

Public opinion on natural ecological environment issues in the context of the Western Development of China

Luo Zukui *

School of Sports and Health Science, Kaili University, Guizhou, 556011, China

Abstract: *In the past two decades, China has launched huge investments and implemented the Western Development Plan, aiming to strengthen the infrastructure construction of the western region and improve people's livelihoods. However, development may have a negative impact on the local ecological environment, which will seriously affect the sustainable development of China's national economy. Moreover, few people pay attention to the local people's feelings towards ecological environment changes under the background of rapid economic development. The purpose of the large-scale development of the western region is to solve the problems of people's livelihood, so starting from the feelings and wishes of the people, excavating the ecological and environmental problems existing in the process of large-scale development of the western region can better benefit the people. Here, we have set up a poll questionnaire to investigate the public's attention, feelings, and satisfaction degree with ecological environment issues. 1227 questionnaires were distributed, and 517 completed questionnaires were obtained. Due to the principle of voluntary and anonymous investigation, it was beneficial to reflect the true thoughts of the respondents. The results have guiding significance for the sustainable development of China's economy under the premise of environmental protection. We reckon that any damaged ecological environment should be quickly repaired or rebuilt, rather than being solved through fining money.*

Keywords: *Ecological environment, Chinese economy, Public opinion, Sustainable development, Western Development*

I. Introduction

On January 16, 2000, the State Council of China established the Leading Group for Western Development, which comprehensively launched China's western development strategy. Its main goal was to balance the differences between the eastern and western regions of China and drive the economic development of the western region (Pu, 2017). Including Guizhou Province, there were 12 provinces (districts, cities) belonging to western region in Western Development Plan, accounting for 71.4% of China's land area (Xiao et al., 2018; Liu et al., 2023). From 2000 to 2017, China launched a total of 317 key engineering projects in the western region, with a total investment of 6.85 trillion yuan, aimed at strengthening the infrastructure construction in the western region and improving people's livelihoods (Wen, 2018). While the Western Development brought opportunities, the ecological environment has become the primary issue that restricts regional economic development. Ecological environment protection and construction have become important

*Corresponding author: Email: luozukui@126.com

issues of concern to the central government and scholars (Liu et al., 2023). Western ecological environment protection is imperative (Wang et al., 2015). How to balance the economic development and ecological benefits of the western region has become a problem to be solved (Tan and Zhao, 2013). Environmental protection is the cornerstone of the sustainable development of the western region (Liu et al., 2009), involving the future of the entire national economy (Zhao, 2006; Liu et al., 2023), and also related to the smooth implementation of the "the Belt and Road" strategy (Wang et al., 2015). Developing the economy under the premise of a good ecological environment is a hot topic of global concern, and ecological civilization is an inevitable choice for the future of all countries around the world (Tan and Zhao, 2013).

On the natural ecological environment in the Western Development Plan of China, scholars have mainly completed research on soil and water conservation countermeasures (Luo and Sun, 2018), experience reference (Xiao et al., 2018), ecological legal system construction and ecological compensation mechanism (Wang et al., 2015), industrial pollution research (Wang and Li, 2023), the relationship between ecological environment and economic development (Shan and Shi, 2023), and so on. Most of the above studies discuss and analyze the natural environment problems in the development of the western region from the perspective of managers and scholars. They may act in their own interests, and few people pay attention to the people's feelings, views, pros and cons, while the people living in the western region have experienced the whole process of the ecological environment change caused by the western development, and their intuitive feelings about the western development may provide some useful information for the western development.

Guizhou Province is one of the key objects of China's western development, as an ecological barrier in the upper reaches of the Yangtze River and the ecological vulnerability of a large area of karst landforms (Dai et al., 2023), indicating that the feelings and intuition of the people of Guizhou for the development of the western region are very representative. This paper takes Guizhou Province as the representative to investigate the people's attitudes, feelings, pros and cons, satisfaction degree and concerns about the problems related to the natural ecological environment in the region through the questionnaire distributed in the region, and provides some suggestions for the future development of the western development from the perspective of the people.

II. Research Methods and Data Analysis

Questionnaire design

The questionnaire consisted of two parts. The first part involved the basic information of the respondents, including whether they were from Guizhou Province, gender, age, educated degree and employed status. The second part was the respondents' feelings about the impact of the development of the western region on the environment, with a total of 19 questions.

Poll methods and data collection

The questionnaire was distributed in three sessions. For the first time, in March 2023, the third-year students majoring in biological sciences at Kaili University distributed the questionnaire. In order to improve the efficiency of the poll, 44 students in a class were divided into 5 groups, and each group designated a team leader to lead the team to distribute the questionnaire to 5 different places inside and outside Kaili University campus, and each student completed 10 questionnaires, and a total of 470 questionnaires were distributed. The second time, in May 2023, each of 21 third-year students majoring in biological sciences at Kaili University was arranged to bring 30 forms home and distribute them during the holidays, distributing a total of 630 questionnaires. For the third time, in October 2023, a student who used this poll data as his graduation thesis brought 127 questionnaires home and distributed in Zhijin County of Guizhou Province. In total, we distributed 1227 questionnaires during the three sessions, 605 questionnaires were recovered, and 517 questionnaires were

finally determined to be relatively complete. The questionnaires were distributed in most parts of Guizhou Province. In order to obtain the most reliable data, the respondents were not bound by the questions. If the respondents believed that the single-choice questions have multiple choices, they could choose multiple answers, and some individual questions that the respondents were uncertain or unwilling to express their opinions could be given up. The principle of voluntary freedom may be conducive to improving the credibility of the poll results.

Data analysis

For the single-choice questions, if the respondent chose multiple answers or did not choose, this question was considered invalid, but the other questions of the questionnaire were adopted. When calculating the percentage for each question, the denominator was the total number of valid choices for that question.

III. Results

Attribute statistics of respondents

Of the 517 questionnaires collected, 87.6% were from and 12.4% were outside Guizhou Province. 57.6% were males and 42.4% were females. 15.3% were under 20 years old, 69.6% were 20-40 years old, 13.0% were 41-60 years old, and 2.1% were over 60 years old. 5.2% of those with primary school educated degree or less, 18.4% of those with junior high school educated degree, 32.1% of those with high school educated degree, and 44.3% of those with college educated degree or above. State agency staff accounted for 6.8%, businessmen 14.1%, peasants 12.2%, students 40.1% and others 26.8%.

Results of public opinion on ecological environment

In total, 19 questions and the responses of the respondents are as follows.

(1) Regarding the environmental problems of Guizhou Province caused by the large-scale development of the development. 14.4% respondents believe that the damage to the environment is terrible, but it is feasible to develop first and then deal with them; 3.1% respondents believe that there is a lot of damage to the environment, but there is no need to deal with it, and the natural world can recover on its own; 8.0% respondents believe that regardless of the degree of damage to the environment, economic development has the top priority; 70.0% respondents believe that the protection of the environment should be prioritized, and even if development must be carried out, it should be carried out under the premise of careful planning; 4.5% respondents believe that there is no impact on the ecological environment.

(2) The most affected environmental problem to Guizhou Province in the Western Development. 13.0% respondents believe that water pollution is serious; 15.0% respondents believe that the deforestation is terrible; 8.5% respondents believe that soil erosion has increased; 10.3% respondents believe air pollution is severe; 40.6% respondents consider the above four items grievously; 12.6% respondents are unaware.

(3) The main factor affecting the ecological environment of Guizhou Province from the development. 16.4% respondents believe it comes from road construction; 23.0% respondents believe it comes from real estate; 40.2% respondents believe it comes from industrial contamination; 20.4% respondents do not know the reason.

(4) Whether you have received ecological compensation in the Western Development Plan of the western region? 6.3% respondents admit that they have received compensation and feel that it is reasonable; while 13.4% respondents have received it but feel that the compensation is insufficient; 35.9% respondents have not received it themselves, but someone around them has received; 44.4% respondents are unclear about this issue.

(5) The greatest benefits brought by ecological environment construction in the Western Development of Guizhou Province. 11.4% respondents believe that it has increased employment; 12.0% respondents believe that

the local environment has been improved; 17.1% respondents believe that it brings economic income; 13.7% respondents do not feel any benefit; 45.8% respondents think it is more convenient to get around.

(5) The impact extent of the large-scale development in the western region on the ecological environment. 38.4% respondents believe that the degree of damage is large-scale and widespread, and the impact of the developed local areas on the environment has spread to the surrounding areas; 30.1% respondents believe that the developed site is small, the local damage is serious, but the surrounding undeveloped environment is less implicated; 24.1% respondents think it has an impact, but it is not obvious; 7.4% respondents think there is no effect.

(6) Regarding the relationship between the large-scale development of the western region and the ecological environment. 13.5% respondents believe that rapid development is a good measure to promote economic development, and the environment is not a concern; 75.6% of the respondents approve to practice slow development on the premise of maintaining the ecological environment; 5.8% respondents believe that development should be called off and the environment should be reserved first; 5.1% respondents are unwilling to care about this issue.

(7) At present, the ecological environment of Guizhou Province is much better than that of 20 years ago, or not? 26.5% respondents believe that the current ecological environment is much better than that of 20 years ago; 46.2% respondents believe that the current ecological environment is much worse than 20 years ago; 6.2% respondents feel that there is no change; 21.1% respondents can not compare because they have not experienced it themselves.

(8) Assessment of the current ecological environment in Guizhou Province. 20.5% respondents think it is very good; 69.6% respondents think it is average; 7.6% respondents think it is bad; 2.3% respondents feel very bad.

(9) The environmental awareness of local people in Guizhou Province. 7.0% respondents think that the environmental awareness is very high; 65.4% respondents feel it is average; 24.0% respondents think it is poor; 3.7% respondents are unclear about this issue.

(10) Whether you pay attention to engineering, news, and legal and regulatory issues related to the ecological environment? 17.6% respondents are concerned about it; 66.1% respondents pay attention occasionally; 16.2% respondents have never paid attention.

(11) Whether you are willing to participate in environmental protection activities? 25.6% respondents try to participate in all environmental protection activities; 45.2% respondents are willing to participate selectively; 22.3% respondents are too busy and only want to participate in some activities; 7.0% respondents do not want to participate.

(12) The responsibility for environmental protection and construction in the large-scale development of the western region. 75.3% respondents feel that it should start with me, and everyone is responsible; 15.6% respondents believe that it is the local government and environmental protection department; 9.1% respondents think it should be borne by beneficiaries.

(13) Who have been most negatively affected by the ecological and environmental damage of the western development of Guizhou Province? 68.9% respondents believe that they are farmers; 13.5% respondents identify as businessmen; 7.6% respondents consider it is workers; 10.0% respondents think it is the government.

(14) Who have benefited the most from the ecological and environmental protection construction of the western development of Guizhou Province. 32.1% respondents believe that they are farmers; 34.9% respondents consider it is businessmen; 10.0% respondents consider it is workers; 22.9% respondents think it is local government.

(15) Whether the economic development and ecological environmental protection of the western region of

Guizhou Province can be a win-win situation? 12.0% respondents believe that it is definitely possible; 50.3% respondents think it is possible; 25.0% respondents feel unpredictable; 12.6% respondents think it is absolutely impossible.

(16) The most important ecological and environmental problems should be paid attention to in the development process of Guizhou Province in the future. 29.6% respondents refer to vegetation protection; 27.6% respondents believe that it is water conservation; 21.4% respondents believe that it is land resource protection; 21.4% respondents think it is air quality.

(17) Public participation in environmental construction. 78.7% respondents do not spit; 81.7% respondents do not litter and cigarette butts; 61.2% respondents have told others not to litter; 49.6% respondents have participated in environmental protection activities; 52.2% respondents have been involved in noise reduction.

(18) Individual acts of environmental destruction. 63.9% respondents refer to illegal cutting of trees. 49.0% respondents talking about using iron scabs, lassoes and traps to kill wild animals; 52.9% respondents mention killing birds; 44.7% respondents acknowledge that they have reclaimed or burned mountains and then used them for farming; 76.9% respondents talk about littering; 64.9% respondents refer to sewage discharge.

(19) What are the species types that have significantly decreased due to development? 99.8% respondents mention animal species; 0.4% respondents mention large plants; 0.6% respondents mention fungi.

IV. Discussion

Analysis of respondents' attributes

The questionnaire was distributed in Guizhou Province. The respondents were basically natives or people living in Guizhou Province for a long time. Therefore, they had a deep experience on local large-scale development, which was conducive to increasing the accuracy of the questionnaire results. Due to the large number of illiterate elderly people in the local region, many elderly people refused to fill in the questionnaire, which might be the reason that the majority of the respondents were young. The proportion of respondents with college educated degree or above, age group 20-40 years old and status as students was large.

Analysis of the results of the ecological environment poll

The respondents gave multiple answers to some single-choice questions in the questionnaire, and did not answer the questions according to the requirements of the questionnaire. Therefore, the poll truly reflected the respondents' thoughts and their serious attitude towards filling in the questionnaire, thus improving the credibility of the questionnaire.

The majority of the respondents are willing to support the large-scale development of the western region. Most of them are not only occasionally pay attention to the ecological environment around them, but are also willing to selectively participate in environmental protection activities, and feel that they have the responsibility to participate in the construction of environmental protection. The result shows that the people in Guizhou Province have a positive attitude towards the large-scale development of the western region. Vast majority of the respondents believe that the development should be carried out slowly under the condition of giving priority to environmental protection, which shows that the people have the ideological consciousness that "economic development cannot be obtained at the cost of the environment". Guizhou Province is an important transportation hub and mineral base in China, and is a water conservation area and ecological barrier area in the upper reaches of the Yangtze River (Dai et al., 2023), but 73% of the area in Guizhou Province is karst landform, which has the characteristics of easy soil erosion and geological change. Because of these characteristics, the fragility of ecological environment has become the first problem to be solved in the development of Guizhou

Province (Dai et al., 2023). The people of Guizhou Province have the awareness of giving priority to environmental protection, which is beneficial to the steady development of the western region.

Since the development of the western region, the respondents feel that the quality of the ecological environment has declined greatly. Most of the respondents feel that the ecological environment of Guizhou Province is at a general level, and the quality of many indicators such as water, forest, soil and air have declined, and the impact of construction on the environment will affect the surrounding areas, and the primary factor that destroys the ecological environment comes from industrial pollution. The harm caused by the destruction of the ecological environment is difficult to detect in a short term (Tan and Zhao, 2013). The poll results are more representative based on the feelings of residents in Guizhou Province or those who have lived in the local region for a long time. The ecological damage caused by the development of the western region has become a consensus, and the pollution has shown a state of overall deterioration and partial improvement (Deng et al., 2023). The ecological problems faced by Guizhou Province have played a hindering role in the sustainable development and even the entire national economy (Wang and Li, 2023), which shows the correctness of "it is better to have green waters and lush mountains than gold and silver mountains".

The large-scale development of the western region presents two sides of the pros and cons. Most respondents feel that the biggest benefit of development is that the transportation construction has brought convenience to travel, and at the same time, it has caused the disadvantages of the decline in the quality of many indicators of the ecological environment and the decline in the species and quantity of animals. However, a large proportion of respondents still believe that a win-win situation between economic development and ecological and environmental protection is possible in the large-scale development of the western region. The majority of respondents believe that in the large-scale development of the western region, the biggest beneficiaries are the businessmen, but the peasants are the ones who have been most negatively affected. Many respondents did not know if there had ever been an ecological compensation. The implementation of fair ecological compensation is conducive to the sustainability of ecological and environmental protection (Wang et al., 2015). The author of this article does not agree that any ecological environment is compensated with money. Money as ecological compensation will give the power departments and wealthy businessmen an excuse to destroy the environment. Most of the ecological compensation should be "ecological damage compensated by ecological return", that is to say, the damage to the ecological environment should be restored or rebuilt in the fastest way to return the ecological environment to the natural world, and only in this way can the long-term interests and immediate interests be combined, and local interests and the overall interests be combined, and the relationship between steady economic development and ecological environmental protection be coordinated. Environmental protection and economic development should be given equal attention, and economic development should be carried out under the condition that environmental protection is given priority.

Although the respondents have adopted a supportive attitude and are concerned about the development of the western region to a certain extent, their awareness of environmental protection is still at a general level, because their participation in various environmental construction activities such as not spitting, not littering and cigarette butts, participating in environmental protection activities, and reducing noise is relatively low. In addition, there are cases of stealing trees, killing animals, dumping garbage and discharging sewage. These show at least two problems, one is that the publicity of environmental protection is deficient, and the public's awareness of environmental protection needs to be further improved; Second, there is a lack of ecological legal system construction. Ecological damage cases can be handled in accordance with ecological laws and regulations (Tan and Zhao, 2013).

V. Conclusion

Based on the people's experiences and feelings, the poll reflects the people's true thoughts and provides a reference for the later development of the western region. In the process of developing the western region, whether to practice "ecological protection first" or "economic pioneer" may come to different conclusions from the perspective of the people or from the perspective of policymakers and managers. The purpose of the large-scale development of the western region is to solve the problems of people's livelihood, so starting from the feelings and wishes of the people, excavating the ecological and environmental problems existing in the process of large-scale development of the western region can better benefit the people.

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