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Research on Administrative Division Adjustment and Resource Reorganization at Township in the Northwestern Arid Region

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Abstract: Through the analysis of the current status of resources and the environment in small towns in the northwestern arid region, this study aims to identify the factors constraining the development of the area and address the socio-economic development issues caused by severe resource scarcity. The results indicate that effective resource organization is an efficient way to promote economic and social development in small towns in the northwestern arid region. Administrative division adjustment serves as a method to integrate and allocate resources effectively, contributing to leveraging the advantages of the entire region and facilitating a virtuous development of the economy and society.

Keywords: Northwestern arid region; Administrative division adjustment; Resource reorganization

Introduction

The vast region, including Shaanxi, Gansu, Ningxia, Xinjiang, and the western part of Inner Mongolia, constitutes China's northwest arid area. With a total area exceeding 3 million square kilometers, it accounts for one-third of the country's total land area. This region is characterized by its extensive size, abundant resources, sparse population, and promising development prospects. However, small towns in the northwest arid area have long been hindered in their socio-economic development by various factors such as limited water resources, geographical

constraints, concentration of ethnic minorities, and harsh climatic conditions. As a result, the socio-economic development in this region has consistently lagged behind that of the eastern coastal areas.

1. Current Status of Resources in Small Towns in the Northwest Arid Area

1.1 Constraints on Development Due to Lack of Water Resources

Due to weather and geological conditions, water resources in small towns in the northwest arid area are extremely limited, and the water quality itself is not high. The water resources constraints has become the



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most crucial issue affecting the development of this region [1]. The annual precipitation in this area is 5186.4 billion tons, about one-fourth of the national average. The annual total water resources amount to 2235.1 billion tons, accounting for 8.16% of the national total. The average annual runoff modulus is 8.9 thousand m³/km² [1], while the inland basin runoff modulus is only 4.06 million m³/km², one-seventh of the national average. It is the region with the smallest surface runoff in the country, especially in inland river basins, where per capita water availability is even more severe, accounting for only one-third of the national average (Table 1).

The agricultural production in this region is very extensive, with a lack of awareness of maintaining and managing the ecological environment. The actual consumption of water resources is high, while the utilization efficiency is low, exacerbating the shortage

of water resources in the region. Regional water scarcity is particularly severe in Ningxia, where the surface water in small towns mainly comes from seasonal rivers, small springs, and the diversion of the Yellow River. The average annual runoff in towns is only 0.45 billion cubic meters, with a total mineralization of 4-5.4 g/L. The pH value of some water bodies reaches 9, and the distribution volume of water diversion is 13.8 cubic meters/second. Groundwater sources are extremely scarce, buried deep, with sporadic exposed springs. The average storage is only 0.1856 billion cubic meters/year, located in the Quaternary aquifer with a mineralization of 3.1-6 g/L, reaching as high as 29.69 g/L. Both the total volume and water quality of regional water resources are far below the national urban water standards, making it difficult to meet the requirements of urban economic and social development.

Table 1: Water Resources Overview in Provinces and Regions of Northwest China

Province (Region)	Annual Average Total Water Resources (Billion Tons)	Annual Average Precipitation (mm)	Annual Precipitation Volume (Billion m ³)	Annual Precipitation Depth (Billion m ³)	Annual Runoff Volume (Billion m ³)	Annual Runoff Depth (Billion m ³)	Groundwater Volume (Billion m ³)	Annual Total Water Resources Volume (Billion m ³)	Annual Average Runoff Modulus (Thousand m ³ /km ²)
Northwest Region	2235.1	399	1464	347	424	85	230	447	8.9
Ningxia	9.9	198	157	305	8.5	16	16	10	1.9
Shaanxi	441.9	601	1371	667	420	204	165	442	21.5
Gansu	274.3	319	1297	328	273	69	133	274	6.9
Qinghai	626.2	460	2064	286	623	86	258	626	8.7
Xinjiang	882.8	419	2429	147	793	48	580	883	5.4

Note: Data source is from "Comprehensive Development of the Central and Western Regions" (Volume 2). Annual precipitation data is based on meteorological data from provincial capitals.

1.2 Insufficient Utilizable Arable Land Resources

The vast expanse of the northwest arid region plays a pivotal role as a significant land reserve for China's development [2]. In the western region, arable wasteland suitable for agriculture totals 1,766.9 thousand hectares, representing over half of the national total. Among this, 1,615.1 thousand hectares are distributed in the

northwest region, constituting 91.4% of the total arable wasteland in the western region (Table 2). However, the utilization of land in this area is hampered by adverse natural conditions, a lack of water resources, and poor soil fertility, resulting in a low land use efficiency and insufficient available arable land resources.

Table 2: Distribution of Wasteland Suitable for Cultivation in the Western and Northwest Regions [4]*

Distribution Indicators	National	Western Region	Northwest Region	Shaanxi	Gansu	Qinghai	Ningxia	Xinjiang
Absolute/103hm ²	3200.8	1766.9	1615.1	10.2	141.1	38.5	100.1	1325.3
Proportion/%	100.0	55.2	91.4	0.6	8.0	2.2	5.7	75.0

Note: Data Source is from "Comprehensive Development of the Central and Western Regions" (Volume 2). The data for the Western Region corresponds to the national proportion, while the data for the Northwest Region and each province corresponds to the proportion within the Western Region.

1.3 Constraints on Regional Development Due to Urban Infrastructure Conditions

Infrastructure construction is a fundamental prerequisite for the development of small towns and regions ^[3]. Over the years, the country has made substantial investments in the infrastructure construction of the central and western regions. While some essential requirements affecting production and daily life have significantly improved, there still exists a considerable gap to meet the higher-level demands of economic and social development. Firstly, the overall level of infrastructure construction remains lagging, unable to effectively support the rapid growth of the entire region, especially the urban economy, as evidenced by the contradiction between the increasing material life demands of the people and the outdated infrastructure. Secondly, a market-oriented and modern investment system for infrastructure construction has not been established. Construction investment still heavily relies on government funding, but regional finances are tight, making it challenging to provide sufficient construction funds. Furthermore, the interconnection of infrastructure is insufficient, and a regional transportation network has not yet been established, preventing the full utilization of comprehensive advantages. Lastly, there is a lack of effective policies and regulations guiding public welfare investments, which are still in a state of self-organization by the private sector.

1.4 Simple Economic Structure and Unexplored Resource Advantages

The simplicity of the urban economic structure in the arid western region is evident in various aspects such as industry, employment, and ownership structure, as it lacks large enterprises and core industrial groups that can significantly impact the economy ^[4]. Industries still predominantly focus on raw material cultivation and basic processing, with a short industrial chain and low product added value. In particular, the underdevelopment of the secondary and tertiary industries is noticeable, with a scarcity of higher-level service enterprises, especially technology-based firms. The regional economy is primarily agriculture-based, exhibiting low competitiveness. Unique local resources, such as ethnic cultural tourism and specialty breeding and processing, have not been fully explored

to enhance regional competitiveness.

2. Utilization of Administrative Division Adjustments for Resource Reorganization

A region's resources encompass various aspects such as climate, water, arable land, and infrastructure. Cities and regions are interconnected, mutually influencing each other ^[5]. Cities are dynamic entities that utilize regional resources for development while also playing a decisive role in regional changes, subsequently impacting surrounding cities positively or negatively. Therefore, the uncertainty of urban development and the diversity of resource demands mean that resource needs are not restricted to their own administrative divisions. With rapid economic and social development in recent years, the actual demand for resources and distribution characteristics has undergone significant changes. The traditional fixed administrative division approach to resource allocation can no longer meet the needs of modern economic and social development. It is imperative to break the constraints of urban areas and allocate regional resources on a larger scale for reorganization.

2.1 Resource Allocation through Administrative Adjustments

To address the issue of resource scarcity in the development of small towns in the arid northwest region, it is essential to use administrative adjustments to allocate resources appropriately. This involves providing suitable resources to suitable towns, maximizing the effectiveness of resources, and improving resource utilization efficiency. Some fundamental strategies include:

Actively implementing the concept that "Green mountains and clear waters are invaluable assets," avoiding excessive exploitation of regional resources for economic development.

Rationally distributing various types of resources within the region to make optimal use of limited resources.

Developing diverse agriculture and distinctive breeding to enhance the value-added in agriculture.

Effectively utilizing unique tourism and ethnic cultural resources for the development of multiple industries.

Undertaking the development of regional human

resources to bring out the region's characteristics.

Allocating funds from the western development project for urban infrastructure construction, especially achieving interconnectedness in transportation, information, and logistics between towns and regions.

Enhancing the awareness of resource sharing among the local population, fostering a mindset of mutual benefit and win-win cooperation.

2.2 Selection of Towns in Administrative Adjustments

Towns undergoing administrative adjustments should have significant political, economic, or historical status within the entire region. They might possess outstanding characteristic advantages, meet the desired resource conditions of other regions, exhibit good development momentum or potential, and serve as the most dynamic and development-demanding towns in the region. These towns should have the potential to quickly become regional leaders, driving the development of other towns in the area. For cities in the arid northwest region, facing adverse environmental conditions, scarce resources, and economic underdevelopment, it is especially crucial to concentrate efforts on developing central towns. Administrative adjustments should directly promote the economic and social development of towns and regions, addressing challenging issues and related constraints in urban development. However, it is essential to recognize that developing central towns with advantages for the entire region will inevitably impact surrounding cities. Therefore, rational compensation in policy resources is necessary for the surrounding cities after the regional economy has grown, ultimately driving collective regional development. The determination of cities undergoing administrative adjustments directly affects the future development of the entire regional economy and society and requires careful consideration.

Conclusion

The development of cities and regions is closely interconnected, and closed administrative divisions constrain the economic and social development of urban areas by hindering resource utilization. Administrative division adjustments serve as an effective means to address this issue, enabling increased resource efficiency, reduced internal consumption, and the higher-level allocation of regional resources. This is particularly crucial for small towns in the arid central and western regions, where resource scarcity and weak foundational conditions prevail. Breaking through the barriers of administrative divisions for resource integration becomes even more important. This approach allows for the concentration of efforts to secure a position in the fierce competition of globalized regions.

References

- [1] Zhi-Zhong L, Yi-Ling Z. Development of geography in arid areas of China in the 21st century [J]. *Journal of Xinjiang Normal University: Natural Science Edition*, 2001, 20 (6): 40
- [2] Xiao-Ling P, Xiao-Zhen P, Yong-Dong L. On the sustainable development of arid areas in northwest my country [J]. *Regional Research and Development*, 2001, 20 (9): 198
- [3] *Tongxin County Chronicle*. Yinchuan, Ningxia, China. People's Publishing House of Yinchuan: 2006.
- [4] Dong-Tao Z. *China's Western Development • Volume 2: Resource Development*. Beijing, China. People's Publishing House of Beijing: 2000.
- [5] Qi-Hu L; Climate change in the northwest arid region and its impact on hydrological processes [D]. East China Normal University, 2012.