

JAPAN'S PLASTIC WASTE MANAGEMENT – CHALLENGES AND POTENTIAL SOLUTIONS

Japan has the second highest plastic management index (PMI) in the world, thanks to its advanced waste management system and high levels of local cooperation. On the other hand, Japan's per capita plastic consumption is also quite high. Innovative policies, strategies, and action plans are required for Japan to promote the circulation of resources and build a sustainable lifestyle and society.

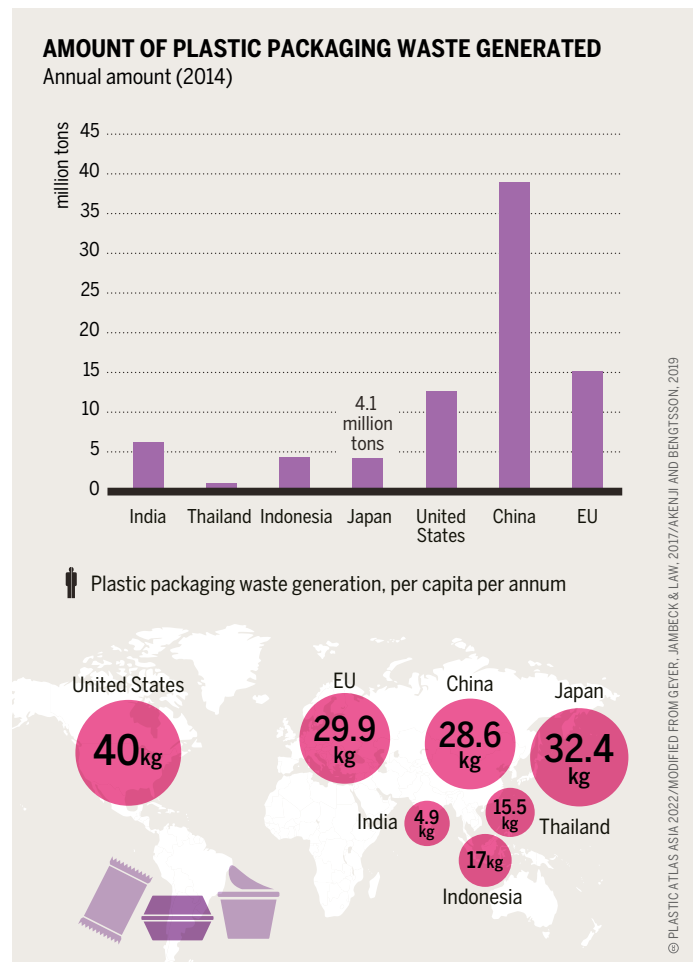
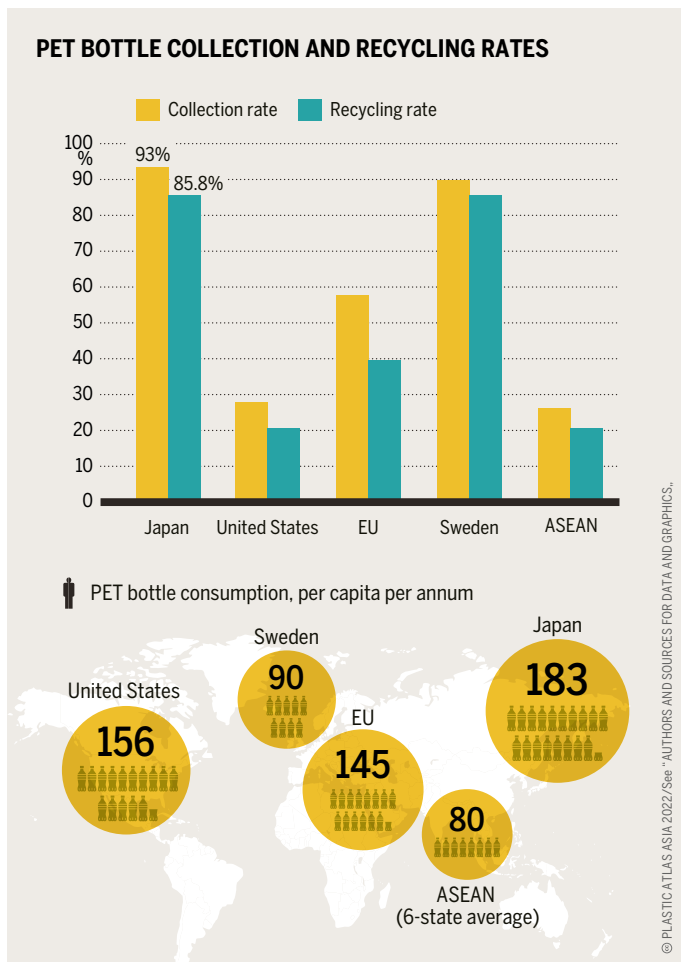
Japan has a cutting-edge plastic waste management system, advanced infrastructure, and various other technologies and policies for recycling and waste processing, not to mention a proactive system of cooperation with citizens and companies. According to the plastic management index (PMI), a metric for comparing countries' performances on plastic waste management from various angles, Japan is ranked second after Germany out of 25 countries. Moreover, Japan is among the top countries in the world when it comes to managing PET bottles,

with a collection rate of 93% and a recycling rate of 85.8% (as of 2019). As for collection channels, 46% rely on local governments and organizations, while 54% rely on businesses, including PET bottle-specific trash cans installed beside vending machines and other collection boxes.

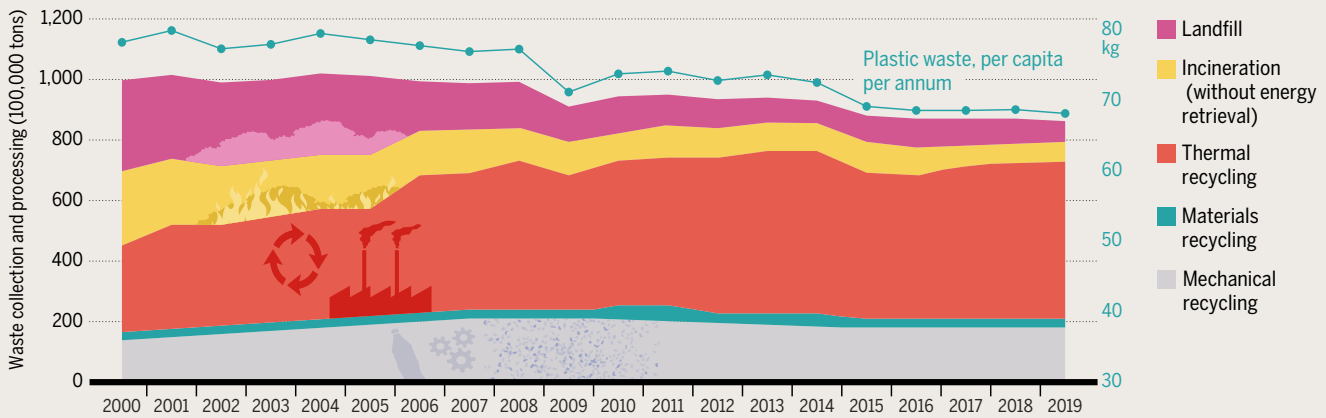
However, waste management policies and their implementation are not sufficient for addressing the global marine plastic pollution crisis. Over the past few years, the amount of plastic waste among general waste has been rising in Japan, reaching 4.1 million tons in 2019. More than three-quarters (77.2%) of this figure consist of single-use containers and packaging. Indeed, in terms of per capita plastic packaging waste emissions, Japan ranks second in the world after the United States, making it the largest emitter in Asia. The average Japanese person uses around 450 plastic shopping bags per year, an astounding figure which is 11 times higher than Indonesia and 17 times higher than the United Kingdom. Moreover, Japanese people buy 183 PET bottles annually on average, which adds up to a nationwide figure of 23.2 billion bottles per year.

Japan's PET bottle recycling rates are among the highest in the world. Per capita consumption is also high.

Japan has the second-highest plastic waste emissions per person in the world.



SECULAR CHANGE IN PLASTIC WASTE PROCESSING METHODS IN JAPAN.



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Incineration is the most common processing method in Japan. Only about 20% gets recycled.

The most common method for disposing plastic waste in Japan is through *incineration*. Only 22% of the collected plastic waste becomes mechanically or materially recycled. This number includes both domestic recycling as well as plastic waste exports that are recycled overseas. From 1988 to 2016, Japan had the third highest rate of plastic waste exports (10.3%) in the world, just behind Hong Kong (26.1%) and the United States (12.4%). 70% of these exports were shipped to China. In 2018, however, China banned the importation of plastic waste, with Indonesia, Vietnam, Thailand, Malaysia, and other Southeast Asian countries following suit. This led to a need for Japan to expand its domestic recycling market. In response to this increase in demand, recycling companies have provided additional funding for investment in facilities. For example, Daiei Kankyo, a recycling corporation headquartered in Kobe, invested JPY 1.5 billion in 2020 for plant construction in Osaka, while Japan Environment PLANning (JPLAN) applied chemical recycling technologies to enhance bottle-to-bottle plants in Kawasaki City and PET-to-polyester recycling plants in Kitakyushu City. These examples illustrate the recent expansion of domestic recycling businesses in response to the increase in demand for recycling.

In 2019, the Japanese government established the Plastic Resource Circulation Strategy based on the 3Rs (reduce, reuse, and recycle) + Renewables, with the aim of transitioning to a circular economy via plastic waste management. The Strategy posits the following three milestones: i) charging fees in order to reduce single-use plastic usage; ii) enforcing waste sorting at collection and efficient resource use; and iii) promoting renewable materials, renewable resources (such as paper and bioplastic), and other alternatives to plastic. More concretely, the following ambitious goals were set forth in the Strategy: A) reduce single-use plastic emissions by 25% by 2030; B) make all plastic packaging and goods reusable or recyclable by 2025; C) reuse or recycle 60% of all plastic containers and packaging by 2030; D) reuse or recycle (or, where this is not feasible, thermally recycle) all plastic waste by 2035; E) double the use of renewable materials by 2030; and F) maximize the introduction of bioplastic (up to 2 million tons approx.) by 2030.

Moreover, local governments have begun introducing new regional policies for controlling plastic waste. For example, Kameoka City, Kyoto, became the first municipality to sign the Zero Plastic Waste Declaration ordinance, banning the provision of plastic shopping bags in retail stores. Kesen-numa City,

Miyagi, with a vibrant fishing industry, has declared to reduce its marine plastic waste emissions down to zero, establishing a detailed action plan for preventing the flow of disposed plastics into the ocean, working with citizens and private corporations.

Consumers are also becoming more aware of the plastic problem. There has been an increasing number of new civil initiatives (e.g. the 530week) and social ventures (e.g. No Plastic Japan and MyMizu), with more citizens voicing their opinions in public. Moreover, the Ministry of the Environment (MOEJ) has launched the Plastic Smart campaign to promote such initiatives on a national scale. MOEJ also established the Japan Partnership for Circular Economy (J4CE) in order to strengthen the collaboration of public and private sectors, bringing diverse stakeholders together and backing their efforts to bring about a circular economy.

In addition to these domestic efforts, Japan has also been cooperating internationally in order to overcome the issue of marine plastic pollution at both global and local levels. At the 2018 ASEAN+3 Summit, Japan announced the ASEAN+3 Marine Plastic Debris Cooperative Action Initiative, while during the G20 Summit in Osaka, it released the Osaka Blue Ocean Vision, which aims to reduce additional pollution by marine plastic debris down to zero by 2050. The Ministry of Foreign Affairs (MOFA) reaffirmed the importance of international cooperation and enhancement of the capacity of developing countries to act. In July 2021, MOFA launched the Management of wastes, Recovery of marine litter, INnovation, and Empowerment (MARINE) Initiative.

As illustrated by these examples, Japan has introduced numerous innovative policies and strategies to promote the circulation of resources and to build a sustainable society. The Japanese experience shows that building an adequate waste management system is a *sine qua non* for curbing plastic pollution. Nonetheless, this alone is not sufficient for addressing the global plastic problem. Additional actions to curb the generation of plastic waste at the initial stages of the plastic lifecycle, namely the production stage, are also crucial. In order to reach this point, governments, corporations, consumers, and other stakeholders all need to take responsibility during both production and consumption.