Promoting Garbage Classification Policy in China

for

The Premier of China
Keqiang Li

and

Municipal Governments Circular Economy Divisions and
Other Departments Participating in
the Municipal Solid Waste Classification Policy

by

Zhe Su
ENGL 301 Student,
Team Member of the SuBaoJang

August 1st, 2020

Table of Contents

Abstract

The report aims to uncover whether if residents in the cities that have launched the garbage classification policy has been success at adapting to the new garbage disposal regulations, and if not, what are the hurdles preventing them from doing so. The goal of the report is to provide feedback to the policy makers on areas requiring improvement to better promote the garbage classification policy across the country. China has been suffering from a massive growth in domestic garbage over the past few decades, with landfills reaching its capacity much sooner than anticipated. While there were attempts at addressing this pressing issue launched since the beginning of the 21st century, none has been successful at reducing the amount of waste disposed at landfills. In 2017, a garbage classification plan was announced at the national level, with 46 cities serving as the pilot cities. The cities are expected to recycle 35 per cent of their garbage by the end of 2020. As there were no specifications at the national level, municipal government are instead in charge of designing and enforcing the garbage classification policy. A survey was created and distributed across Chinese social media platforms, including WeChat and Sina Weibo, as well as shared amongst the author's friend circles. 11 participants had responded to the survey, although only 7 of the responses were applicable for the purpose of analysis. The respondents came from 4 major cities in China, Shanghai, Guangzhou, Beijing and Shenzhen. Through their responses, there appears to be a positive correlation between the use of a clear and intuitive category system with the likelihood of adapting and following the new classification guidelines; whereas the reverse leads to less willingness to adapt the new classification policy even in face of punishments. Overall, all participants agreed that education and technological tools would increase the chances of citizens following the new garbage classification requirements.

Introduction

A. GARBAGE ISSUES IN CHINA

Over the past quarter of a century, China has been importing garbage from the rest of the world as it scavenged for resources to meet its growing economy (Katz, 2019). Moreover, China became the world's second-largest producer of municipal solid waste (Huang, 2019). With a growing amount of waste produced and imported on an annual basis, China introduced waste management regulations originally in 2000 in 8 pilot cities to target the problem faced by the country. As the original program had failed to achieve its aim, a more ambitious national plan involving 46 pilot cities were issued in March 2017 with goals of recycling 35 per cent of waste targeted by the end of 2020 (Huang, 2019). Additionally, the 1982 Constitution was amended (last in 2018) to include an Environmental Protection Clause, with several laws introduced at the national level, including the Environmental Protection Law, the Law on Prevention and Control of Environment Pollution Caused by Solid Waste and the Circular Economy Promotion Law (Wang & Jiang, 2020). As of 2017, 97.5% of the annual waste was disposed through incineration or landfill (Wang & Jiang, 2020). Recycling accounted for only 2% of the annual waste.

B. DESCRIPTION AND IMPLEMENTATION OF THE GARBAGE CLASSIFICATION POLICY AT THE MUNICIPAL LEVEL

The 2017 plan mandates the pilot cities to establish local administrative rules or decrees on household waste management sorting guidelines (Wang & Jiang, 2020). As of the beginning of 2020, no local decrees or administrative rules have been issued in 17 of the 46 pilot cities. Since the sorting plans are managed at a municipal level, classification standards are affected by local technical capacities of waste management, such as whether if a comprehensive waste disposal system or a sophisticated end disposal facility is in place.

Of the pilot cities that established local legislations for sorting waste, a four-tier category system of recyclable, hazardous, biodegradable ("wet waste" in Shanghai) and other waste ("dry waste" in Shanghai) were introduced (Wang & Jiang, 2020). Some cities, such as Tianjin, introduced a two- or three-category alternative. While slogans, tips and posters about the new garbage sorting rules are posted everywhere, citizens still struggle to sort their rubbish correctly. Shanghai have received a lot of complaints on its confusing wet/dry categories. For example, a wet napkin should be disposed in the "dry" category while chicken bones belong in the "wet" category. However, pork bones somehow belong to the "dry" category unlike the chicken bones (Huang, 2020).

The thousands of instructors and tens of thousands of training session that the city had hired do not seem to be effective at addressing the confusion. Based on a survey of 3,600 people living in major Chinese cities conducted at the end of 2018 by the Vanke

Foundation and data consultancy Dataway, the accuracy rate of waste-sorting amongst citizens may be lower than 27.7% (Ge & Ren, 2018). As there are heavy fines and social credit rating penalties, citizens and companies alike are stressed over the regulations. #DividingRubbishSoonSendsShanghaiCitizensCrazy were trending with tens of thousands of users before the hashtag was banned by Sina Weibo (Allen, 2019).

C. PURPOSE OF THE REPORT

With the rapid approach of the 2020 deadline, the report aims to understand whether if citizens have been successful at adapting to the new garbage disposal regulations, and if not, what are the hurdles that is preventing them from doing so. The goal of the report is to provide the target audience with insight and feedback that will assist in promoting garbage classification through improvement in future policy making, particularly when garbage classification is launched across the entire nation.

Methods

The statistics for municipal solid waste prior to the introduction of the policy is provided by the Ministry of Housing and Urban-Rural Development of the People's Republic of China (MOHURD), accessible from their website with the 2018 as the most recent data year available. Additional supplementary information is gathered from new articles and published research reports. Please see the references for a detailed list.

To gather data on the success and challenges of the garbage disposal policies, a survey was created with questions that addressed whether if respondents had been compliant with the local administrative rules, and if not, what is the reason behind their reluctance to comply. The survey also aims to explore whether if the existing categories used in the respective cities are easy or difficult to understand. Lastly, respondents can leave suggestions for improvements.

The survey was distributed across Chinese social media, including WeChat and Sina Weibo, and shared amongst the author's friend circles. Responding to the survey was entirely voluntary and anonymous to protect the respondent's privacy and improve the accuracy of the responses.

Data Section

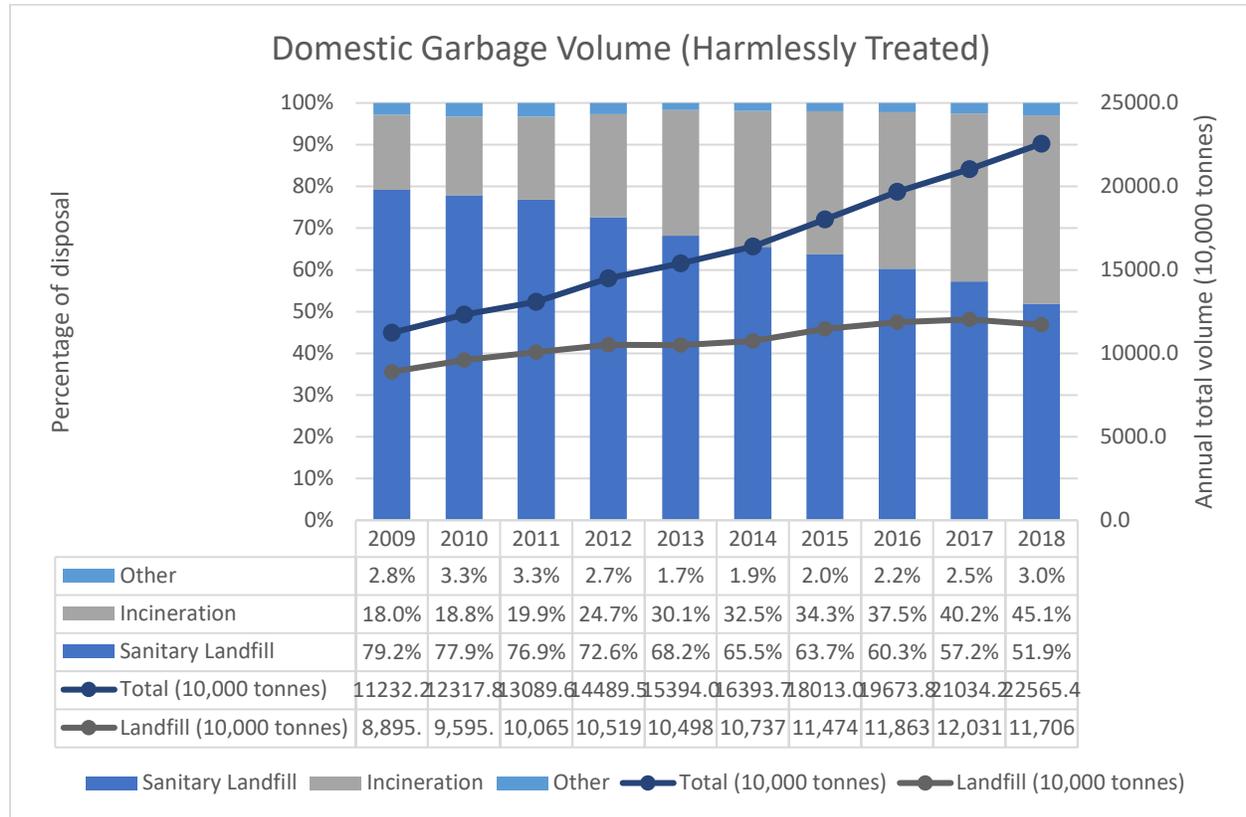A. STATISTICS ON MUNICIPAL SOLID WASTE PRIOR TO POLICY

Figure 1: The composition ratio of harmless waste disposal (2009-2018).
Data source: *Ministry of Housing and Urban-Rural Development of the People's Republic of China, retrieved Aug 1, 2020.*

China's annual domestic garbage volume has doubled over the decade from 2009 to 2018, as demonstrated in Figure 1. Although a higher percentage of garbage is now being incinerated (45.1%) instead of disposed in landfills (51.9%), the absolute tonnage of garbage being disposed in landfill continue to remain high, and is reported at a staggering 117 million tonnes as of 2018. The top 10 cities with the most waste are listed out in Figure 2, along with the percent of disposal between the three methods. Although Beijing is the highest at 9.8m tons in 2018 of total annual waste, only 40% of their waste was dumped in landfills. Xian, by contrast, had 4.2m tons of total annual waste, of which all of it were disposed in landfills. Another city that is unique is Dongguan, which generated 4.6m tons of waste in 2018. However, only 11% of it, or 500k tons, went towards landfills. The remaining were all incinerated harmlessly as according to the reported figures. The differences in percent of garbage that were incinerated between the cities were likely a result of the different levels of investment in high end disposal facilities (Huang, 2019). As one can observe from Figure 2, cities with a higher tonnage of garbage that is incinerated have invested a significant amount into domestic garbage treatment in 2018, except for Dongguan. Data on recycling is not provided by MOHURD as of the 2018 data year.

	Total Domestic Garbage (1,000 tons)	Sanitay Landfill (1,000 ton)	% of Total	Incineration (1,000 ton)	% of Total	Other	% of Total	Investment in Domestic Garbage Treatment (1,000 RMB)
Beijing	9,751.2	3,938.1	40.4%	3,997.0	41.0%	1,816.1	18.6%	3,128,880
Shanghai	7,847.3	3,943.0	50.2%	3,860.0	49.2%	44.4	0.6%	2,039,660
Shenzhen	7,022.7	4,186.5	59.6%	2,530.8	36.0%	305.3	4.3%	970
Guangzhou	5,575.6	3,950.1	70.8%	1,614.2	29.0%	11.3	0.2%	2,259,370
Chongqing	5,490.8	2,921.5	53.2%	2,569.3	46.8%	-	0.0%	1,373,980
Dongguan	4,629.1	502.0	10.8%	4,127.1	89.2%	-	0.0%	24,300
Chengdu	4,469.6	2,064.3	46.2%	2,369.5	53.0%	35.9	0.8%	1,148,380
Xi'an	4,231.5	4,231.5	100.0%	-	0.0%	-	0.0%	-
Wuhan	4,066.8	1,320.6	32.5%	2,533.5	62.3%	212.7	5.2%	-
Hangzhou	3,693.1	1,728.3	46.8%	1,964.8	53.2%	-	0.0%	171,260

Figure 2: Top 10 cities with most domestic garbage generated, from most to least (2018).
Data source: *Ministry of Housing and Urban-Rural Development of the People's Republic of China, retrieved Aug 1, 2020.*

B. SURVEY RESPONSE

Demographics of Survey Respondents

The sample size of the survey was 11, but only 7 lives in pilot cities with a garbage classification policy in place. As such, the report will be based on the 7 people that lives in pilot cities. Of the 7 who lived in the pilot cities, 3 are from Shanghai, 2 from Beijing, 1 from Guangzhou and 1 from Shenzhen.

Garbage Classification Policy in Respondent Cities

All 4 cities which the respondents are from have a four-category classification policy in place. Apart from Shanghai, the four categories are kitchen waste, recyclable waste, hazardous waste (or harmful waste). Recyclable waste include glass, metal, plastic, paper, etc. Kitchen waste are perishable waste. Hazardous, or harmful waste is defined to be anything that can cause direct or potential harm to humans or the environment. These would include things such as chemicals, or biohazardous waste such as needles etc. Other waste generally includes the things that do not belong in the above category.

Shanghai's four-category system include hazardous waste, recyclable waste, wet waste, and dry waste (Zhou, Shen, Xu, & Zhou, 2019). The wet waste category of Shanghai includes perishable biomass, which is similar to the kitchen waste of other cities. Dry waste is anything that does not belong in the previous three categories. It is important to note that although wet waste should include all kitchen and other household perishables, pork bones and wet face masks somehow belongs in the dry category.

Frequency in Complying with Local Garbage Classification Policy

The following table outlines the frequency of the participants in complying with their garbage classification policy. In the survey, the participants are asked to identify whether if they always, frequently, occasionally, or never comply with the garbage sorting rules in their domestic city. As the survey is voluntary, their responses are solely based on their own judgment, and thus the data may be biased. However, since the survey is anonymous, participants understand they will not be penalized based on their responses, and this should encourage some degree of honesty.

Survey Response to "Frequency in complying with the guidelines in daily garbage disposal routine"

	Always	*Frequently*	*Occasionally*	*Never*
Beijing (2)	*2 (100%)*			
Shanghai (3)		*1 (33%)*	*2 (66%)*	
Guangzhou (1)	*1 (100%)*			
Shenzhen (1)		*1 (100%)*		

Table 1: Frequency in complying with local garbage classification policy based in cities as indicated by survey responses. The brackets next to the cities indicate total participants from the city.

It is interesting to note that Shanghai, being the only city with a different four-category system, is also the only city with 2 participants indicating they comply with the rules only occasionally.

Challenges in Classifying Garbage

Participants are also asked why they find garbage difficult to classify. The survey provides participants with the option to select whether if it is due to the time involvement, the confusing categories, both, and other reasons which the participant can indicate. The three participants who always complied with the local sorting rules chose to not reply to the question. The participant from Shenzhen indicated that it was time consuming. For the 3 participants from Shanghai however, 2 found the categories too confusing, while the remaining one thought it was both confusing and time consuming.

The survey also asks if the participants find the current categories of garbage classification in their cities a) makes perfect sense, b) is somewhat confusing, or c) is very confusing. All participants from a city that is not Shanghai find the categories perfectly fine to understand. The 3 participants from Shanghai found the categories either somewhat confusing or very confusing.

Necessity of Education or Phone Application to Assist with Adapting to Garbage Classification Rules

When asked if they feel that the training sessions provided by the government helps with adapting to the classification policy, all 7 participants responded positively. They also prefer the assistance of phone applications to help them classify garbage, as it would improve the accuracy and reduce the time needed.

Data Limitations

There are several areas of the survey which limits the interpretations of the results. Firstly, there is a lack of participants from each city. This effectively makes the sample size on a city basis to be at most 3. Secondly, since participants are asked to gauge their own frequency in complying with the policies, their response will likely be biased. Lastly, even if the population is complying with the garbage classification policy, whether if this will result in a higher percentage of domestic waste being recycled cannot be predicted by this survey alone. Nevertheless, the data still provide some insight into the garbage classification policies which will be addressed in the next section.

Conclusion

A. SUMMARY AND INTERPRETATION OF FINDINGS

Based on the survey results, citizens are at the very minimum attempting to adapt to the new classification policies. Shanghai's four categories of Hazardous, Recyclable, Wet and Dry is bringing its citizens more difficulty in their daily garbage disposal routine. The confusion caused by the categories not only makes it more time consuming to comply with the policy, but also reduce the likelihood of citizens complying with the regulations despite the penalty involved. The four categories used by other cities are seemingly easier to grasp, resulting in a higher likelihood of complying with the garbage sorting policy. The participants also view more training sessions and the assistance of a phone application in sorting garbage positively, indicating that the two would more likely lead to a higher adoption rate of complying with the garbage classification policy.

B. RECOMMENDATIONS

The following recommendations may help improve the accuracy and promote garbage classification policy in their respective cities:

1. Using a more intuitive categorizing system that is easy to understand. Shanghai's dry and wet categories cause a lot of confusion for its citizens, compared to the categories used in Beijing, Guangzhou, and Shenzhen. This is because household perishable waste belongs all to the same category, "kitchen waste", compare to Shanghai's system where some are dry, and others are wet.
2. Continuing the training session and employing the use of technology to assist with the classification process.
3. Considering a unified garbage categorizing system across the country.
4. Maintaining a transparent communications channel with citizens to assist and help them understand the importance of garbage classification for their own health and environment.

Appendix

A. SURVEY

Municipal Solid Waste Classification Policy

The purpose of this survey is to collect data that will be used to analyze and provide recommendations to improve the effectiveness of the garbage classification policy. The goal of this inquiry is to obtain feedbacks and understand the challenges that citizens face when adjusting to the new classification policy, so that the existing regulations can be amended to help reach national goals. The formal report will be presented to the officials at the provincial level and also to the premier, Keqiang Li.
The survey will take no more than 10 minutes to complete. Your responses are voluntary and anonymous. The results will not be presented on an individual basis. Thank you for your participation.

1)   City of residence?

_____

2)   Has the municipal or provincial government put a garbage classification policy in place in the above city?

Yes   /   No

3)   Frequency in complying with the guidelines in daily garbage disposal routine:

Never   Occasionally   Frequently   Always

4)   What makes garbage difficult to classify?

a.   Too much time involved
b.   Categories are too confusing
c.   Don't see a need for the classification policy
d.   Both a & b
e.   Other: (Please specify) _____

5)   The current categories used to classify the garbage:

a.   All the categories make perfect sense – easy to classify and understand
b.   Some categories make sense while others are more difficult to identify
c.   None of the categories are intuitive to understand

6)   Would more education on the classifications help with adapting the policy?

Yes   /   No

7)   Would an application that classifies the garbage based on photo recognition help with adapting to the policy?

Yes   /   No

8)   Other feedback regarding the policy in general.

References

Allen, K. (2019, July 04). Shanghai rubbish rules: New law sends Chinese city into frenzy. Retrieved August 02, 2020, from https://www.bbc.com/news/world-asia-china-48847062

Ge, M., & Ren, Q. (2018, December 19). China's Efforts to Promote Garbage-Sorting Have Gone to Waste. Retrieved August 02, 2020, from https://www.caixinglobal.com/2018-12-19/chinas-efforts-to-promote-garbage-sorting-have-gone-to-waste-101361045.html

Gong, Z. (2019, August 12). Why China has started to classify its garbage. Retrieved August 01, 2020, from https://news.cgtn.com/news/2019-08-12/Why-China-has-started-to-classify-its-garbage-J6aPiHBA6Q/index.html

Guangzhou Government. (n.d.). Waste Classification. Retrieved August 03, 2020, from http://www.gz.gov.cn/guangzhouinternational/residents/wasteclassification/

Huang, H. (2019, November 25). Sorting out China's waste problem. Retrieved August 01, 2020, from https://multimedia.scmp.com/infographics/news/china/article/3038540/china-waste-sorting/index.html

Jiang, W. (2019, June 24). The era of compulsory garbage sorting begins. Retrieved August 01, 2020, from https://www.chinadaily.com.cn/a/201906/24/WS5d10650ba3103dbf14329e23.html

Katz, C. (2019, March 7). Piling Up: How China's Ban on Importing Waste Has Stalled Global Recycling. Retrieved August 01, 2020, from https://e360.yale.edu/features/piling-up-how-chinas-ban-on-importing-waste-has-stalled-global-recycling

Ministry of Housing and Urban-Rural Development of People's Republic of China. (n.d.). Retrieved August 02, 2020, from http://www.mohurd.gov.cn/xytj/tjzljsxytjgb/

Shenzhen Government Online. (2020, June 30). A guide to domestic waste and recycling. Retrieved August 03, 2020, from http://www.sz.gov.cn/en_szgov/news/infocus/waste/guide/content/post_1359006.html

Wang, H., & Jiang, C. (2020). Local Nuances of Authoritarian Environmentalism: A Legislative Study on Household Solid Waste Sorting in China. *Sustainability, 12*(6), 2522. doi:10.3390/su12062522

Yang, R., Huang, Y., Zhan, K., & Han, W. (2020, January 6). In Depth: Beijing's New Solution for Millions of Tons of Trash. Retrieved August 01, 2020, from https://www.caixinglobal.com/2020-01-06/in-depth-beijings-new-solution-for-millions-of-tons-of-trash-101501187.html

Zhou, M., Shen, S., Xu, Y., & Zhou, A. (2019, August 26). New Policy and Implementation of
Municipal Solid Waste Classification in Shanghai, China. Retrieved August 01, 2020, from
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6747299/