

How to Make a Clean City: Tokyo as a Model for Environmental Improvement -The Shared Future of Asia and Japan-

The Institute for Urban Strategies, a Japanese private think tank, publishes the Global Power City Index (GPCI) every year. The GPCI compares 48 major global cities on six functions—Economy, Research and Development, Cultural Interaction, Livability, Environment, and Accessibility. Up to the latest report in 2024, the ranking of the top five cities has remained unchanged for nine straight years, in the following order: London, New York, Tokyo, Paris, and Singapore. Among the six functions, Asian cities tend to fare poorly in the Environment function, with Seoul ranking #17 and Tokyo #18 in 2024, but Tokyo ranked #9 in “Commitment to Climate Action,” a new indicator established in the Environment function, making it the only Asian city to make it into the top 10. The initiatives undertaken by Tokyo, a megalopolis with a population of 14 million, offer many hints for solving the environmental issues faced by countries in Southeast Asia.



(c) Jiji Press.

An Underground Temple

“Wow, it looks like a Greek temple!” “Do they really pool rainwater here?”

Visitors to the Metropolitan Area Outer Underground Discharge Channel, lying under Kasukabe City, Saitama Prefecture, just outside Tokyo, invariably let out a cry of surprise. One of the world’s largest underground discharge channels, this monumental structure sits 50 meters underground and stretches 6.3 kilometers. Fifty-nine colossal pillars—18 meters high and weighing 500 tons—support the ceiling, creating an appearance that gives it the nickname “underground temple.” It was built with the aim of mitigating flood damage in the Tokyo metropolitan area and can hold 670,000 cubic meters of water. This is roughly the same volume as Sunshine 60, a 240-meter-tall, 60-story skyscraper in Ikebukuro, Tokyo. Put to service in 2006, the underground discharge channel cost 230 billion yen to build. According to the Japanese Ministry of Land, Infrastructure, Transport and Tourism, it has saved 148.4 billion yen in losses that would otherwise have been incurred from flood damage up to 2024. Sixty-five percent of the construction costs has already been “recouped,” and the reduced flood risk has helped Kasukabe City attract companies. Most importantly, residents living in the vicinity no longer have to worry about flooding, which gives them a sense of happiness that cannot be expressed in monetary terms.

Flooding is a serious issue in many Southeast Asian countries. Particularly in Indonesia, there were 2,284 cases of flooding in 2024, making up the biggest proportion of the 5,593 natural disasters that occurred that year, and affecting 5.7 million people (according to the Indonesian National Agency for Disaster Management). An underground discharge channel is an effective model for densely populated areas like Jakarta, where river overflows and urban flooding occur frequently every year due to seasonal heavy rains. By employing the shield method, in which a tunnel is dug laterally using an excavator, as in the case of the Metropolitan Area Outer Underground Discharge Channel in Japan's Kasukabe City, such a channel can be constructed without the need to block roads. This seems to be a feasible plan for highly populated, traffic-heavy Southeast Asian cities.

Forest Bathing in the City

On the roof of Ginza Six, a 13-story building along the main street of Ginza, one of Tokyo’s most famous shopping and entertainment districts, you can actually enjoy forest bathing. The entire 4,000-square-meter rooftop is a garden, provided with a circular promenade all the way around the garden. Office workers who work nearby and shoppers visit this urban oasis to refresh their mind and body. The garden commands a view of Tokyo Tower and the Ginza district, giving you a luxurious feel. This rooftop garden, the largest in Ginza, was developed

in 2017 in response to the Tokyo metropolitan government's urban greening policy, and contributes to the mitigation of urban heat island effects and improvement of the cityscape.

From 2001, the Tokyo metropolitan government mandated all new buildings and extensions on a piece of land with an area of 1,000 square meters or more to have greenery over at least 20% of the open space on the ground, and 20% of the usable space of the building. Moreover, to help reduce carbon dioxide emissions, all new homes built from April 2025 onward are required to have solar panels installed.

Urban climate change measures are an urgent issue in Southeast Asia as well. Air pollution is particularly severe in Bangkok, Thailand. While the air quality standard for the average measurement of airborne particulate matter (PM2.5) per cubic meter is 25 micrograms according to the World Health Organization's guidelines, 35 micrograms in Japan and the United States, and 50 micrograms in Thailand, the concentration of PM2.5 exceeded 75.1 micrograms, a level deemed to have detrimental health effects, in 48 of Bangkok's 50 districts on January 24 this year.

Power sources in Thailand mainly consist of natural gas and coal. These emit large amounts of carbon dioxide, and in Bangkok air pollution becomes especially severe in the winter, when there is little rainfall, and during the dry season. Although the city needs to increase the share of renewable energy as a power source, a nation's energy structure does not change overnight. On the other hand, initiatives like greening the rooftops and walls of urban buildings and installing solar panels on homes can be introduced in any country. Cities in Vietnam such as Hanoi and Ho Chi Minh City, where air pollution is deteriorating as a result of rapid economic growth, can also make use of the know-how Tokyo has cultivated to date.

The Three Rs

Plastic waste can be seen as a symbol of civilization's waste. Most of the plastic waste that enters the ocean, in particular, is generated in Asian countries. The Philippines and Indonesia, which consist of numerous islands and have large coastal populations, are among the world's top generators of ocean plastics. While, of course, both countries are promoting recycling measures, the Tokyo metropolitan government implements reduction measures on multiple levels. For instance, it encourages the use of recyclable materials for lunch boxes and beverage containers, the use of plant-based plastic or other recyclable materials for disposable containers, and the recycling of waste plastic into raw materials for chemical production. It is committed to the three Rs of reduce, reuse, and recycle. Countries like

Malaysia, which has a high dependence on landfill for waste disposal and is trying to increase the recycling rate, probably can learn a lot from Tokyo's initiatives.

Shifting Mindsets

Foreign tourists who visit Tokyo are often amazed by how clean it is and how little trash is visible on its streets. On the other hand, some people complain that it is inconvenient because there are few trash cans around the city. With trash cans becoming increasingly scarce year after year, even Japanese people sometimes find it inconvenient. Still, there is a shared mindset among the Japanese that you are expected to take home any trash from products you purchase. Ultimately, the most crucial factor in addressing environmental challenges is a shift in mindsets like this among the citizens. Any effort to thoroughly sort waste will be meaningless if the citizens do not follow the rules. Whenever a new environmental regulation is introduced in Tokyo or any other part of Japan, companies and citizens naturally voice concerns about the economic costs and any inconvenience it may cause. Still, once the measures are implemented, they often come to recognize the benefits, like how they actually reduced a company's unnecessary costs and increased profit, and how they enriched people's lives. The "Tokyo model," refined through the process of such trial and error, will likely offer valuable solutions for Southeast Asian countries.

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Press

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Metropolitan Area Outer Underground Discharge Channel pressurized water tank (Kasukabe, Saitama) . (c) Jiji Press.

02



Ginza, Tokyo (Photographed in April 2025). (c) Jiji Press.

03



Metropolitan Area Outer Underground Discharge Channel pressurized water tank (Kasukabe, Saitama). (c) Jiji Press.

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*Volunteers assist residents through swift floodwaters in Makassar on February 12, 2025.
(c) AFP=時事*

05



The city skyline is seen amid high levels of air pollution in Bangkok on March 21, 2025.

(c) AFP=時事

06



An aerial picture shows a flooded residential area after some rivers overflowed following heavy rain in Bekasi, a suburb of Jakarta, on March 5, 2025. (c) AFP=時事