

## Study on Comparison of Citizens' Environmental Awareness Among Four Cities in China and Japan

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### Abstract

This study aims to compare governmental activities and citizens' consciousness in environmental protection in China and Japan. The citizens' environmental awareness and the relevant acts were examined by designing and distributing questionnaires to citizens in urban and rural cities in China and Japan. The results demonstrate that there are more differences between the two countries than between urban and rural cities inside the same country. Chinese people pay more attention to local severe problems, and require more garbage classification while Japanese people are relatively satisfied with the current environmental situations. Past trends of the accessible environment could positively affect citizens' perspectives for the environment in the future.

**Key words:** Environmental awareness; Citizen; China; Japan; Social survey

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### INTRODUCTION

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The urban environmental problems of China are still serious, and the trend is not so affirmative. With the acceleration of the urbanization, cities have presented environmental pollution and ecological damage problems variously. The urban environmental problems cannot be solved without the main actors of the city—the citizen and the government. To survey a relationship between the environmental awareness of the citizens and the government, can link with the realism of China closely, and has a more direct practical significance.

The environmental protection based on the sustainable development started in China relatively late in the 1990s. The "Rio Declaration on Environment and Development", "21 Centuries Agenda" and other important international documents were adopted by the United Nations Conference on Environment and Development in June 1992. These fully reflected the present-day human social new ideas of sustainable development, and reflected the consensus reached in the field of environment and development in the world and the highest-level political commitment by the signatories. On this basis, China's State Council Environmental Protection Committee has produced the "China's Agenda 21". Its strategic thought was that the prerequisite of China's sustainable development is a development, the strategy of China's sustainable development seeks to focus on the sustainable development of society, and China's sustainable development should be built on the sustainable use of resources and on the basis of a good ecological environment. Its main content included four major

parts which were the overall strategy and policies of the sustainable development, sustainable social development, sustainable economic development, and the rational use and protection of resources and the environment respectively.

Environmental awareness is a kind of independent advanced ideology. Although the scientists have not given a definite concept to environmental awareness, the related information from the definition and the component of environmental literacy could still make a definition of that. Looking through the classification of environmental awareness, the understanding of its concept has covered the nature, the population, the law, the economy and other aspects. Citizen's environmental awareness is namely for the expression of environmental literacy in the citizens' awareness.

Environmental awareness should include the understanding of natural environment, a manner of treating the relation between human and nature; desire and action for environmental protection. In brief, environmental awareness is a comprehensive concept covered by domain and discipline. According to previous studies, citizens' behavior should include factors as below: cognition of environmental problems, understanding a relation between human and nature, custom environmental behavior, sense of participation and legal awareness about environment, attitude towards the environment around and so on. This study analyzes inquisitional data based on the concerning aspects of environmental awareness in the survey areas, finding citizen's environmental awareness and behavior in large and small cities in China and Japan to compare.

Environment-related policy-making and establishment of the legal systems are still in the initial stage in China, while Japan's environmental policies, management systems, legal norms and its related industries have been constructed and have been improved to a relatively mature stage since the 1960s. The Citizen Congress were held by the government and normal citizens in Japan, to get the ideas to improve the local environment, while in China there's a little lack in this aspect of the communication between the government and the citizens.

As a result, it is anticipated that the environmental management systems and the relevant laws and regulations, which were constructed under the guidance of the environmental policies based on ideas of sustainable development, are compared between China and Japan in the study. This study mainly aims to investigate differences in the citizen's environmental awareness between China and Japan.

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## 1. METHODS

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To compare citizens' consciousness in environmental protection and the governmental activities in four cities in China and Japan, social surveys were carried out.

Questionnaires were designed and were distributed to the citizens to examine their environmental awareness and relevant acts.

### 1.1 Social Survey

The following aspects were included in this study:

- Cognition about environment problems
- Understanding of the relation between human and nature
- Behavior towards the environment
- Sense of participation and legal awareness about environment
- Attitude towards the environment

Therefore, questions in the questionnaire in this study were set as follows:

- What should the relationship between the environment and human be?
- In your opinion, comparing with the past 5-10 years, how did the local environmental status changed?
- Forecast the local environmental status 5-10 years later.
- If the government holds environment-related hearings in your community, will you attend?
- Have you ever attended any activities for environmental protection?
- You think your environmental awareness is?
- In order to improve the environment, what do you expect the government to do? Please tick at most three in the following options.

### 1.2 Survey Areas

As urban cities in China and Japan, we chose Tianjin and Sapporo (Lin, 2011). Tianjin is the third largest city in China, of which central urban area is 177.07 km<sup>2</sup>, and the population is 4,278,900. The main industry of Tianjin is manufacturing. Sapporo is the fifth largest city in Japan by population, and is capital of Hokkaido Prefecture. The total area is 1,121.12 km<sup>2</sup>. The main industries of Sapporo are service sector, tourism and food-processing industries.

As for rural cities in China and Japan, Jixian and Ishikari (Lin, 2011). Jixian is a tourist city in the north of Tianjin City, which has an area of 1,589.74km<sup>2</sup>, and the population is 828,604. The main industry of Jixian is tourism. Ishikari is a city located in Ishikari Subprefecture in Hokkaido, which has a close situation and also tight intercommunion with Sapporo City. The total area is 721.86 km<sup>2</sup>, and the population is 61,025. The main industry of Ishikari is fishery, port industry and transportation.

### 1.3 Data Analyses

The questionnaires were distributed to citizens in Tianjin and Jixian in China, and Sapporo and Ishikari in Japan. Three hundred questionnaires were distributed to each city to ensure a large quantity of random samples.

Several inquiring methods were taken in the survey areas (Lin, 2011). In Tianjin and Jixian, a social survey

was carried out by face-to-face way based on the questionnaires. In Sapporo, the questionnaires were distributed in several meetings held inside and outside Hokkaido University. In Ishikari, they were sent by mail directly to the citizens. The addresses of the citizens were obtained from the phone book of Ishikari.

The collected data were analyzed by using the factor analysis methods, such as the linear regressive analysis method, the logical regressive analysis method, and cross analysis method. The analysis was especially focused on the citizens' consciousness, their evaluation to themselves and the environment around, and also their requests towards the government. The Chi-square test was applied to all the results in order to examine the statistic significance of the results obtained in this study.

## 2. RESULTS

### 2.1 The Relationship Between the Environment and Human

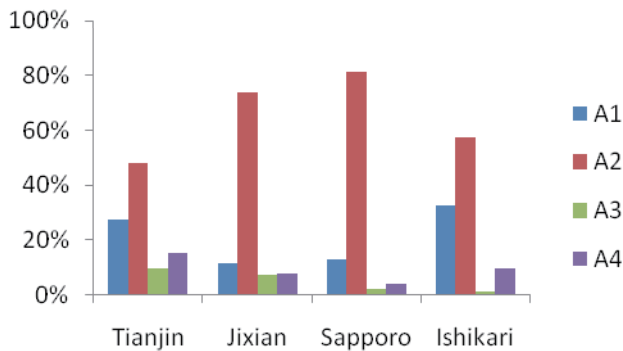
How the citizens consider a relationship between the environment and human is an important factor which could affect their behavior toward the environment.

#### Question 1: A relationship between the environment and human should be:

A1 We should consider a benefit of the environment first

A2 We should develop the environment and humanity together harmoniously.

A3 We should conquer the environment to meet higher needs of our lives.



**Figure 1**  
Relationship Between the Environment and Human for Citizens in Tianjin, Jixian, Sapporo and Ishikari

The chosen rate of A1 and A2 is 67% in Tianjin, 85% in Jixian, 94% in Sapporo and 90% in Ishikari, respectively (Figure 1). The rate of Chinese citizens that chose A3 is much higher (10% in Tianjin and 7% in Jixian) than that of Japanese citizens (2% in Sapporo and 1% in Ishikari). This may indicate the environmental friendliness of Japanese citizens is more prominent than that of Chinese citizens.

### 2.2 Changing Trend of Local Environmental Status

Questions 2 and 3 were prepared to examine how the citizens consider the local environment was in the past and will be in the future.

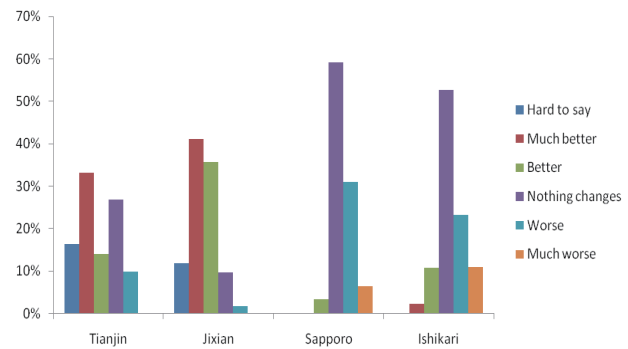
#### Question 2: In your opinion, comparing with the past 5-10 years, the current local environmental status is:

Much better  Better  Nothing has changed  Worse  Much worse  I don't care

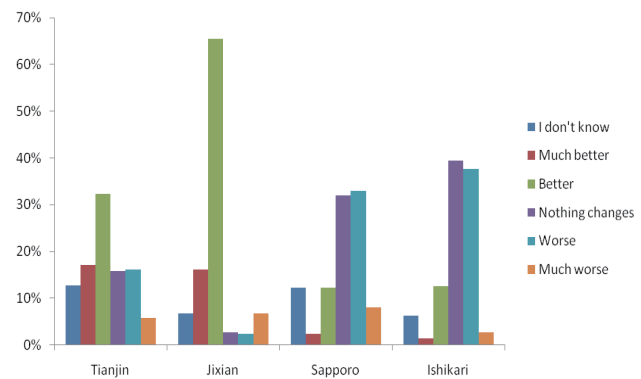
#### Question 3: Forecast the local environmental status in the next 5-10 years:

Much better  Better  Nothing will change  Worse  Much worse  I don't know

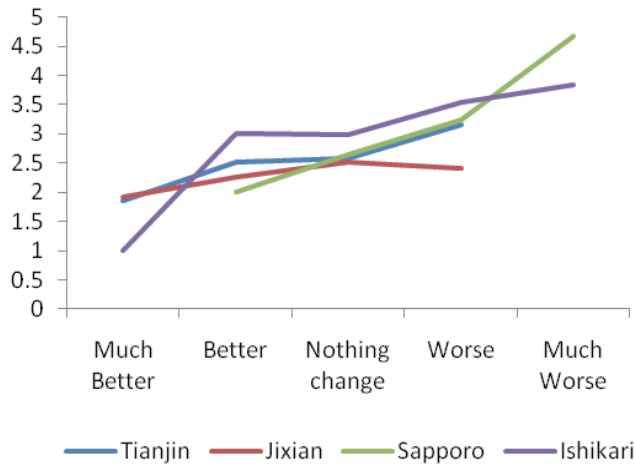
The results of the two questions are shown in Figure 2.1 and 2.2. If the forecasted trend is evaluated by "Much better"=1, "Better"=2, "Nothing will change"=3, "Worse"=4, "Much Worse"=5, the average score of the forecasted trend by citizens in the next 5-10 years in Tianjin, Jixian, Sapporo and Ishikari is shown as in Figure 2.3.



**Figure 2.1**  
The Local Environmental Status Changing in the Past 5-10 Years in Tianjin, Jixian, Sapporo and Ishikari



**Figure 2.2**  
The Trend of Local Environment Status Forecasted by Citizens in The Future 5-10 Years in Tianjin, Jixian, Sapporo and Ishikari



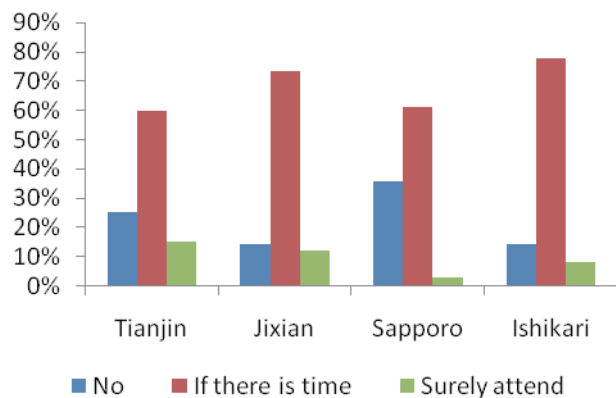
**Figure 2.3**  
**Average Score of the Trend of Local Environmental Status in the Next 5-10 Years Forecasted by Citizens in Tianjin, Jixian, Sapporo and Ishikari**

Figure 2 shows that in most of the four cities except Jixian the citizens forecast the local environmental will be worth in the next 5-10 years. Obviously the trend of the local environmental status in the past 5-10 years judged by the citizens positively affects that in the next 5-10 years

### 2.3 Willingness to Attend Environment-related Hearings

Attending environment-related hearings can embody both curiosity and mastery about environmental knowledge.

**Question 4: Will you attend environment-related hearings in your community held by the government?**



**Figure 3**  
**Citizens' Willingness to Attend Environment-related Hearings in Tianjin, Jixian, Sapporo and Ishikari**

Figure 3 shows that the willingness of the answerers to attend hearings in their communities is mostly depend on whether they have time or not.

The answerers in urban cities (Tianjin and Sapporo) tend to attend less than those in rural cities (Jixian and Ishikari). This may be because the answerers in urban cities live relatively busy and more individually.

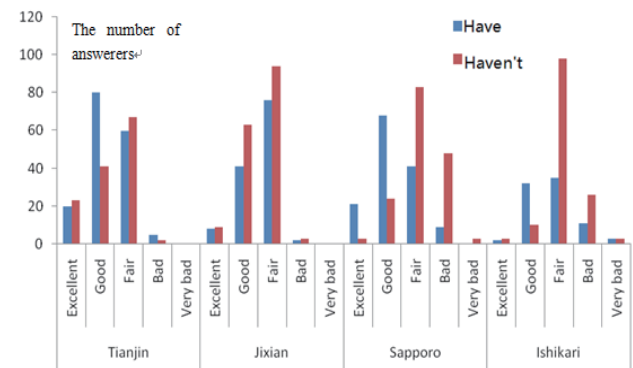
### 2.4 Relationship Between Attending Rates of Environmental Protection Activities and the Self-evaluation of Citizens

A relationship between attending rates of environmental protection activities and the self-evaluation of citizens in Tianjin, Jixian, Sapporo and Ishikari is examined by the cross analysis.

**Question 5: Have you ever attended any activities for environmental protection?**

**Question 6: Evaluate your environmental awareness:**

Excellent Good Fair Bad Very bad



**Figure 4**  
**Relationship Between Attending Rates of Environmental Protection Activities (Question 5) and the Self-evaluation of Citizens (Question 6) in Tianjin, Jixian, Sapporo and Ishikari**

Figure 4 shows results of the cross analysis between attending rates of environmental protection activities and the self-evaluation of the citizens in Tianjin, Jixian, Sapporo and Ishikari. As mentioned in Section 3.3, the citizens in Tianjin have a higher rate in attending environmental protection activities than those in the other cities. Tianjin is the only city in which more citizens have attended the related activities than those who haven't attended. Figure 4 shows that the citizens in Tianjin have relatively rates of choosing "have" and "haven't" in the groups of "excellent" and "fair"; while in the groups of "good" and "bad" have attended is much more than those who haven't attended. In Jixian, on the other hand, in all groups of the self-evaluation, the citizens who haven't attended the activities are more than those who have attended. This is because relatively few citizens in Tianjin and Jixian evaluate that they are "Bad", and none of them evaluate that they are "Very bad", in this aspect. In Sapporo, citizens who chose "excellent" and "good" have an observably higher rate in choosing "have" than "haven't", while those who chose "fair" and "bad" have similar rates between choosing "haven't" and "have". In Ishikari, the rate distribution of the citizens is all similar with that in Sapporo, except for the cases of "Excellent" and "Very bad".

To sum up, in Chinese cities, no clear relationship

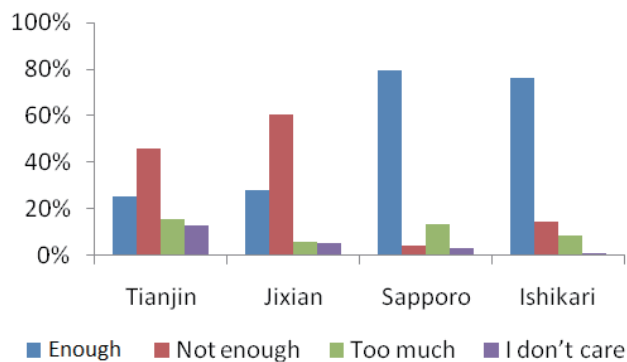


was found between the attending rates of environmental protection activities and the self-evaluation of the citizens, while in Japanese cities, citizens who chose “excellent” and “good” had higher rates of choosing “have” than “haven’t”, and those who chose “fair” and “bad” chose “have” and “haven’t” similarly. This implies that Japanese citizens valued their environmental awareness more objectively, based on their attending rates of environmental protection activities.

### 2.5 Attitudes Towards Classification of Trashes

Trash assorting systems in Japan have been fully developed. In Sapporo City, for example, trashes are divided into sorts of burnable, unburnable, huge trashes, plastics, bottles and cans, papers, and others. Plus, throwing the burnable, unburnable, huge trashes is charged in Sapporo. In China, burnable and unburnable trashes are not forced to be assorted. Classification of trashes is expected to be promoted by charging trashes.

**Question 7: In your opinion, the number of classification of the trashes is:**



**Figure 5**  
Attitude Towards Classification of Trashes in Tianjin, Jixian, Sapporo and Ishikari

Figure 5 shows most Chinese answers think the number of classification of trashes in China is not enough, while most Japanese answers think it is enough in Japan. It seems that the Japanese answers have got used to the sorting way of trashes in their daily lives, while Chinese answers require their government to improve their gathering and recycling systems of trashes.

According to Chinese Government (2011), by the year of 2015, the national urban life trash treatment rate needs to be reached to 80% or more, while provincial capitals and municipalities need to achieve full trash harmless treatments. Corporations and individuals which generate wastes are required to pay trash fees. Chinese Government (2011) also calls the citizens to improve the treatment of wastes, which could lower the costs.

### 2.6 Expectation for Governments in Improving the Environment

To examine expectation of citizens to the local governments, Question 8 was designed.

**Question 8: In order to improve the environment, what do you expect the government to do?**

A1 Prioritize environmental protection first in the process of economic development

A2 Enhance environmental education and publication, to improve citizen’s environmental awareness and level of their behavior

A3 Improve mechanisms of public participation in environmental protection

A4 Encourage NGOs

A5 Improve environmental laws

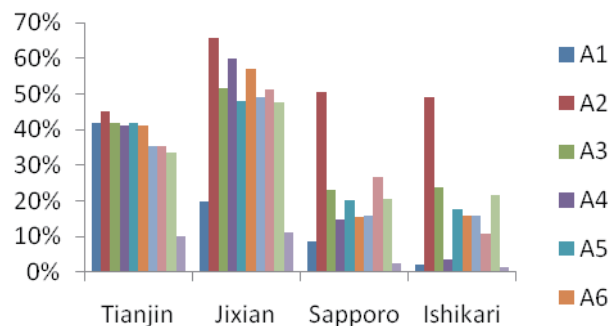
A6 Enhance law enforcement

A7 Increase investments on environmental protection

A8 Develop technology related to environmental protection

A9 Set feasible economic policies and guide citizens and organizations to pay more attention to environmental protection

A10 Other



**Figure 6**  
Expectation of Citizens for the Government to Improving the Environment in Tianjin, Jixian, Sapporo and Ishikari

Figure 6 shows the second option (A2) was chosen most in all the cities, which is the only option of which rate exceeded 30% in the survey in the two Japanese cities.

## 4. CONCLUSIONS AND RECOMMENDATIONS

The results obtained in this study can be analyzed and concluded as:

- The environmental friendliness of Japanese citizens is more prominent than that of Chinese citizens.

- Most citizens in China estimated future environmental status optimistically, while Japanese citizens tend to feel a little pessimistic for the future.

- Forecast of the future trend of environmental status in the future by citizens is affected substantially by the past trend they evaluated for.

- Most citizens in both China and Japan will attend environment-related hearings if they have time.

- Most Chinese answers think classification systems of trashes in China is not enough, while most Japanese

answerers satisfy with the current system.

- Most citizens in both China and Japan chose an option that they require their governments to enhance environmental education and publication, to improve citizen's environmental awareness and the level of their behavior.

Based on the conclusions above, some recommendations to both countries are drawn as follows:

- Enhance environmental education and publication, to improve citizen's environmental awareness and the level of their behavior, especially to relatively low income citizens.

Recommendations towards the Chinese government are:

- Study the experiences of the developed countries in classifying trashes and facilitate related policies as planned.

- Encourage NGOs by more support in all aspects.
- Enhance law enforcement.

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