CURRENT SITUATION IN TOKYO
A BRIEF SUMMARY OF TOKYO’S WASTE SITUATION

CURRENT SITUATION

MEGA-CITY, MEGA-CONSUMPTION

Tokyo is a global megacity with an area that covers some 2,194 km² and houses 14 million residents, making it the largest city in the world in terms of population. The central area of the 23 wards (districts) spreads over 627 km² and houses over 9 million residents, making it a highly dense area comparable to New York City and Paris.

The urban setting contributes to a high amount of consumption and waste. The 23 wards generate a total of around 3 million tonnes of municipal solid waste each year. This amounts to about 7.4 Tokyo Domes. About 70% of this waste comes from households, while the other 30% comes from shops/offices.

Each person in Tokyo generates close to 1 kg of waste everyday. The amount of municipal solid waste in Tokyo reached its peak in 1989 at 4.9 million tonnes and has decreased to around 3 million tonnes today thanks to rising awareness and government initiatives. However, much more can be done.
A BRIEF SUMMARY OF TOKYO’S WASTE SITUATION

CURRENT SITUATION

50 YEARS LEFT?

Currently, Tokyo has only one operating landfill. The largest amount of what we dispose of at Central Breakwater Landfill is incineration residue, such as fly ash. And second to that is slag from municipal waste such as sewage sludge. Followed by non-combustibles such as metal and glass that cannot be burnt physically.

Furthermore, it has been said that this landfill will meet its capacity in around 50 years* It is important to think about waste in its pre-waste state and head towards a circular economy.

*The number of years we could use at New Sea Surface Disposal Site (Shinkaimen Landfill Site) located outside of Central Breakwater Landfills is variable. From 2007, the volume of landfill used annually has been radically reduced, thanks to thermal recycling (turning non-burnables into burnables), the spread of categorized recycling, and making molten slag from incinerator ash. Furthermore, the space has been expanded by digging deeper into the seabed within the landfill sites. As of 2018, it is considered that we can continue to use it for ‘more than 50 years’.

WHAT DESIGN CAN DO NO WASTE CHALLENGE 2020-2021
A BRIEF SUMMARY OF TOKYO’S WASTE SITUATION

CURRENT SITUATION
IMPORTING FOOD WASTE

In Japan, it is custom to say “Itadakimasu” before eating and “Gochisosama” after eating to show your gratitude towards agricultural products and farmers. It has also historically been considered a courtesy and a virtue to finish every dish that is served at the table.

However, in reality, 1.3 billion tonnes of edible food is still wasted annually. In bustling Tokyo, industrial food waste from restaurants reaches up to 980 thousand tonnes annually, while households are responsible for 990 thousand tonnes.

Japan’s food self-sufficiency rate is approx. 66%, but if you look at Tokyo, this number drops to only 3%. There is a contradiction baked into Tokyo’s food system, where we import large amounts of food from outside the city, yet we throw them away without consuming them.

FOOD SELF-SUFFICIENCY RATE IN TOKYO

Source: Ministry of Agriculture, Forestry and Fisheries
A BRIEF SUMMARY OF TOKYO’S WASTE SITUATION

CURRENT SITUATION

MANY REASONS BEHIND TEXTILE WASTE

In Japan, 940 thousand tonnes of clothing is disposed of every year. However, it is difficult to get an accurate figure for Tokyo because textiles are often thrown away as burnable trash.

This disposal is said to occur for a combination of reasons. Some of which are short cycles of consumption and production thanks to the rise of fast fashion, a reluctance to sell or resell at lower prices to maintain brand value.

In Japan, the import penetration ratio of clothing stands at 97%. About 60% of it is from China, while the rest comes from other Asian countries such as Vietnam and Indonesia.

The import penetration ratio shows to what degree domestic demand is satisfied by imports. The domestic demand is calculated as GDP plus imports minus exports.

Source: Japan Chemical Fibers Association. Textile Handbook 2017
A BRIEF SUMMARY OF TOKYO’S WASTE SITUATION

CURRENT SITUATION

THE SECOND LARGEST CONSUMER OF PLASTIC

Japan’s domestic consumption of plastic products reaches up to 10.12 million tonnes per year. The amount of plastic packaging waste produced is second only to the United States, at a massive 35 kg per capita (2017). Until recently, most of this waste was exported to China for disposal. But since 2018, China and other Asian countries have begun to restrict imports, and waste plastic is now piling up at waste disposal plants all over Japan.

In recent years, the problem of microplastics flowing into Tokyo Bay has also emerged. There have been reports that microplastics have actually been detected in the bodies of fish swimming in Tokyo Bay. We are now faced with the difficult task of securing disposal sites while reducing consumption.

Source: Geyet, Jambeck, and Law, 2017, Report by the UN Environment Programme (Single-Use Plastics: A Roadmap for Sustainability), 2018
Global heating is caused by the collection of raw materials, the transformation of these materials into products that are used briefly and that are discarded as waste. It is important to realize that next to the production of waste and greenhouse gases, each phase uses resources like water and energy as well as land that is no longer available for biodiversity and CO2 absorption.
INSIGHT ON WASTE IN TOKYO
Designers and manufacturers respond to consumer needs that are reflected in product preferences and shopping behaviors. It is in this sense that consumers are said to vote based on what they buy.

In Tokyo, the following factors are often considered as consumer priorities:

- Convenience
- Quality
- Sanitation/Cleanliness

The preference for convenience is best exemplified by the ubiquitousness of convenience stores. For example, there are close to 8000 convenience stores in the city, that mostly operate 24/7.
LOCAL INSIGHT

FEW OPTIONS
JAPAN

There has been a departure from a more sustainable lifestyle that existed when resources were limited, especially in cities where commercialization dominates. Products and systems are not designed with reduce, reuse or recycle in mind. Instead, the 3R’s are only applicable to things that have already been deemed as “waste”.

Consumers are often not provided with sustainable, alternative choices such as plastic-free, sell-by-weight, and bring your own bottles and containers. There are minimal behavioral nudges (incentives and restrictions) to take less because waste treatment costs are externalized as pooled tax expenses.
You will find that streets in Japan are clean, even without the provision of waste bins. Public littering is illegal, and so is the disposal of large items like furniture and e-waste without registration and payment. There are numerous complex regulations on proper waste disposal for both household and industrial waste; and non-compliance may lead to heavy fines.

A national annual budget of 2 trillion yen is allocated for municipal waste treatment. Each person pays around 15,000–20,000 yen (around 150 USD) in taxes towards this every year.

In addition, Tokyo's highly sophisticated incinerators can process plastic at the expense of higher carbon dioxide emissions. This means that at home, for example, it doesn't matter how much plastic you throw away, as long as you separate it. Unfortunately, the effect is that Tokyo's 'perfect' waste management system is in fact reducing people's awareness of waste.
GET INSPIRED BY JAPANESE HERITAGE
Japan’s Edo period lasted from 1603-1868. The population of 30 million was said to be a resourceful community with the mindset of a circular society.

Back then, Japan had an active second-hand and recycling market and ecosystem. Material recycling, repair and reuse were widely practiced. This was made possible by a variety of occupations. For example, ash buyers collected ash from burned timber or waste to be used as fertilizers, fabric dyes, and for alcohol distillation.

Today, the second-hand market in Tokyo is mainly for materials like apparel, automobiles, and electronics. Are there ways for designers to activate new markets? How can designers normalize them and make them fun for consumers?
Japan is a mountainous island surrounded by seas, and has developed its own unique culture in harmony with nature. In the riverside town of Gujo Hachiman in Gifu Prefecture, people have developed a lifestyle around the domestic use of spring and mountain water. From upstream to downstream, the same water is used over and over again but for different purposes, from drinking to washing clothes. As it goes downstream, the water is eventually used for farming, and completes a cycle by returning to the same waterways. This lifestyle in balance with nature makes the cityscape beautiful, and still fascinates people today.

In present day, there are some attempts made to create new harmonies with nature using our own hands. For example, ACROS Fukuoka utilizes the latest environmental technology to recreate as natural an ecosystem as possible. The architecture incorporates the flow of time with an eye for the natural features of the area, and a design that looks to the future while matching with today.

How can we stay in harmony with nature while utilizing our unique cultural values, within the constantly developing urban landscape of Tokyo?
Japanese architecture is closely related to its culture, and often fosters the Japanese sense of rationality and beauty. The spatial characteristics of the corresponding dimensions between pillars and tatami mats developed the concept of modules unique to Japan, which can still be found as an influence in current building systems.

Igusa, the material used for tatami, has a natural ability to regulate humidity, purify the air, and eliminate odors. And, if you take care of it, you can continue to use it for more than 20 years by turning it over when the front is worn out. The idea of sustainability as we know it today was also present in ancient Japanese practices.

How can the wisdom and spirit of the past inherited in Japanese culture be applied to life today?
ReBuilding Center JAPAN collects, sorts and organizes wood, furniture and tools from home demolition projects. By “rescuing” items that have lost their place in the world, they not only reduce the cost of transporting the waste, but also reduce the environmental impact. It plays a role in passing on a culture that we are losing with the changing times and in celebrating people’s feelings for the items they owned.

Customers can buy old wood that can be used to build or remodel homes, as well as products such as upcycled furniture. There is also an opportunity to work together with them as supporters and to meet like-minded people.

How can we design a circular marketplace that values old things and makes things last longer?
Even small actions can have a big effect and eventually lead to a movement. The group mentality that is unique to Japanese people has an aspect of valuing collective effort towards one cause, which could help to raise awareness.

**PIRIKA** is a smartphone app that helps you keep a log of the litter that you pick up on the street. In real-time, it visualizes the total amount of trash being collected by do-gooders around the world.

How can we share the interests and actions towards environment of each of us with others and design a system that can change the world?
WHERE DESIGN CAN MAKE A DIFFERENCE IN TOKYO
TOWARDS A JUST AND CIRCULAR ECONOMY

To bend the line, we must focus on where it matters most.

We have to go beyond the current ‘take–make–waste’ system of the linear economy and aim for circular economies for all. We need to consume less, we must design out waste, and make products and materials that regenerate natural systems and that are kept in use. Sustainable living must become much more inclusive and diverse to be accessible to all.

Stabilising landfills (i.e. filtering out unsuitable waste and preventing the release of greenhouse gases) and recovering materials help, but they are not ideal long-term strategies. Reducing the waste that ends up in landfill should be the priority. Recycling and composting are more helpful but should still be limited, because they often destroy some value or lower the quality of resources. Re-using products and reducing waste should be prioritized when managing waste.

While eliminating and preventing the creation of waste is the ideal, we do not want to be rigid idealists. While we focus on rethinking and redesigning the entire system over the long term, we can also make an immediate impact by reducing waste and reusing stuff. Of course, better recycling and composting methods will still be needed.
How can we use natural resources that are available in Japan more wisely and consume mindfully? We have highlighted some key opportunities, but there are plenty more! Refer to the global brief for further inspiration.

Convenience, perfection, standardization, and high sanitary standards are current consumption and production priorities that result in extensive packaging. How can we create new incentives for consumers and producers to use less packaging materials?

Japan ranks 2nd globally for the volume of single-use plastic waste per person. How can we boost the demand for plastic-free products?

Tokyo is known to have many single households and a declining sense of community. How can we design and promote ways of sharing that are convenient and attractive to single households?
How can we make products and materials that are kept in use or regenerate natural systems? Would it be possible to find a hint for new design from the variety of characteristics found in Japanese traditional culture? We have highlighted some key opportunities, but there are plenty more! Refer to the global brief for further inspiration.

**MAKE BETTER OPPORTUNITIES FOR DESIGN**

Furoshiki, the traditional wrapping cloth that is used to wrap clothing, goods, and gifts is a widely used, multi-purpose item. How can we design products that are similarly multi-functional, reusable and aesthetically pleasing?

In Japan, there are traditional crafts that inherit both functionality and beauty, which are made out of local, natural resources. Each item is made by artisans’ hands with sophisticated skills. How can we rethink traditional crafts and develop them to create additional value?

Japan has a strong tradition of creative design. How can we make products that can be dissected into modules or smaller units that can be repaired or replaced?
WASTE NOTHING
OPPORTUNITIES FOR DESIGN

How can we dispose of goods more responsibly and treat waste as a resource? We have highlighted some key opportunities, but there are plenty more! Refer to the global brief for further inspiration.

HANDLE SMARTER

- Single-use packaging and products flow quickly and efficiently to waste facilities in Tokyo. How might we create opportunities for items to be redirected and used as a valuable resource before they are considered waste?
- In Tokyo, we have food banks, but it is not well recognized or used. How can we better utilize this resource in order to reduce food loss?
- Today, second-hand markets exist in Tokyo for materials like apparel, automobiles, and electronics. How can we activate second-hand markets for more kinds of products and materials, like plastic and building materials?
REFERENCES/LEARN MORE
To learn more, here are the main sources used for creating this briefing.

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What Design Can Do Tokyo

Related documents in Japanese can also be found at [What Design Can Do Tokyo](http://www.cjc.or.jp/) website.