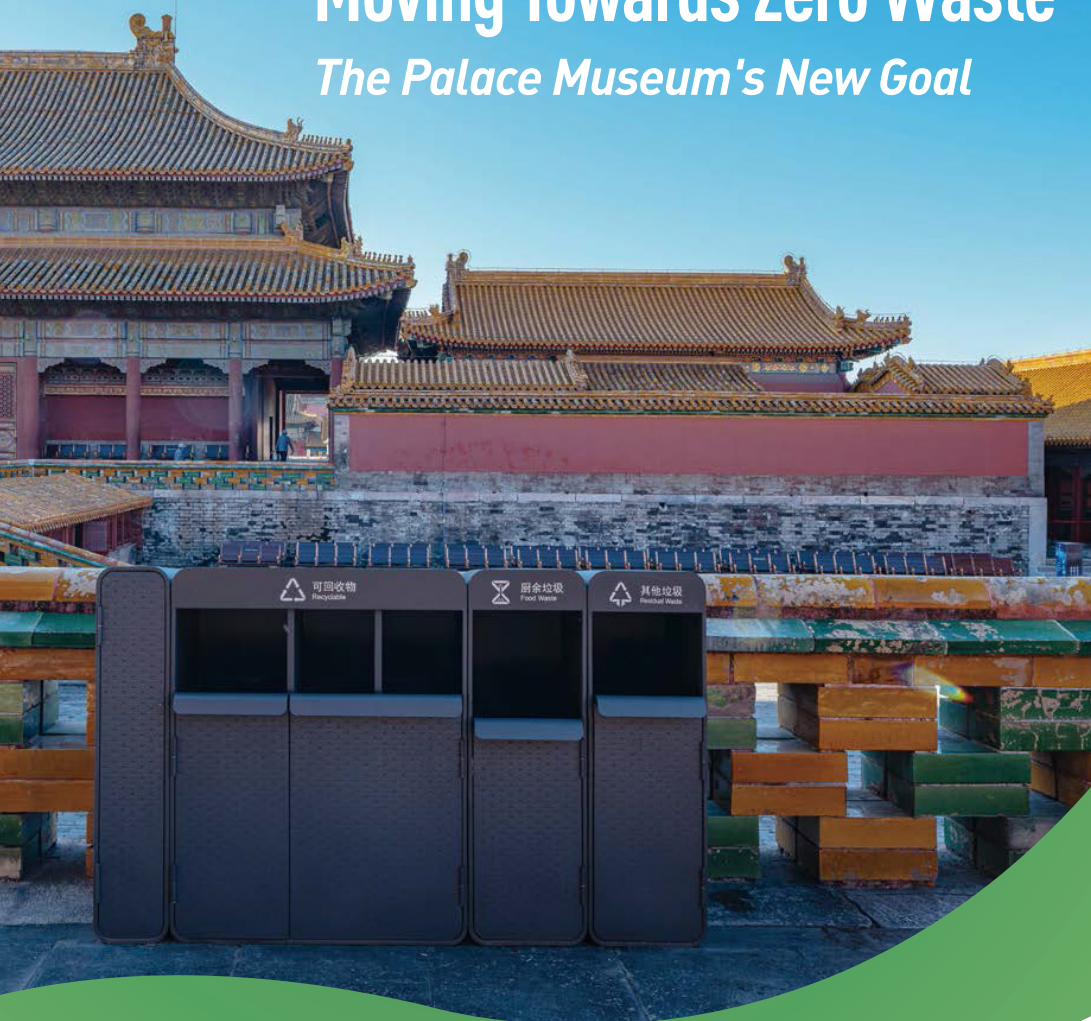


# Moving Towards Zero Waste

## *The Palace Museum's New Goal*







© Zero Waste Initiative at the Palace Museum

Since the middle of the 20<sup>th</sup> century, the process of global industrialization and urbanization has accelerated, pushing human society towards the age of consumption. The linear model of production, characterized by “mass production, mass consumption, and mass waste”, has not only increased the amount of garbage, but has also led to landfills and wasted resources, causing environmental pollution, health woes, and a series of related problems. This has effectively accelerated the pace at which the different responsible parties must conduct waste management and resource circulation.

As an integrated concept in the field of waste management, zero waste will not only lead to the ultimate vision of a society free of trash with significantly less environmental impact but will also provide a methodology for waste management. As zero waste is expected to solve modern society’s increasingly serious garbage problems, it is of great social, economic, and environmental importance.

Since the establishment of the Zero Waste International Alliance in 2002, an increasing number of countries, cities, and institutions have incorporated the zero waste concept into their waste management systems. In 2010, the Shanghai World Expo brought the concepts of sustainability, including green initiatives, environmental protection, and waste sorting, to more Chinese people. Subsequently, the advocacy and practice of zero waste in Chinese society has gradually increased. With the Action Plan for Household Waste Sorting System, released in March 2017, as a major indicator, China officially launched the era of mandatory waste sorting and its national waste management entered a new historical stage. The municipal household waste sorting policy and the state-promoted "No-waste City" pilot program, as well as the actions taken by enterprises, public welfare organizations, and individual citizens, have together gradually formed a diversified zero waste action plan.

On January 16, 2020, the Palace Museum and the Vanke Foundation jointly launched the Zero Waste Initiative at the Palace Museum. The two parties hoped to achieve breakthroughs in waste reduction, sorting, and recycling by focusing on the management of household waste in the offices and historic sites of the museum. In addition, the green value of the





zero waste concept and the exploration methods in the museum would be activated by employing diversified means. The year 2020 marked the 600<sup>th</sup> anniversary of the Forbidden City, which is the historic palatial complex based on which the museum was born. It was also a perfect for the launch of the first zero-waste exploration in its history. As a pioneer of green and low-carbon exploration, this ancient world cultural heritage site has taken on the challenging task of achieving zero waste, and has forged ahead in this new stage of social development.

In September 2020, at the United Nations General Assembly, Chinese President Xi Jinping solemnly pledged that China would scale up its Nationally Determined Contributions by adopting more vigorous policies and measures and would strive to peak carbon dioxide emissions by 2030 and achieve carbon neutrality by 2060. His address further highlighted the importance of zero waste for carbon neutrality.

But there is still a long way to go to truly realize the multiple benefits of zero waste, with continued support for green, circular, and low-carbon social development. And to make positive contributions to carbon neutrality and climate change, we not only need more responsible parties to participate in specific zero waste actions, but also more public cultural and educational institutions to promote the concept of zero waste. This will allow the zero waste concept to be naturally and progressively internalized in everyone's heart, establishing an atmosphere of zero waste action in the whole of society.

Since the launch of the Palace Museum Zero Waste Initiative, all departments and staff of the museum, the Vanke Foundation, and a number of outstanding professional partners have joined in tackling both the challenges and opportunities that may come up in the exploratory journey towards a green Palace Museum.

From the beginning of 2020 to the end of 2021, overcoming the impact of the COVID-19 pandemic, the Palace Museum implemented the "Zero Waste Office" initiative among its staff and advocated the "Zero Waste Tour" practice among visitors. Through the three stages of consolidating the infrastructure, implementing innovative promotional and educational

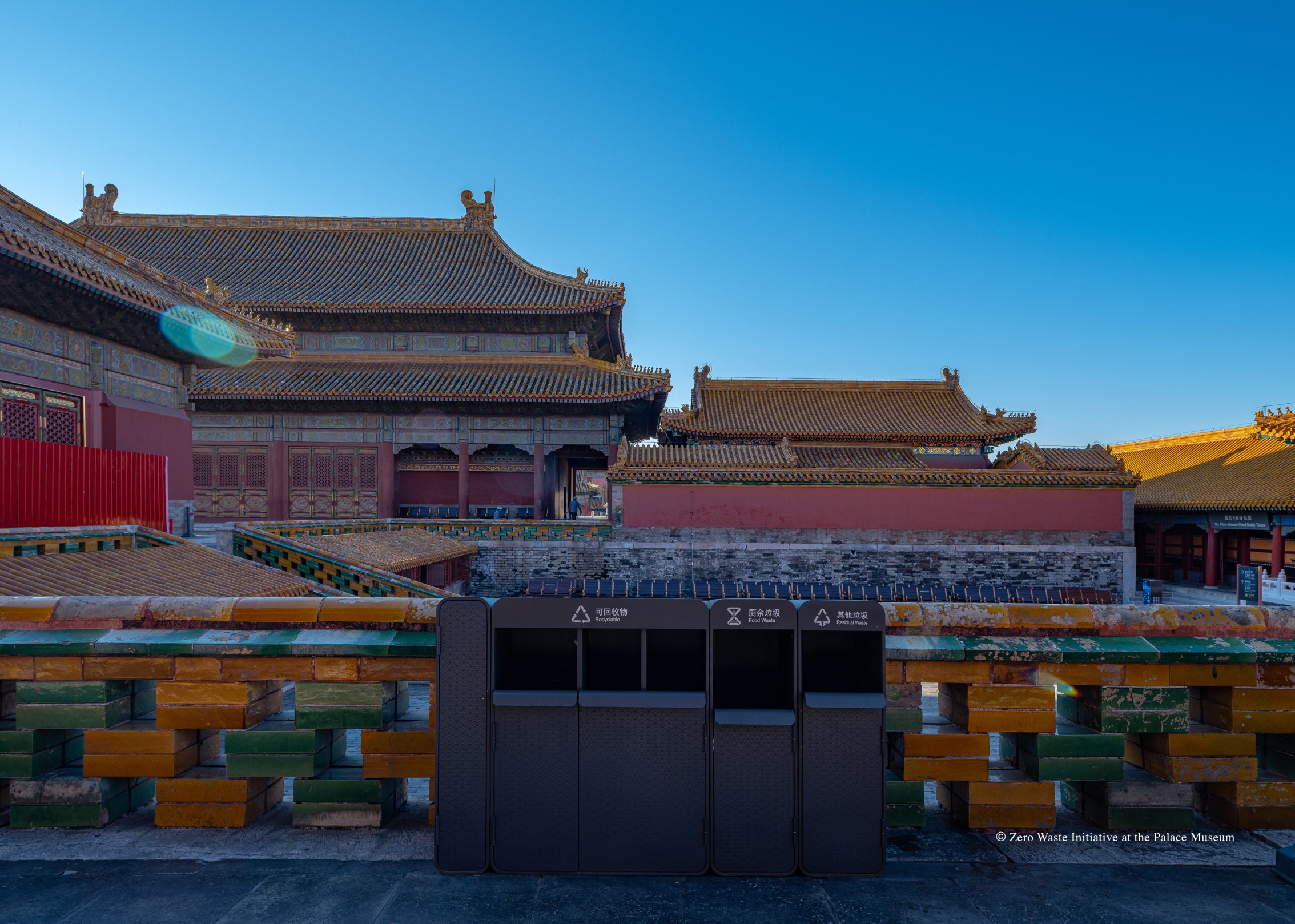
strategies, and deepening and consolidating ongoing practices, the museum's Zero Waste Initiative has achieved encouraging results and accumulated valuable experience. Within two years, after the launch of the "Clean Plate Campaign" promoted by the project, the consumption of all types of food materials in the staff canteens decreased. Based on comparative data between August 2021 and August 2020, the consumption of all types of food materials was reduced by about 5%-24%, and the amount of kitchen waste decreased by about 11.1%. About 3,000 Palace Museum staff, 11 million visitors, and 40,000 tour guides were actively engaged in the project.



A group photo taken at the launch ceremony for the Zero Waste Initiative at the Palace Museum on January 16, 2020







可回收物  
Recyclable

厨余垃圾  
Food Waste

其他垃圾  
Residual Waste





## Consolidating the Infrastructure

At the beginning of the Zero Waste Initiative project, the Palace Museum quickly established the Zero Waste Project executive committee, which compiled and issued the Implementation Plan for the Zero Waste Initiative, laying the institutional foundation for the subsequent work as well as for all the teams. In 2020, the project team, by adhering to scientific guidance and factoring in the conditions of the Palace Museum, laid a solid foundation for the zero waste exploration of the entire museum, relocating trash bins, setting up a resource recovery center, and adding a new compost base.

### Scientific layout of custom waste sorting bins

In order to arrange the new waste sorting bins in a more rational and efficient manner, from May to August 2020, Tsinghua University's School of Architecture conducted a survey on environmental behaviors within the Palace Museum. Visitors were invited to the museum with portable research devices. Nearly 500 effective tour tracks were collected, and more than 600,000 GPS data points were obtained. Combined with factors including visiting sequence, length of stay, and crowd density distribution of visitors after entering the museum, an analysis report of the tour tracks was completed. This report provided a solid scientific basis for the Palace Museum to adjust the location of the new classified garbage bins.

After relocation, the total number of trash bins in the entire public area of the Palace Museum was reduced from 310 to 110, a decrease of nearly two-thirds. Based on scientific research, the reduction in the number of garbage bins and the reasonable locations have not only minimized their visual disturbance to the landscape in the Palace Museum, but have also improved the quality of the visiting experience without affecting convenience. The working area of the cleaning personnel is also more concentrated, greatly improving waste-sorting efficiency.



In November 2020, some sharp-eyed visitors noticed that the open area of the Palace Museum was fully updated with waste sorting bins. These bins, with their dark gray background and traditional Chinese auspicious cloud pattern, were customized by an industrial design team commissioned by the project team, and took nearly one year to complete. The design meets the needs of both visitors and the cleaning staff, while cleverly integrating the traditional aesthetic pattern of the Palace Museum, thus fusing modern industrial design with the museum's elegant traditions.



© Zero Waste Initiative at the Palace Museum

The new waste sorting bins blend into the landscape of the Palace Museum





## A resource recovery center with distinctive Chinese characteristics

Baseline survey data showed that about 20 percent of household waste in the Palace Museum is recyclable. In order to do a good job of sorting, storing, collecting, and transporting the recyclables, the project team planned and built a resource recovery center with distinctive Chinese characteristics.

Covering an area of 42 square meters, the resource recovery center is located north of the West Prosperity Gate of the Palace Museum and is divided into two areas: recyclables and food waste. The first is used to store eight kinds of recyclables, namely plastic bottles, glass bottles, metal cans, paper, cardboard, books, newspapers and magazines, which are sorted by the museum staff and visitors. After being stored here for a short period, the recyclables are regularly transferred to the back-end disposal facility for recycling and reuse. The food waste is collected and transferred to municipal processing facilities on a daily basis. The resource recovery center is modeled after the Thirteen Courtyards area in the Palace Museum. Its quaint style is perfectly integrated into the museum's landscape and the surrounding environment.



The Resource Recovery Center of the Palace Museum



## Turning dead leaves into compost

In autumn and winter, dead branches and fallen leaves often keep the Palace Museum's cleaners busy. With the right methods, this kind of green waste can be turned into treasure and can enrich the soil. The work team, collaborating with professional technical partners, built a compost base with 16 compost bins in the new branch of the Palace Museum in the northern suburb of Beijing. The museum's green waste is decomposed using aerobic composting and compost bagging technologies as well as through the collecting, crushing, and composting process. The project team is still fine-tuning the technological solutions.

The decomposed compost products of green plants mixed with other raw materials can be used in situ for plant cultivation, three-dimensional planting, plant maintenance, and revitalizing old soil at the Palace Museum. It can also be used for seedling breeding in the plant nursery and greenhouse at the northern branch of the museum, which realizes the goal of on-site organic waste disposal. In May 2021, the compost base in the north branch was officially put into service. By the end of October



A "zero waste" ecological compost lucky bag





2021, 3,840 kilograms of green waste from the Palace Museum had been decomposed and converted, and the first batch of organic compost was returned to the soil.

A handy tool makes a handy man. The project team updated the cleaners' tools and transport facilities, identified the key nodes for the waste sorting and recycling chain at the museum, and clarified and announced the responsibilities of each party, thereby solving the problem of the last 100 meters by improving the efficiency of waste transfer in the community. This has laid a solid foundation for the Palace Museum to carry out further zero waste work.



The little tourist is sorting waste in the Palace Museum



## Innovative Promotional and Educational Strategies

Publicity and advocacy is one of the important missions of the Palace Museum's Zero Waste Initiative. Only by fully understanding the concept of zero waste can the various groups involved change their behavioral patterns. Thus, the entire chain of waste sorting and disposal will operate in an orderly manner to gradually achieve the goal of zero waste.

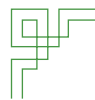
Focusing on the Palace Museum's Zero Waste Initiative, the project team identified four core groups - museum staff (including the cleaners), visitors, tour guides, and the general public. After analyzing the characteristics of the various groups, the project team formulated accurate training plans as well as promotional and educational strategies. They also helped develop the idea of zero waste by cultivating an atmosphere conducive to conservation of all resources, and inspired these groups to take action in contributing to the zero waste project.

The effect of an innovative promotional and educational plan is directly related to how it is implemented. Therefore, the project team cooperated with various experts to flexibly use various innovative approaches for literary and artistic works and designs, in order to create an environment in which innovative waste-reduction solutions could be developed. On important occasions such as Earth Day, World Environment Day and World Food Day, the project team actively planned online and offline educational activities under the theme of zero waste to attract the attention of visitors and the public so as to win public support for the zero waste project.

### Diversified and flexible training to promote the zero waste initiative

Actions speak louder than words. The leadership of the Palace Museum attaches great importance to its staff taking part in the Zero Waste Initiative. To this end, the project team used various tools and methods,





based on thoughtful arrangement, to mobilize the employees to actively participate, including in fun competitive games, professional training courses, operational guide videos, quick sorting posters, and the Clean Plate Campaign, among others. Considering the vast area of the Palace Museum, its multiple functional departments, and its responsibility to protect cultural relics, in 2021, the project team specially invited waste sorting lecturers to visit each of the museum's functional department to explain how waste sorting could be combined with the specific office environment. The interactive course of answering questions and solving puzzles further improved the awareness and practical ability of all staff. As for cleaners, a key group to ensure effective waste sorting, the project team invited external experts to carry out a number of intensive training sessions regarding the meaning and practical operation of zero waste, to ensure their full understanding.

Looking back, many staff members of the Palace Museum emphasized that this kind of on-site explanation and physical simulation training was very helpful in clearly understanding the sorting standards and promoting the proper sorting practices. The collective training also made them more deeply aware that the Palace Museum attached great importance to the project.



Staff members of the Palace Museum attending a practical training session on waste sorting conducted by an external lecturer (left)



The restaurants at the Palace Museum launched the Clean Plate Campaign on Zero Waste Day in August 2020

### Harness everyone's talent to reduce food waste

Immediately after the initiative was launched in 2020, a survey on the composition of waste found that kitchen waste accounted for 42% of the Palace Museum's total waste. It was the basic consensus of the project team that reducing food waste was one of the top priorities of the Zero Waste Initiative. As a widely popular cultural and tourism site that has attracted the admiration and love of the Chinese people and even the world, the Palace Museum deemed that the restaurants were to be the main spot for practicing economy and reducing food waste. Starting from the staff canteens in the office areas, it gradually expanded the campaign to business restaurants open to visitors, resulting in a comprehensive reduction of food waste.

In August 2020, the staff cafeterias in the Palace Museum launched the Clean Plate Campaign to practice economy and reduce food waste. The Palace Museum set up a Canteen Conservation Working Group and formulated and promulgated a supporting implementation plan and system. The working group organized relevant training, publicity, and interactive activities at regular intervals to generate enthusiasm of the Palace Museum staff in cherishing their food. Driven by a series of actions, the Clean Plate Campaign has become the latest fashion trend among the museum staff. The consumption of all kinds of main food materials in the staff canteens has declined, and the amount of kitchen waste has also gradually decreased. Indeed, the Palace Museum's staff took practical actions to achieve results they can be proud of.



### The comparison between per capita food consumption and kitchen garbage of the staff canteens in the Palace Museum

August 2021 vs. August 2020

<b>Rice</b>	↓	12%	<b>Meat</b> (pork, beef and mutton)	↓	5%
<b>White flour</b>	↓	24%	<b>Eggs</b>	↓	11%
<b>Cooking oil</b>	↓	16%	<b>Kitchen garbage</b>	↓	About 11.1 %

On October 16, 2021, on the occasion of the annual World Food Day, the Palace Museum held a themed activity called "Zero Waste in the Palace Museum, Striving to Minimize Environmental Impact". Combining offline activities with an online promotional campaign, onsite audience and online users were encouraged to actively engage in the Clean Plate Campaign and create a "zero food waste" culture. The seven restaurants that participated in the themed event became the first batch of zero waste restaurants in the Palace Museum.



The themed activity "Zero Waste in the Palace Museum, Striving to Minimize Environmental Impact"

### Empowering "zero waste tour guides", and advocating "zero waste tours"

About 50 percent of the visitors who enter the Palace Museum to experience fine traditional Chinese culture opt for guided group tours. Therefore, the guides have thus become an important link between the museum and the visitors. Therefore, strengthening the idea of zero waste among these tour guides would undoubtedly have a positive impact on the museum's Zero Waste Initiative.

On July 13, 2021, the Zero Waste Initiative at the Palace Museum project held its first tour guide training seminar in Beijing. Thousands of outstanding tour guides from all over the country who care about eco-friendly tourist behavior participated in the online or offline training sessions.

The continuous tour guide training, the guidebook for zero waste tours, and the related ongoing incentive measures have greatly improved the understanding of zero waste among tour guides. They have subsequently developed their skills in promoting the concept of zero waste, thus bringing a new experience of "zero waste tours" to Palace Museum visitors.



A tour guide, conducting a "zero waste tour", introduces the Palace Museum's waste sorting facilities to visitors





### Leveraging the power of culture and art, and skillfully conveying information about zero waste

At the end of 2020, a "compost flower bed" was built near the square of the Palace Museum's Archery Pavilion. The flower bed is a miniature ecosystem made up of various facilities. Here, visitors could learn about compost, one of the important traditional elements of China's profound farming culture, and see with their own eyes how returning garden waste to nature improved the soil and promoted ecological circulation. The Palace Museum's compost lucky bags, made of compost organic matter, were used as an eco-friendly gift to the museum's WeChat followers for participating in the themed activity, which drew a warm response.

During Spring Festival in 2021, the year of the Ox, the Palace of Compassion and Tranquility area of the museum exhibited a sculpture titled "Zero Waste · Auspicious Ox Ringing out the Old". Based on the works of the famous artist Han Meilin, the sculpture was made up of more than 15,000 pieces of waste from the Palace Museum. Its aim was to spur visitors to reflect on waste from the perspective of art.

In August 2021, the Palace Museum Store and its online channels launched a new series of gifts, including handkerchiefs, towels, eco-friendly bags, and eye masks, which were filled with beautiful traditional patterns from the Palace Museum and won praise from the public. The raw materials used were rPET made from plastic bottles collected at the Palace Museum. The waste was brought to life by the fusion of traditional and contemporary styles. A total of 24,435 recycled plastic bottles, equivalent to 0.63 tons of carbon dioxide reduction, or the amount of CO<sub>2</sub> absorbed by 10.46 ten-year-old trees over their lifetime, were used to produce the museum's eco-friendly cultural and creative products from June to December 2021.

From the ecological compost flower bed, to the recycled sculpture of the Auspicious Ox, and to the cultural and creative products, all these reflect the hope of the Palace Museum, as a cultural pioneer, to not only inherit Chinese culture and a national tradition of aesthetics, but also guide visitors to appreciate the precious value of green and eco-friendly

development, so as to deepen their overall understanding of the concept of zero waste.



The ecological compost flower bed near the square of the Palace Museum's Archery Pavilion



Cultural and creative products from the Zero Waste Initiative at the Palace Museum







## Ongoing Deepening and Consolidation

The Zero Waste Initiative at the Palace Museum has a long way to go. From 2022, the project entered a stage of long-term stability. Based on the exploration experience and achievements over the past two years, the Palace Museum and the Vanke Foundation will continue to deepen the practice of zero waste, jointly contribute to the construction of a green Palace Museum, and integrate the concept of zero waste into the daily operation and management of the Palace Museum.

At the same time, the Palace Museum is also looking forward to collaborating with more cultural and tourism institutions to facilitate the zero waste work in Chinese museums. The Zero Waste Initiative at the Palace Museum can help us share the story of environmental protection and let the world see Chinese museums in a new and beautiful light.



The sculpture "Zero Waste · Auspicious Ox Ringing out the Old"

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## Issued by



Established on 10 October 1925, the Palace Museum is a broadly representative museum on traditional Chinese art, based on the imperial palace of the consecutive Ming and Qing dynasties, known as the Forbidden City, as well as its vast imperial art collections. It was listed as one of China's most important protected cultural heritage sites by the State Council in 1961, and was inscribed on the UNESCO World Heritage List in 1987. In 2007, the museum was designated as "National 5A Tourist Attraction", and the next year, as "National First-level Museum".



Approved by the Ministry of Civil Affairs and the State Council, Vanke Foundation was established in 2008 as a non-public fundraising foundation with endowment of Vanke Co., Ltd. It was certified as a charitable organization in 2017, and as a "4A National Level Social Organization" in late 2021. Since 2018, sticking to the ethos of "Facing the Future, Daring to Initiate", throughout a five-year strategic plan, the foundation has focused on issues that have a profound impact on the future, including sustainable community development and the harmony between human, society and nature.

## Designed by



