

## *The Interest of Chinese Citizens in Environmental Issues and Green Activities*

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### **Abstract**

Over the last 30 years, China has experienced rapid economic growth that has resulted in several environmental issues that need to be addressed. Numerous researchers believe that by incorporating the social change ideology of “environmental citizenship”, Chinese citizens’ awareness regarding pollution can play an important role in environmental protection. In this regard, the objective of this study was to investigate Chinese citizens’ awareness regarding environmental issues, pollution in cities, and pro-environmental behavior, and thereafter identify the factor that determines their participation in environmental protection or pollution activities. Using a questionnaire survey, data on aspects such as knowledge of environmental protection laws and garbage sorting rules, awareness of the severity of China’s environmental issues, participation in and prioritization of pro-environmental activities in daily life, were collected. Using factor and regression analyses, the mathematical distributions of these aspects were analyzed. The results showed that a majority of Chinese citizens understand the severity of China’s environmental issues and recognize the need for a change in their activities and opinions. However, only a few them adhere to the environmental protection laws. Presently, the focus of Chinese citizens is shifting from rapid economic development to sustainable development, highlighting the role of the education sector and the national/local government in raising public awareness regarding pro-environmental behavior.

Keywords: Environmental citizenship, pro-environmental behavior, green activities

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## Introduction

Compared with other nations, China has experienced an unprecedented economic growth, and still continues to undergo social change. For a greater portion of the last 60 years, this nation prioritized economic growth over environmental protection (He et al., 2012). Consequently, it is now facing numerous environmental issues that need to be addressed. Many scholars have reported changes in priorities, especially after the 11th Five Year Plan (FYP) that spanned 2006 and 2010 (He et al., 2012). However, the acceleration of industrialization, urbanization, as well as further economic growth continues to place enormous pressure on natural resources in this nation, leading to severe pollution and an excessive demand for resources, which may further hinder economic development and social stability (Wang, 2011). If China maintains its current rapid economic growth rate, and if its economic structure is not fundamentally reoriented, it will sooner, rather than later, reach its resource and environmental limit. Thus, a significant restructuring is necessary with respect to consumption and production modes (He et al., 2012).

Consequently, the Chinese government has had difficulties striking a balance between economic growth and environmental protection. Chinese environmental management is government-regulated, and the environmental policies continue to be executed via a top-down approach (He et al., 2012). Since Environmental Protection Laws (EPLs) were tentatively implemented in 1979, the Chinese government has reformed the production and consumption sectors by amending and re-enacting laws aimed at improving energy consumption efficiency and enhancing environmental protection. In 2018, the EPLs were drastically amended to include environmental regulation and control measures, such as the environmental tax, the environmental impact assessment law, and the emission permit system. Arguably, these administrative initiatives have contributed to the improvement of environmental management to a certain extent. Additionally, there have been indications that the rule of law is now being taken more seriously in the field of environmental protection, owing to China's opening up to global economy and policy (Mol & Carter, 2006). Over the past decades, China's environmental management system has achieved some successes (He et al., 2012).

On the other hand, since the 2000s most especially, environmental destruction has led Chinese citizens to develop grievances and begin environmental discourses, owing to their recognition of the fact that pollution damages their health and material interests (van Rooij, 2010; Yang & Calhoun, 2007).

With growing environmental awareness, Chinese citizens have played an important role in the increased efficient use of natural resources, the adoption of environmentally friendly technologies and cleaner products, the lowering of emissions, and the pressuring of firms into compliance, thereby improving pollution regulation and controlling severe pollution (Mol & Carter, 2006; Rooij, 2010). Many environmental non-government organizations (NGOs) have emerged, resulting in "green-speak" that advocates and promotes a new environmental awareness among citizens (Yang & Calhoun, 2007). Environmentally conscious citizens have a responsibility to work towards a sustainable society, and they embrace all the activities one might normally think of as relating to good environmental citizenship, including recycling, reusing, and conserving (Dobson, 2007).

Numerous researchers believe that through the promotion of the social change ideology of “environmental citizenship”, Chinese citizens’ awareness regarding pollution can play an important role in environmental protection. In this regard, the objective of this study was to investigate the awareness of Chinese citizens with respect to environmental issues, pollution in cities, and environmental protection activities (EPAs). Further, from the results obtained, the goal was to identify the factor that determines their participation in environmental protection or pollution activities, and identify measures that can be put in place to promote environmental protection activities and improve environmental awareness.

## **Methods and Data**

Data collected using questionnaire surveys were used in this study. The questionnaires, which included both open-ended and closed-ended questions, and employed the Likert 7-point scaling system, were distributed to 200 Chinese citizens living in the following cities: Dalian, Shanghai, Amoy, and Shenyang. Data related to the respondents’ basic attributes, environmental awareness and related activities, daily behavior, and psychology, were collected, and finally, a total of 192 valid questionnaires were considered for analyses.

Based on questionnaire-survey data, aspects such as citizens’ knowledge of EPLs, garbage sorting rules, awareness of the severity of China’s environmental issues, participation in EPAs, and prioritization of EPAs in daily life, were analyzed.

## **Results and discussion**

### **Citizens’ Understanding of Environmental Protection Law and Garbage Sorting Rules**

Figures 1-4 show the distribution of responses to questionnaire items regarding citizens’ knowledge of EPLs and garbage sorting rules, as well as their littering and garbage sorting frequency. Only 14.6% of respondents answered “I understand the laws and can explain them to others,” while 74.9% answered “I have heard, but I know nothing about the laws,” and 8% responded “I have not heard of these laws.” Although a majority of the respondents had heard of the EPLs via TV commercials or street advertisements, only a few understood the detailed contents of the laws, indicating that the information regarding EPLs that is made available to citizens by the government and the different municipalities is insufficient to foster autonomous observance of the laws.

On the other hand, a majority of respondents (80%) stated that they understand garbage sorting rules, indicating that knowledge regarding these rules has already infiltrated the society. Garbage bags and publicity posters, which are distributed all over the cities, as well as TV commercials, have been effective in building awareness in this regard. However, 70% of the respondents hardly ever or never sorted their garbage before disposal. Even though they understood the garbage sorting rules, most of them did not voluntarily practice it. Furthermore, approximately 90% of the respondents acknowledged that currently, they do not or they seldom litter, indicating that many Chinese citizens have a revulsion towards littering, and they are committed to keeping their living spaces clean.

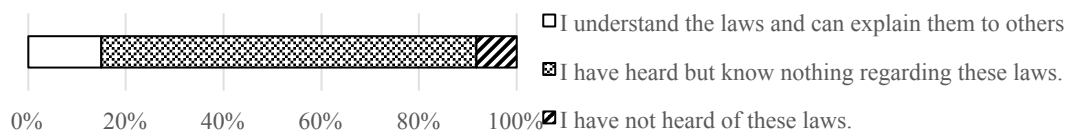


Figure 1: Descriptive statistics of the questionnaire item regarding citizens' understanding of Environmental Protection Laws.

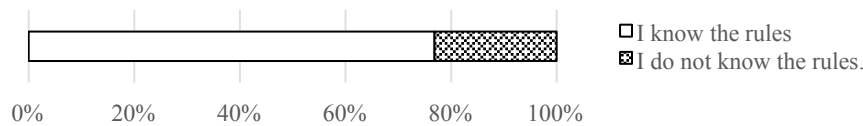


Figure 2: Descriptive statistics of the questionnaire item regarding citizens' knowledge of garbage sorting rules.

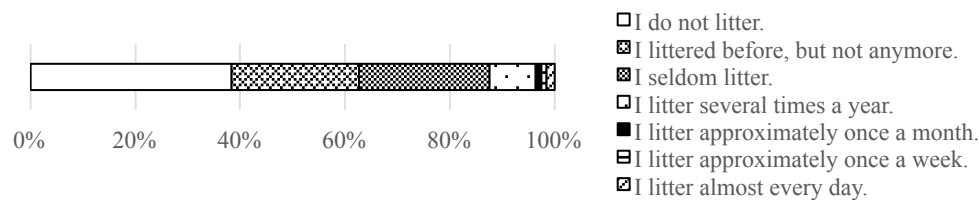


Figure 3: Descriptive statistics of the questionnaire item regarding littering frequency.

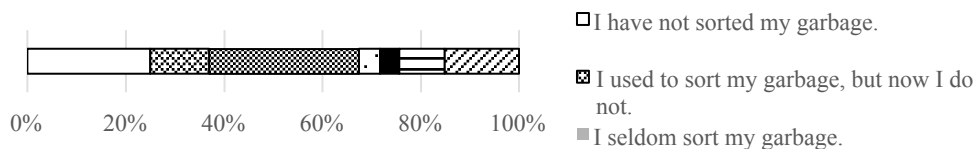


Figure 4: Descriptive statistics of questionnaire items related to garbage sorting frequency.

### Citizens' environmental awareness and related activities

Table 1 presents descriptive statistics of questionnaire items related to respondents' awareness and actions relevant to environmental protection. The different items presented in Table 1 were assigned a score based on the Likert 7-point scale. Taking into consideration the mean scores of all the items, the response "I would like the city I live in to be more hygienic" received the highest score, indicating that of all the environmental problems that affect the daily life of the respondents, cleanliness of living space was of the most important to them. The responses "I think the environmental problems China is facing are very serious" and "I am interested in the environmental problems China is facing" received the next highest mean scores (in that order), indicating that many citizens already feel antipathy towards the current state of environmental pollution in China.

Additionally, the mean scores of "I prioritize maintaining my/our living standard over engaging in energy-saving and garbage weight reduction," and "The top priority for

China is not solving the environmental problem, but further national economic growth” received the lowest scores (in that order). These findings indicate that presently, Chinese citizens value the sustainability of the nation over high-speed economic development and are dedicated to incorporating environmental citizenship, which requires making a commitment to preserving public goods such as the environment (Dobson, 2007).

To extract general factors, all the items were rotated under Promax rotation using maximum likelihood methods. Thereafter, four factors were extracted, and the results of the factor loadings were obtained as presented in Table 1. These four factors were labeled thus: (I) The people around you influence your environmental protection activities, (II) Recognizing the seriousness of environmental problems, (III) Interests in environmental problems, and (IV) Giving priority to national development/improvement of the quality of one’s own life.

	N	Average	Standard deviation	I	II	III	IV
The people around you influence your environmental protection activities.	179	2.056	1.5712	.997			
Your family influences your environmental activities.	176	2.136	1.6540	.698			
I think the environmental problems China is facing are very serious.	186	5.71	1.3917		.949		
I think energy the problems China is facing are very serious.	185	5.303	1.3534		.713		
I have higher eco-awareness than others.	177	4.938	1.3741			.745	
I am interested in the environmental problems that China is facing.	183	5.694	1.3885			.633	
I would like the city in which I live in to be more hygienic.	184	6.5	1.1113			.563	
The top priority for China is not environmental problem-solving, but furthering national economic growth.	181	3.431	1.7863				.999
I prioritize maintaining my/our living standard over engaging in energy-saving and garbage weight reduction.	179	3.838	1.6965				.352

Table 1: Descriptive statistics of questionnaire items related to citizens’ understanding and actions regarding environmental protection.

## Littering and sorting garbage

To investigate the impact of citizen's understanding of environmental protection on their garbage sorting and littering behavior, regression analyses were performed. After being weighted via prorating on a 365 days/year basis, garbage sorting and littering frequencies were considered as the dependent variables, while the independent variables included four extracted factors, gender (dummy variable; male = 1), age, education (weighted variable; education years), knowledge of garbage sorting rules (dummy variable; I know the rule = 1), understanding of EPLs (dummy variable; I understand well = 1), and household monthly income (logarithmically converted). The variance inflation factor (VIF) was <3.0 in all the models, and thus, multi-collinearity was avoided.

Table 2 shows the results of the analyses. Statistically, "Recognizing the seriousness of environmental problems" had a negative effect on littering frequency and a positive effect on garbage sorting activities i.e., citizens who valued environmental and energy sustainability in China made efforts to participate in activities that contributed to sustainability. Therefore, if governments could create awareness among citizens regarding the seriousness of the environmental problems China is presently facing, this would encourage their participation in environmental protection activities.

Contrary to our expectations, "Giving priority to national development/improvement of the quality of one's own life" and "Interests in environmental problems" had no direct relationships with littering or garbage sorting. As shown in Table 1, the priority of many Chinese citizens has already shifted from maintaining their life quality and/or national economic development to environmental problem-solving. However, this priority shift did not result in increased frequency of garbage sorting or abstinence from littering. Therefore, Chinese citizens need to be persuaded through education so that they can acquire a more detailed understanding regarding the impact of littering and garbage sorting on environmental problem-solving.

"The people around you influence your environmental protection activities" had a statistically positive effect on littering frequency, but had no effect on garbage sorting frequency, indicating that the citizens placed a high value on others' opinions, which greatly influenced their littering habits. Citizens who prioritize what others think would tend to refrain from littering because this act is generally regarded as illicit and ill-mannered by the society. Contrarily, the opinions of others did not influence garbage sorting, given that it is generally conducted inside houses and is not witnessed by others. Therefore, a measure whereby waste collection staff are able to see the contents of garbage disposed for composting or recycling systems may have an immediate effect on garbage sorting.

Unfortunately, the results showed that "Citizens' knowledge of garbage sorting rules" had no significant effect on either dependent variables, indicating that even though many citizens understand garbage sorting rules (Figure 1), most of them do not properly dispose of their garbage. Therefore, they must be encouraged not only to acquire knowledge regarding garbage sorting, but also to practice garbage sorting activities. Additionally, "Citizens' understanding of Environmental Protection Laws" had a significant effect only on garbage sorting frequency.

Recent studies have shown that younger populations are most likely to engage in pro-environmental behavior, given that they grew up during the period of intense environmental degradation (Chen et al., 2011). Consistent with this finding, this study showed that younger citizens were more likely to refrain from littering compared with older citizens; however, age was unassociated with garbage sorting frequency. Younger citizens expressed greater concern regarding the future environmental sustainability of China. Additionally, they have been educated in schools regarding the problems of modern China; thus, a majority of them are learned and are conscious of the importance of their actions and moral values with respect to maintaining China's sustainability. In cities, scattered garbage and hygiene problems are clearly visible, given that the contribution of garbage sorting to national sustainability is still obscure, and citizens are generally not well educated.

According to previous studies, people with higher levels of education are more likely to engage in pro-environmental behavior. This is because their exposure to more information regarding environmental degradation as well as their schooling have made them more conscious of their responsibility towards the environment (Scott & Willits 1994; Chen et al., 2011). Contrary to these previous studies, this study showed that education and gender are not directly related to littering and garbage sorting. Additionally, it showed that by improving citizens' knowledge regarding law and rules related to environmental protection, education level no longer affected the two dependent variables, meaning that higher levels of education did not strengthen the motivation for environmental sustainability. Therefore, to establish pro-environmental citizen activities, not only the knowledge of law or rules should be imparted, but in addition, education regarding pro-environmental moral values should be provided during elementary education.

Considering that in traditional gender roles, women in China perform more domestic tasks such as garbage sorting and recycling than men, gender may affect environmental protection activities (Chen et al., 2011; Li 2003). However, this custom has been mostly abolished, and women now work. Thus, regardless of gender, it is important that all citizens understand and conform to garbage sorting rules.

	Littering frequency B	Garbage sorting frequency B
Male dummy	.053 (.022)	.055 (.052)
Age	.268*** (.002)	-.076 (.004)
Education	-.043 (.007)	-.037 (.018)
Citizen's knowledge of garbage sorting rules.	-.090 (.042)	.073 (.099)
Citizen's understanding of Environmental Protection Laws.	.072 (.031)	.322*** (.073)
Recognizing the seriousness of environmental problems.	-.187** (.014)	.302*** (.033)
Giving priority to national development/improvement of the	.116 (.011)	-.030 (.027)
Interests in environmental problems.	-.033 (.017)	.159 (.040)
The people around you influence your environmental protection activities	-.245*** (.013)	-.092 (.030)
Businessman dummy.	-.252 (.034)	-.006 (.081)
R-Squared	.184	.229
Adjusted R-Squared	.127	.173
N	153	147

Table 2: Results of regression analyses.  
\*Sig. < .01, \*\*Sig. < .05, \*\*\*Sig. < .01.

## Conclusion

A citizen's high self-efficacy in environmental protection activities would generally promote environmental citizenship. If the atmosphere of the residential area is dirty and surrounding is littered with garbage, citizens will lack the motivation to refrain from littering. Hence, the cleanliness of residential areas helps to foster moral values regarding hygiene. Presently, Chinese citizens cannot fully appraise the extent to which their activities directly contribute towards environmental protection. This could be one of the reasons that suppresses their motivation to engage in environmental protection activities. Therefore, educating citizens on garbage sorting for composting and recycling systems, and explaining how this contributes to environmental protection, may help them feel profitability and reciprocity while practicing garbage sorting.



This study clearly reveals that garbage sorting rules are well-known in China. The dissemination of information by the Chinese government regarding garbage sorting, which is done via television commercials, posters in the city, and the many trash boxes prepared for each sort of garbage, distributed across the different cities, contributes to publicizing the garbage sorting rule. However, this current system does not provide a strong deterrent to negative-environmental activities. The promotion of pro-environmental activities cannot be achieved without radical changes in citizen's understanding and moral values. Shanghai enforced a "compulsory garbage sorting rule" for household waste on July 1, 2019, which requires that individuals who fail to properly sort their garbage will be fined up to 200 yuan. Strict rules can enforce particular behaviors; however, they do not change opinions or understandings. Rather, the understanding of citizen would be effectively changed if they are aware of the observations and judgments of others. Additionally, education, which brings about drastic changes in awareness regarding the environment by fostering a culture that encourages EPAs in China, is now required. At a residential garbage disposal area, if volunteers closely observe trash disposal and sorting, and if residential committee members as well as property management staff are engaged in observing the actions of the neighborhood residents, it is expected that this would encourage citizens to follow the sorting rules.

China, which is a country that has faced international criticism for its domestic environmental policies in the past (Mol & Carter, 2006), is presently shifting its focus from national economic development growth to sustainability. Therefore, the effective implementation of environmental education programs to promote awareness regarding environmental protection may have immediate effects.

This study had some limitations. Firstly, the surveys were conducted only in urban areas. A previous study revealed that the behavioral clusters for urban vs. rural locations are salient (Whitmarsh and O'Neill, 2010). Urban areas may suffer more from substantial environmental threats compared with rural areas (Vitousek et al. 1997; Kalnay & Cai 2003), and larger cities with greater political power and higher employment opportunities can afford to promote pro-environmental behavior (Chen et al., 2011). Therefore, comparing citizens' understanding and awareness with respect to their location i.e., urban and rural, and thereafter, deducing implications based on the approaches employed aimed at improving suitable citizen's pro-environmental activities based on their locations, will be the focus of our next study.

Additionally, the results of this study were contrary to those of previous studies (Scott & Willits 1994; Li 2003; Chen et al., 2011), which showed that citizens who were employed, holding leadership positions, living in larger cities, female, younger, highly educated, single, and have environmentally friendly attitudes, were more likely to participate in pro-environmental behavior. Therefore, a more careful examination is still required to reveal causal relationships among these factors, and to better understand the inconsistencies between the results of this study and those of previous studies.

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