

Research on Water Conservation Consciousness of Residents in Hebei Province

-- The Achievement of the Curriculum Assessment Reform of 《Introduction to Environmental Science》

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Abstract

Water is the mother of all things, the foundation of survival, and the source of civilization. General Secretary Xi proposed a sixteen-character guideline for water conservancy in the new era: water conservation first, spatial balance, systematic governance, and two-handed effort. Based on the increasing emphasis on water environment and water ecology in the new era, we have conducted a systematic survey on the water-saving awareness of residents in Hebei Province, and conducted statistics and longitudinal analysis of the survey results, as well as the current status of residents' water-saving awareness. Related suggestions were also made.

Keywords

Water saving awareness; domestic water consumption habits; water saving equipment; reclaimed water.

1. Research Background

China is the country with severe drought and water shortage. The total amount of fresh water resources in my country is 2.8 trillion cubic meters, accounting for 6% of the world's water resources, second only to Brazil, Russia and Canada, and ranking fourth in the world. However, my country's per capita water resources are only 2,300 cubic meters, which is only 1/4 of the world average, and it is one of the poorest countries in the world with per capita water resources. At the same time, China is the country with the most water consumption in the world, and the form of my country's water resources is very severe.

Hebei Province has serious water shortages. The per capita water resources are 386 cubic meters and the per mu per mu water resources are 243 cubic meters. Both per capita and per mu water resources are equivalent to 1/8 of the national average, which are both lower than the national level and adjacent. The amount of self-produced surface water resources in provinces, cities, districts and some mountainous areas has been exclusively used by Beijing and Tianjin. At present, surface water has been declining year after year, and groundwater has been severely over-exploited, leading to land subsidence, environmental degradation, and endemic diseases (such as endemic goiter caused by iodine deficiency in water, fluorosis caused by high fluorine content in water, etc.). People in Hebei Province are Facing severe water shortage challenges.

2. Research Purpose

1. Realistic goal: Through practical activities, learn about water knowledge, water saving methods and people's awareness of water saving, so that people know the lack of water resources in Hebei Province and the importance of water saving in life. In this way, we can mobilize people's enthusiasm to protect and cherish water resources, enhance people's consciousness of using water reasonably, efficiently, and not wasting water resources, reduce water usage, and promote sustainable development.

2. Developmental goals: through practical activities, cultivate and improve the ability to discover and solve problems, the ability to interact with people, communicate and cooperate, and improve the ability to collect and process information resources.

3. Emotional goals: through practical activities, stimulate the enthusiasm of inquiry, clarify the importance of water saving, and save water in daily life, and create a good environment of harmony between human and water.

3. Research Object and Research Scope

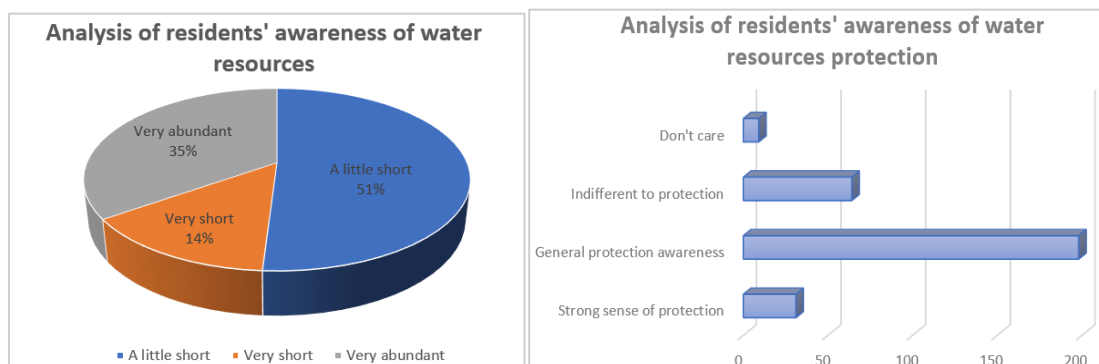
1. Research scope: cities in Hebei Province
2. Research object: randomly selected among residents

4. Survey Content and Analysis

4.1. Analysis of Awareness

According to data analysis, most residents of Hebei Province have little understanding of the water scarcity in their locations, and some of them are not aware of the water scarcity. Among 302 people, 105 people think that water resources are not lacking and sufficient (34.77% of the total), 154 people think that water resources are a little lacking (50.99% of the total), and 43 people think that water resources are very short (accounting for 14.24% of the total number).

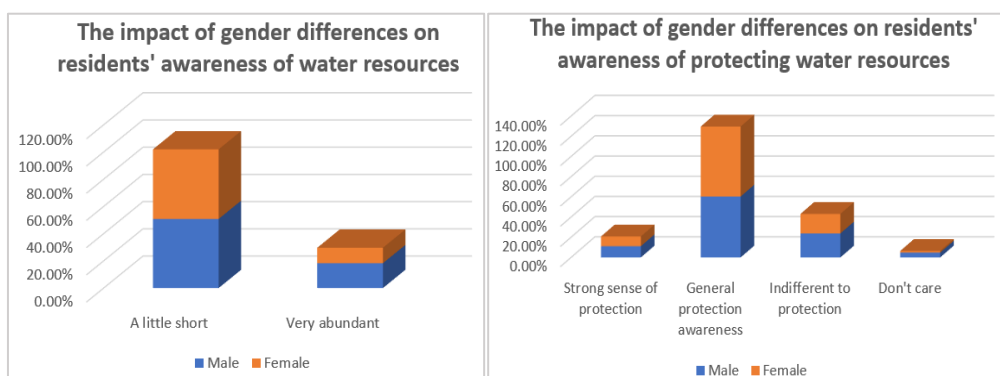
Regarding water-saving awareness, according to our survey, 31 people have strong awareness of water-saving in their lives (10.28% of the total), 198 people have average awareness of water-saving in their lives (65.56% of the total), and 64 people Water consciousness is indifferent (21.19% of the total), and 9 people have no water saving consciousness (2.98% of the total). This shows that the vast majority of residents have not personally experienced the lack of environmental water resources in their locations, and the lack of water resources has not seriously affected people's lives, so that the vast majority of residents lack understanding of the current situation of water resources in Hebei Province.



In the water-saving awareness survey, the ratio of males to females is close to 3:4, the number of boys is 126, and 14 people have strong awareness of water conservation (11.11% of the total)

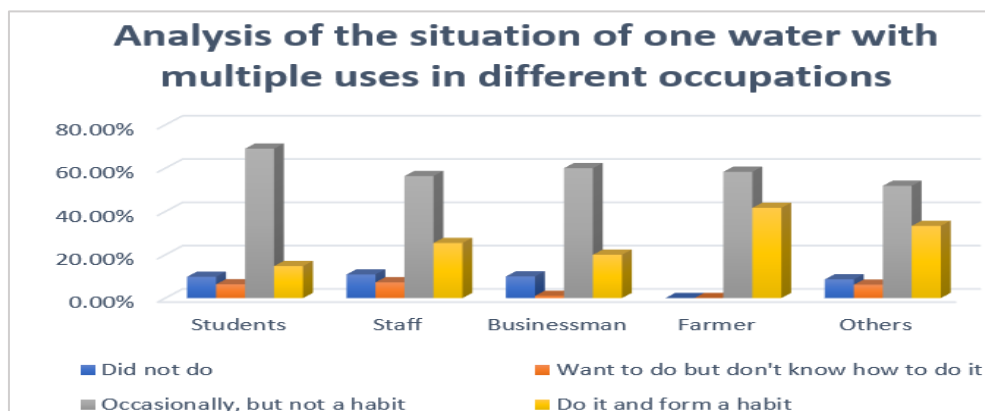
number of boys). There are 76 people with average water conservation awareness (60.32% of the total number of boys). There are 30 people indifferent to water protection awareness (23.81% of the total number of boys). There are 6 people who don't care about water resources protection ((4.76% of the total number of boys). The number of girls is 176, of which 17 have strong awareness of water resources protection (accounting for 9.66% of the total number of girls), and 122 Water protection awareness is average (69.32% of the total number of girls), 34 people are indifferent to water protection (19.32% of the total number of girls), and 17 people are not concerned about water protection (1.7% of the total number of girls).

From this comparison, we found that men and women have roughly the same awareness of water resources and water-saving awareness, but men's awareness of water scarcity in Hebei Province is slightly stronger than women's, and women have a stronger awareness of water saving than men.

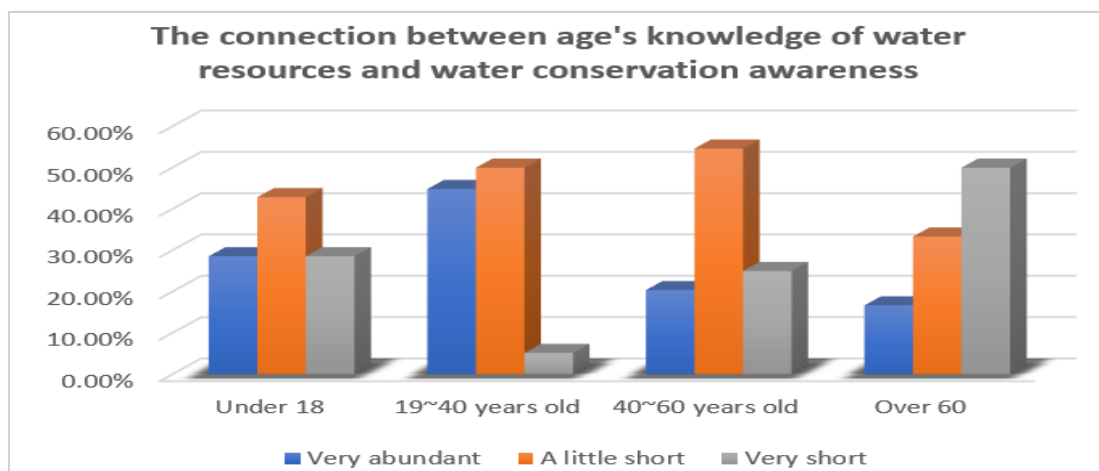


In the water-saving awareness survey, we conducted a specific analysis on the professional situation. The number of students is 142, and 14.79% of the total are able to use one water for multiple purposes. There are 55 employees in the company, and 25.45% of the total are often used for multiple uses. There are also 10 residents who are engaged in business occupations. People often use one water for multiple uses (accounting for 20% of the total population). 12 farmers often use one water for multiple uses (accounting for 41.67% of the total). There are 83 residents who are unemployed and other types of occupations. Protect water resources. Strong residents accounted for 34.94% of the total.

From this we can find that farmers often use one water for multiple uses accounted for the largest proportion of the total, and nearly half of them have formed daily water-saving habits; students accounted for the least proportion of the total number of multiple uses of water, indicating that most students They do not have good water consumption habits in daily life and lack water conservation awareness.



There is also a certain correlation between water-saving awareness and age. According to the survey, among the 302 people surveyed, only 4.63% of the total people think that water resources are lacking and have achieved multiple uses of water, which shows that a large number of people do not have Strong awareness of water saving. Among the 4.63%, there are 14 people who think that their environment is lack of water resources and have formed the habit of using one water for multiple uses. The number of people under 18 years old is 0, accounting for 0; only 1 in 19-40, accounting for 7.14%; 11 people aged 40-60, accounting for 78.57%; 2 people over 60 years old, accounting for 14.29%. By comparison, it can be found that people aged 40-60 and above have a stronger awareness of water saving, while the middle-aged and elderly have stronger awareness of water saving and water saving habits in life compared to young people.



In general, nearly 70% of residents have average water-saving awareness, and only about 10% have strong water-saving awareness. Nearly 30% of residents have little awareness of water-saving and are indifferent to water saving. Among them, gender did not have a significant impact on the awareness of water resources and water conservation awareness in Hebei Province; there are significant differences between different occupations: farmers know most about water resources and most of them have formed daily life savings. Water habits, while students are on the contrary; age differences also have a great impact on them: middle-aged and elderly people have a stronger awareness of water saving than young people.

We found that most people do not have enough awareness of the current situation of water resources in Hebei Province, and their awareness of water conservation and protection of water is weak. This is largely due to the fact that residents have not faced more water shortages in their current social life, so they are not concerned about water conservation. Do not take it as a necessary thing, most of them just use one water for multiple purposes occasionally, and have not formed a habit. Combining the current residents' understanding of the water resources in Hebei Province, it can be seen that "knowledge determines action". It is necessary to let the residents know the scarcity of water resources from the source, so as to encourage everyone to develop good habits of daily water saving. In recent years, although the state has carried out various and large-scale reforms in the water conservancy industry, the adjustment of water prices is far from enough. The current water prices do not play a role in regulating the contradiction between supply and demand in the water resources market. Statistics show that the water fee standard across the country only reaches 62% of the estimated cost, and the agricultural water price is less than 1/3 of the cost; the water fee only accounts for about 0.3% of the residents' daily expenditure, or even lower, and the water fee is often just symbolic It

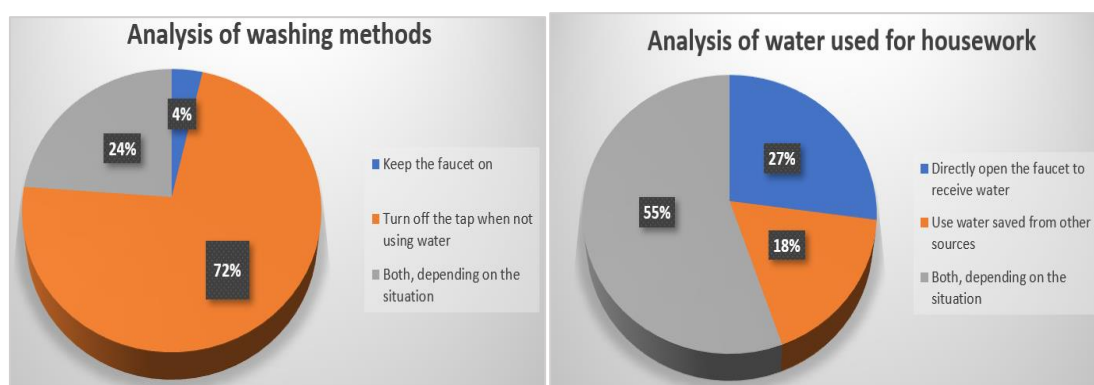
doesn't pay attention to economic benefits, so the residents have no fear of using water and don't care.

4.2. Analysis of Residents' Daily Water Consumption Habits

According to the results of data analysis, most people in Hebei Province may turn off the tap depending on the situation or turn off the tap when they are not in use. However, there are still some people who keep the tap on when they are washing. Among 302 people, 219 of them do not use water. Will turn off the faucet (72.52% of the total number of people), 11 people will keep the faucet on when washing (3.64% of the total number), 72 people have both conditions, depending on the situation; in the domestic water method (such as For flushing toilets, mopping the floor, etc.), among the residents surveyed in this survey, 82 (27.15% of the total population) directly opened the tap to receive water, and 53 (17.55% of the total population) used other aspects to save money 161 people (53.31% of the total number of people), 161 people (53.31% of the total); among the surveyed residents, when the survey is about whether they will do it in life When one water is used for multiple purposes, 185 people (61.26% of the total number of people) occasionally use one water for multiple purposes, but they have not developed a habit. 70 people (23.18% of the total number) have achieved multiple uses of water and have developed a habit, 28 people (9.27% of the total number) did not achieve multiple uses of water, and even 19 people (6.29% of the total number) did not know how to use multiple water.

Through the analysis of the three types of data, it can be seen that in this survey, about 70% of the residents can turn off the faucet when they are not using water, and use the water saved from other aspects to mop and wash the floor. And so on, about 60% of residents occasionally use one water for multiple purposes but they have not formed a habit. It can be seen that nearly 60% of residents have water-saving awareness and water-saving behaviors in their lives, but most of them have not formed a habit.

In daily life, household water content mainly involves: laundry, bathing, washing, drinking, kitchen water, toilet flushing, house cleaning, etc. The survey shows that the top three residents' water consumption are laundry, bathing and kitchen water, and These three items account for more than 80% of all domestic water use. Most residents are also using the water for multiple purposes.



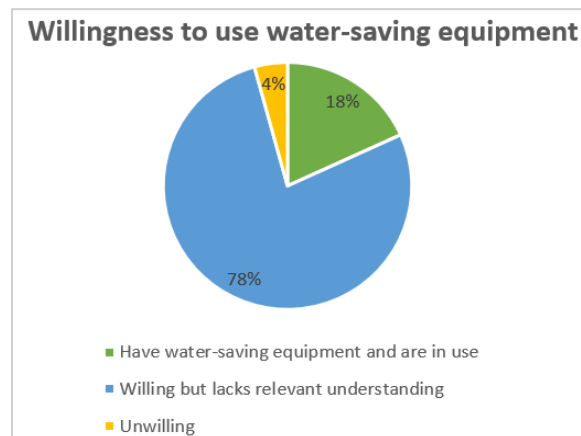
4.3. Analysis of the Use and Willingness of Water-Saving Equipment

After collecting data, we learned that my country has recently developed a variety of water-saving equipment, such as water-saving faucets and toilet water-saving appliances. By investigating residents' knowledge and use of water-saving equipment, we have found that 55 people (18.21% of the total) are using water-saving equipment, and 234 (77.48% of the total) are willing to use water-saving equipment. Lack of relevant knowledge, only 13 (4.3% of the total) people are unwilling to use water-saving equipment. This shows that the vast majority of residents have a positive attitude towards water-saving equipment, but due to the lack of

relevant knowledge and the lack of widespread use of water-saving equipment (especially in some rural areas that are less developed), nearly 80% of the residents are in a state of willingness but no contact.

With the continuous development of the times, more families have put forward higher requirements for the quality of water. Everyone is buying water purification equipment, but not many families purchase and use water-saving equipment specifically.

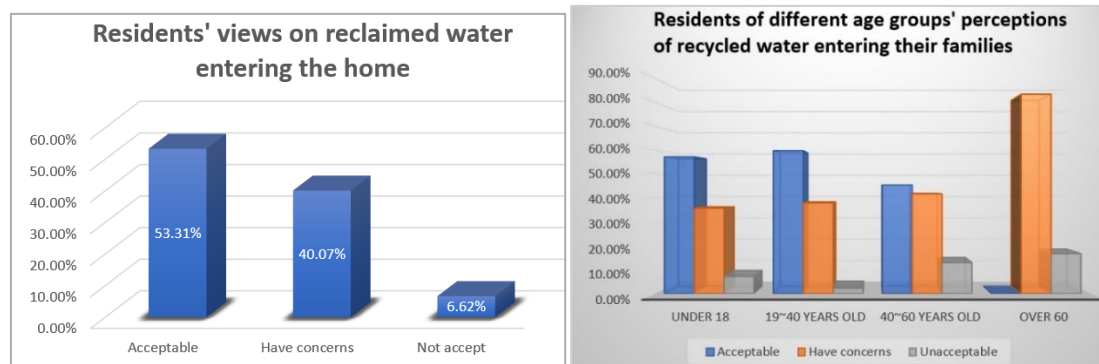
The reasons for our analysis are as follows: It may be due to the high price of water-saving equipment, which has little water-saving effect; secondly, the lack of relevant popularization and promotion of water-saving equipment, which is currently only used in some cities; and it may also be because most residents have insufficient understanding of water resources in our province, lack of water-saving awareness, and a non-self-interested attitude, so do not accept the use of water-saving equipment. In this case, we believe that the government should adopt an active policy. In addition to popularizing water resources in our province and promoting related equipment, it should also provide household subsidies for the purchase of water-saving equipment, thereby making it easier for residents to accept water-saving equipment in family life.



4.4. Analysis of Residents' Views on Recycled Water

Reclaimed water is water treated by sewage treatment plants. It is generally secondary treatment. It has the advantages of not being affected by climate, not competing for water with neighboring areas, being available on the spot, being stable and reliable, and having high guarantee rates. By consulting relevant information, we found that reclaimed water has extremely high ecological and economic benefits.

By asking residents' attitudes towards "appropriately treated reclaimed water used in their homes", we compiled the following data: acceptable residents 161 (53.31% of the total), and 121 residents who are concerned (accounting for The total number is 40.07%), and there are 20 unacceptable residents (6.62% of the total number). Through the residents' views and attitudes towards recycled water, we found that more than half of the residents can accept recycled water into their lives, and about 40% of residents have concerns about recycled water.



According to statistics on the views of residents of different age groups on the entry of recycled water into their homes, we found that more than half (57.14%) of residents under 18 can accept recycled water into their homes, and nearly 60% of residents aged 19-40 agree to enter their homes. Yes, and nearly 60% of residents aged 40-60 have concerns or do not accept recycled water, and the vast majority (83.33%) of residents over 60 have concerns or do not accept it. At present, many young people have a positive and accepting attitude towards reclaimed water, while the acceptance of middle-aged and elderly people is much lower than that of young people. This shows that with age, people's acceptance of recycled water is declining.

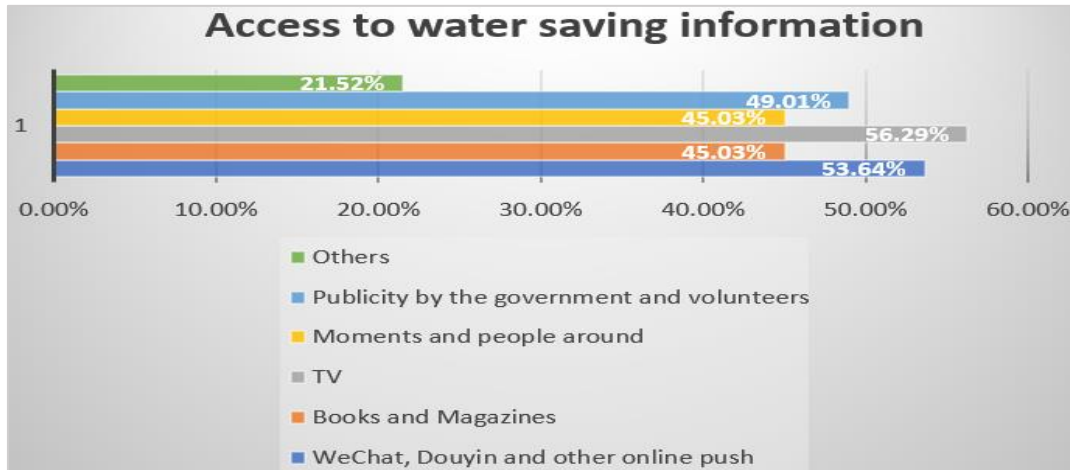
The concept of reclaimed water entering life also needs to be popularized. Reclaimed water can be upgraded to increase efficiency, and the prospects for the use of reclaimed water are promising. The reclaimed water can mainly be used in households, for example, it can be used as water for daily toilet flushing. From a cost perspective, tap water is 3 to 4 yuan per ton, and recycled water is about 1 yuan per ton. If the water consumption reaches a certain level, in the long run, even if the pipeline laying and maintenance costs are included, recycled water will definitely be more cost-effective than tap water. An additional 10,000 tons of recycled water can reduce the demand for water withdrawal by 10,000 tons. From a technical point of view, no matter what degree of sewage can be prepared into pure water. Although the cost is still relatively high, with the advancement of technology, these problems will be gradually resolved. Therefore, in the water saving work, we can make the water saving process transparent and open, so that the masses can see the safe production process, dispel their worries, and make more popularization and promotion for the general public. In this way, China's water saving process In order to reach a new level.

4.5. Analysis of the Most Effective Ways to Obtain Water Resources Conservation Information and Publicize Water Conservation

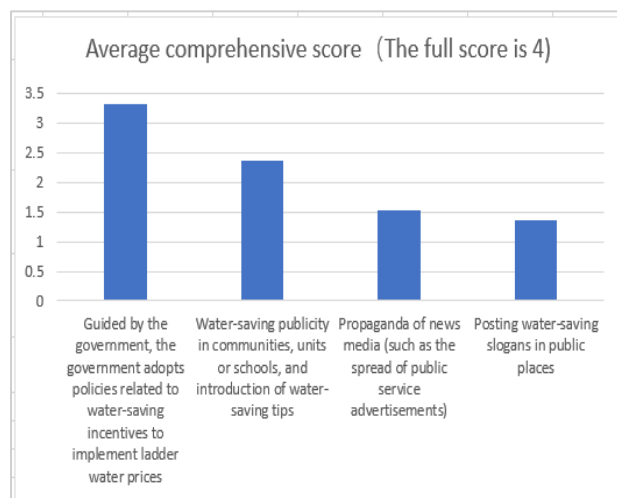
The results of the survey on the channels for residents to obtain information on water conservation showed that among the 302 residents, 162 (53.64%) of residents obtained information from WeChat, Douyin, etc.; 170 (56.29%) obtained information from TV) 148 people (49.01%) obtained water-saving information from the government and volunteers; 136 people (45.03%) obtained information from books and magazines; 136 people (45.03%) knew information from friends around them. There are 65 people (21.52%) in other channels not covered by the survey.

The results of the survey show that residents receive a greater proportion of water-saving information from online feeds such as TV, WeChat, and Douyin, as well as publicity by the government and volunteers. Books, magazines and friends also have a good influence.

The objective conclusion of this survey is that through the media, government, and the Internet, publicity methods are helpful for residents to strengthen their water-saving awareness and obtain water-saving information.



For improving people’s awareness of water conservation, we investigated the most effective channels for publicity and restraint, and the results showed that the score (full score 4 points system): government-guided, adopt water-saving incentive policies to implement tiered water prices average comprehensive score 3.31; The average comprehensive score of community, unit or school water-saving promotion and introduction of life tips is 2.37;the average comprehensive score of news media (public service advertisement) is 1.53; the average comprehensive score of posting water-saving slogans in public places is 1.36. The results of the survey showed that the government-led approach to adopt water-saving incentive policies to implement tiered water prices scored the highest, followed by water-saving publicity in communities, units or schools, and advertising and public places with the least scores of water-saving slogans. This investigation has drawn an objective conclusion for us:through government guidance and economic implementation measures have the best effect on citizens' practical water saving, and water saving publicity should be increased in communities, schools and other public places. In order to implement water-saving policies, the government must intervene to carry out macro-control and implement the cost of living. It is difficult for residents to develop water-saving habits only by relying on slogans and news media to promote the symptoms and not the root cause.



5. Conclusion and Suggestion

Through this survey and statistics, we have a deep understanding of residents’ awareness of water saving. However, due to the limited survey methods, we only collected 302 questionnaire

interviews, which did not fully cover all aspects of the masses. The overall situation reflects the objective situation, but some conclusions can still be drawn from the existing data.

In the survey of residents' water conservation awareness, we found that:

1. Nearly 70% of the residents in Hebei Province lack understanding of the current situation of water scarcity in Hebei Province, and only about 30% of the residents correctly understand the current situation of water resources in our province. Among them, men's awareness of water scarcity in Hebei Province is slightly better than women's, and women have a stronger awareness of water saving than men; middle-aged and elderly people have stronger awareness of water saving as a whole, but young people's awareness of water saving is relatively low. Said to be worse.

2. Ninety percent of residents support the use of water-saving equipment, but most of them have not really been exposed to water-saving equipment due to lack of relevant knowledge. It may be due to the high price of water-saving equipment and the lack of relevant popularization and promotion. It may also be that residents do not use water-saving equipment because they do not know enough about our province's water resources, lack water-saving awareness, and hold a non-self-interested attitude.

3. With the continuous development of the current era, the Internet is increasingly changing people's lives. TikTok and WeChat push and government guidance are the best ways to raise people's awareness of daily water conservation. The government's guidance and adoption of relevant incentive policies can effectively increase residents' enthusiasm for saving water in their daily lives.

4. Reclaimed water is economical and environmentally friendly, with extremely high ecological and economic benefits. However, most residents, especially middle-aged and elderly people, have concerns or do not accept the reclaimed water entering their lives. The possible reason is that the residents do not understand the reclaimed water, and on the other hand, it is not widely used and they dare not use it. The treatment process of reclaimed water can be made transparent, and more related popular science publicity, so that more people can accept reclaimed water.

6. Concluding Remarks

Water is the source of life, the essential of production, and the foundation of ecology. It is the basic guarantee for human development and the necessary foundation for human survival and development. As one of the three major strategic resources as important as food and energy, water has an extremely important position in economic, social development, national security, and urban development. In today's water shortage, water conservation is extremely important.

Therefore, we propose the following initiatives:

1. The management departments of urban water-saving related departments shall strengthen water-saving publicity and create a social water-saving atmosphere. It is necessary to publicize advanced models of water conservation, expose water waste and water conservation violations, and encourage the masses to join the ranks of urban water conservation. Encourage water-saving awareness into the hearts of the people, and improve the water-saving awareness of the whole society.

2. Educational institutions should continuously strengthen water-saving education, cultivate good habits of water saving for primary and middle school students from an early age, and spread the concept of water-saving among young people and establish water-saving awareness.

3. General public places and water-using units should start from the drip to curb waste water, achieve scientific water use, increase the penetration rate of water-saving appliances, and strive to create water-saving units.

4. Resident families should insist on using one water for multiple purposes, develop a good habit of saving water, and strive to create water-saving families and water-saving communities. There is no way to become a river without accumulating small streams. Water saving requires the joint participation and efforts of the whole society. Let us join hands and actively implement the water control policy of "water saving priority, spatial balance, systematic governance, and two-handed effort", and continue to consolidate the "national water-saving type" in our district. The results of the establishment of "a social construction standard zone" have used their own practical actions to infect and drive the people around them, and unite the powerful force of water conservation and water conservation in the whole society.

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