

# Progress in China's Municipal Solid Waste Management and Residents' Behavior: A Case Study in Dongying City

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## INTRODUCTION

Many reforms are underway in China's municipal solid waste management. The government has decided to proactively implement "Compulsory Separation of Penalties" about household waste, in 46 priority cities such as Beijing, Shanghai and other municipalities by 2020. At the same time, other non-mandatory municipalities are voluntarily implementing waste separation activities. Most mandatory cities carry out bonus point system to promote waste separating which has played a significant role in guiding residents' participation in household waste separation activities (Guo, 2017). Bonus point system is an incentive system in which residents are rewarded with points for dropping separated waste. This study is to obtain the latest data on residents' participation in waste separation through a point system in a non-mandatory city, to understand the trend of local residents' participation in waste separation activity during start up period.

## MATERIALS AND METHODS

Data is adopted from Dongying huizhong Environmental Protection Co.,Ltd, a private environmental enterprises in Dongying District, China, which operates community household waste separation system. The enterprises also adopt the bonus point system (Table 1) to guide local residents to separate household waste. Research objective was conducted in a community named 'Xinghedong' which waste separation system are operated by Dongying huizhong Environmental Protection Co.,Ltd. This community has 1202 families. The bonus point system started at September 15, 2020 in this community.

**Table 1 Bonus points system of waste separation**

Class	Type	Name	Unit	Bonus Points	RMB
Recyclable waste	Mental	Iron cans	kilogram(kg.)	40	¥ 0.40
		Aluminum cans	piece	5	¥ 0.05
		Other mental	kilogram(kg.)	100	¥ 1.00
	Clothing	Used clothes	kilogram(kg.)	40	¥ 0.40
		Used shoes	kilogram(kg.)	20	¥ 0.20
	Glass	Glass bottle	kilogram(kg.)	10	¥ 0.10
	Paper	Books	kilogram(kg.)	100	¥ 1.00
		Newspapers	kilogram(kg.)	100	¥ 1.00
		Yellow paper shell	kilogram(kg.)	100	¥ 1.00
		Color paper shell	kilogram(kg.)	60	¥ 0.60
	Plastic	Plastic bottle	kilogram(kg.)	100	¥ 1.00
		Plastic foam	kilogram(kg.)	100	¥ 1.00
Other plastics		kilogram(kg.)	40	¥ 0.40	
Kitchen waste			0	0	
Hazardous waste			0	0	
Other waste			0	0	

## RESULTS AND DISCUSSION

### Number of participants in waste separation activities

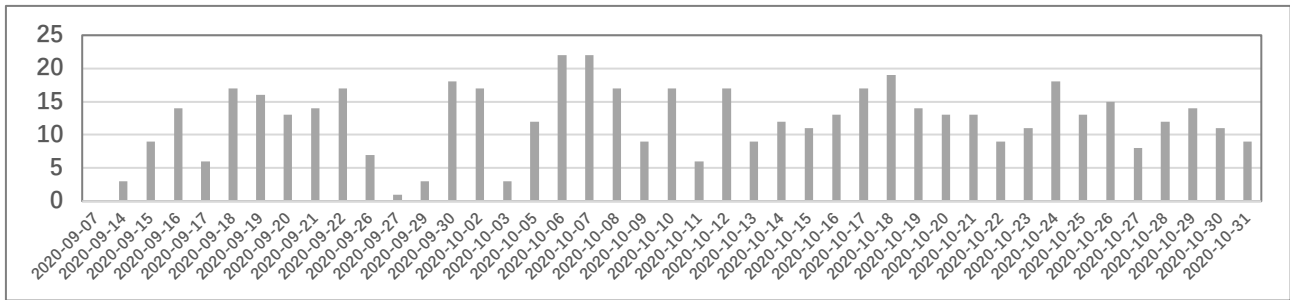


Figure 1 Number of participants (September-October 2020)

Up to 31 October 2020, there are 253 families registered the system, while according to Figure 1, the number of participants every day is only about 5 to 15 people. In addition, during the two months, 229 people participated in the garbage sorting less than 10 times; only 15 people participated more than 10 times. In other words, after registration, less than 10% of the residents are likely to maintain their waste separation activities for a long time.

### The trend of residents' participant in waste separation activity

Figure 2 shows the composition of recyclable waste monthly in Xinghedong community. We can see that the total amount of recyclable waste thrown out is still unstable. The community started waste separation system on the 15 September 2020. In the first month the residents were not familiar with the waste separation methods and bonus points system. With 2 weeks of Waste separation briefing and publicity, from the second month the residents started to participate in bonus points system with large amounts of recyclable waste. From the third month, the amount of waste gradually stabilized, which shows that residents have started to form the habit of separating waste.

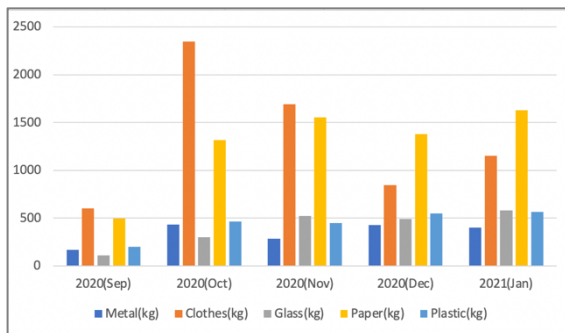


Figure 2. Composition of recyclable waste monthly

## CONCLUSION

This study examines the progress of waste segregation activities in non-mandatory cities in China, which have made small steps forward with bonus points system. Although local residents' waste separation habits have not yet been formed, we still see positive aspects of resident awareness towards waste separation through registration rates (802 families). We also found the residents' behavior towards waste separation under the influence of bonus points system during start up period. Over time, residents would gradually form the habit of waste separation.

## REFERENCES

Guo, S., Ding, G., Zhao, Q., & Jiang, M. (2017). Bonus point system for refuse classification and sustainable development: A study in China. *Sustainability*, 9(10), 1776.