHAVIOUR CHANGE INITIATIVES

- Composta São Paulo, a civil society initiative, championed by the City, which initially distributed two thousand compost bins to households. This is then collected and organic waste is turned into compost and can be placed in yards, service stations, garages and even kitchens.
- Taipei has designed a waste management culture using mobile apps, which let users track waste trucks and alert them whenever one is nearby. Everyone is responsible for throwing their own waste into the truck, so everything has to be accounted for by the person who consumed it.



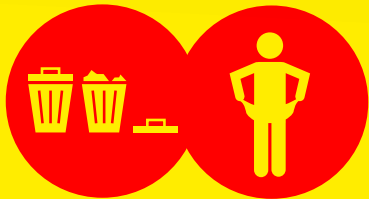
PHOTO: ZERO WASTE LAB

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MAKE IT FAIR

Mexico City is an unequal city. Those disproportionately affected by waste problems are the *pepenadores* (waste-pickers) and volunteer waste workers. Those who live in a low-income neighbourhood will also suffer from waste on the street more than those in a high-income area.

Private services such as Uber have popped up to fill the gaps left by inadequate public infrastructure. But these are not accessible to everyone (partly because of their cost). Be careful when designing to not design only for people of a certain class. If you're aiming to change behaviour, try to think about what would motivate and incentivise all kinds of people across the whole of the society. Likewise, when thinking about how to transform trash, try to ensure that the costs of doing so (e.g. trash infrastructure) doesn't become an eyesore or a burden for poorer neighbourhoods to shoulder. And try to ensure that the benefits of such a scheme are spread across society.



THINK LOCAL

Mexico City has just voted in a new government and is still waiting to see what will happen, following an administration and mayor who were very committed to tackling the problem of waste. It can be problematic working with local government, as the administration changes every six years. Funding and support for projects can then stop.

Because of the many vested interests in Mexico's waste management system, including informal labourers, the current problems can be hard to solve. Luckily, Mexico City has a powerful civil society, as shown during the earthquake last year. Social media is also a particularly powerful mobilising force in this city. How can we leverage a strong civil society and bustling social media culture to make sure design concepts create a bigger impact in tackling the waste problems of Mexico City?

DIVE DEEPER



- **TRABAJO SUCIO (SP)**

An article highlighting the role of the thousands of volunteer waste collectors in Mexico City's waste management

- **WHICH IS THE WORLD'S MOST WASTEFUL CITY? (EN)**

An article by the Guardian outlining the cities around the world that struggle most with waste.

- **EL RECICLAJE, UNA OPORTUNIDAD QUE MÉXICO SIGUE DESPERDICIANDO (SP)**

An article about the confusion caused by the new recycling laws in 2017.

- **AGENCY DE GESTIÓN URBANA**

The official website for the Agency of Urban Management in Mexico City, which is in charge of municipal waste management.

- **LABORATORIO PARA LA CIUDAD**

An experimental lab that tries to find provocative ways of thinking about and creating urban life in Mexico City.

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WHATDESIGNCANDO.COM/CHALLENGE

DEADLINE FOR SUBMISSIONS:
15 NOVEMBER 2018



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