

Study on the Stability Evaluation of Ecological Environment in Tibet From the Perspective of Sustainable Development

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Abstract: There are many special and unique types of ecosystems, which play an important role as a barrier to the ecological security of China and even Asia. In recent years, with the intensification of global climate change and the impact of human activities, the ecosystem of the Tibet Plateau has undergone significant changes. We must not only focus on the region, but also consider the whole country and even the world. That is to say, as a new type of tourism, eco-tourism pays special attention to training tourists to learn, experience and appreciate the natural environment, or to appreciate some of the elements in the cultural background connected with the natural environment. It has obvious environmental and social aspects. Cultural sustainability. The white paper puts forward the future development direction from six main aspects, such as the gradual improvement of system of ecological civilization, remarkable achievements in ecological conservation, sustained and stable environmental quality, steady development of characteristic industries, basic establishment of scientific and technological support system, and gradual formation of ecological culture. The plateau itself and its surrounding areas have a great impact on human living environment and economic and social development, and play a vital and irreplaceable role in human survival and development. This paper discusses how to realize the sustainable development of Tibet on the premise of protecting the ecological environment of Tibet from the aspects of ecological environment and resource status, strategic orientation of sustainable development of Tibet and capacity building.

1. Introduction

China's Tibet Plateau is the main body of the Qinghai Tibet Plateau, with an area of about 1.2 million square kilometers and an average altitude of more than 4000 meters. It is a unique ecological regional unit in the world [1]. There are many special and unique ecosystem types, which play an important role in protecting the ecological security of China and even Asia. In recent years, with the intensification of global climate change and the impact of human activities, the Tibetan Plateau ecosystem has undergone significant changes. Especially in arid and semi-arid areas where the ecosystem is extremely fragile, grassland degradation, land desertification and other ecological problems are becoming increasingly prominent. The formulation and implementation of development strategies, plans, policies and projects should not only focus on the present, but also

take into account the future [2]. We should not only pay attention to the region, but also consider the whole country and even the whole world. That is to say, as a new type of tourism, eco-tourism pays special attention to training tourists to learn, experience and appreciate the natural environment, or appreciate some elements in the cultural background related to the natural environment. It has obvious sustainability of environment and social culture. After entering the new century, Tibet has put forward the goal of economic and social development by leaps and bounds. We can't understand it as a development strategy that simply pursues speed, but should bring it into the category of sustainable development [3].

In July, 2018, the Information Office of the State Council of the people's Republic of China issued a white paper on the construction of ecological civilization in the Qinghai Tibet Plateau [4]. The white paper puts forward the future development direction from six main aspects: the gradual improvement of ecological civilization system, remarkable ecological conservation effect, sustainable and stable environmental quality, steady development of characteristic industries, basic establishment of science and technology support system, and gradual formation of ecological culture. As the vast majority of the Qinghai-Tibet Plateau, Tibet is known as "the roof of the world", "the roof of the world of the earth" and "the water tower of Asia" [5]. Tibet's ecological environment security is related to climate system stability, water resources security and biodiversity protection in China and even in Asia. According to the national requirements for ecological environment construction in Tibet, it will be an important strategic goal during the 13th Five-Year Plan period to continue to build the national ecological security barrier and achieve sustainable development [6]. The plateau itself and its surrounding areas have a great impact on human living environment and economic and social development, and play a vital and irreplaceable role in human survival and development. Actively protecting the plateau ecological environment is related to the survival and development of the Chinese nation, and sustainable development is of far-reaching significance [7].

2. The main ecological and environmental problems faced by the sustainable development of Tibet

2.1. Tibet has limited resources and ecological environment carrying capacity, and further investigation and evaluation are needed

With the support of special funds from the state finance, aiming at the main problems faced by the ecosystems in different regions of Tibet Plateau, a series of protection and construction projects were carried out through projects and topics, and corresponding restoration and control measures and key construction technologies were put forward and integrated. The main structure of the ecological security barrier project has been preliminarily constructed. Among them, ecosystem environmental service functions include natural attribute functions such as water conservation, soil conservation, biodiversity protection, wind protection and sand fixation. Economic service function. That is, the service function of the ecosystem to meet the needs of human production and life [8]. Among them, Jina Village is supported by the theoretical system of grassland agriculture, focusing on the assembly and integration of advanced and applicable technologies such as artificial grassland construction and efficient utilization of grass products. The grassland agricultural technology system was established and the demonstration of moderate scale operation was carried out. The development of Tibet ecological environment provides a self-improvement and restoration balance adjustment system. The special natural balance attribute of natural ecosystem makes the ecosystem structure and function relatively simple [9]. The material circulation and energy conversion are uniform, and the anti-interference ability and self balance ability are unified. It will take a long time to recover after some areas have been damaged. Due to the rising of Qinghai Tibet Plateau and

global warming, and the intensity of human activities in some areas is relatively high, there are phenomena such as snow line rise, glacial retreat, soil erosion, lake drying up, grassland degradation, land desertification and so on [9]. According to the latest data, the area of potential land desertification in Tibet is 51938000 hectares, and the area of desertification land is 44.23 million hectares, accounting for 39.72% of the total land area. As shown in Table 1.

Table 1 Classified area and proportion of desertified land in Tibet

Types of	Area (ten thousand hectares)	Proportion (%)	Main distribution area
Total area of desertified land	4402.3	100%	
Wind erosion desertification land	1317.12	29.92	Ali, Naqu
Water-eroded desertified land	24.83	0.56	Ali, Shigatse, Shannan
Salinized land	68.47	1.56	Ali, Naqu
Freeze-thaw desertification land	2991.88	67.96	Nagqu, Ali, Shigatse areas above 4000 meters above sea level

2.2. Plateau ecosystems are facing dual pressures from climate change and human activities

Tibet, as the main body of the Qinghai-Tibet Plateau, with an average altitude of more than 4,000 meters, is a unique ecological regional unit in the world, with many special and unique ecosystem types. Figure 1 is an aerial picture of Tibet.

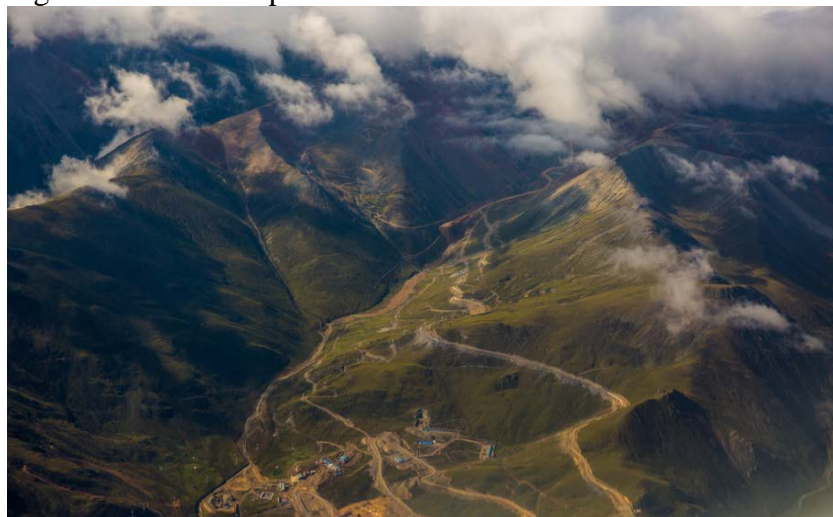


Fig 1 Aerial photo of Tibet

However, with the gradual improvement of Tibet's openness and the increasing accessibility of Tibet's tourism, tourism products based on Tibetan culture are gradually losing their original charm and mystery. Traditional tourism products are increasingly facing the danger of aging. The main types of geological disasters in Tibet are collapse, landslide, debris flow, land desertification, freeze-thaw, salinization, earthquake, debris flow, avalanche, ice lake break and so on. In terms of time, rainfall is the main inducing factor of geological disasters such as collapse, landslide and debris flow, so the rainy season is the most active period of geological disasters every year. According to the development and damage degree of geological disasters, the whole area can be divided into four geological disaster degree areas. As shown in Table 2.

Table 2 Geological disaster distribution table

	Main distribution area	Main types of geological disasters	Distribution area (square kilometers)	Proportion of land (%)
Severe geological disasters in high mountain valleys in eastern Tibet and southern Tibet	Three river basins in eastern Tibet, Yarlung Zangbo basin east of Sangri and southern Himalayas	Collapse, landslide, debris flow, earthquake and glacial lake collapse	27.85	27.85%
Medium-scale disaster zone in the Kuangu Lake Basin, central and southern Tibet	Sangri, Mozhugongka, such as the Yarlung Zangbo River and the Lhasa River, Garzangpo, and Langqin Zangpo river basins west of the First Line, Gangdes Mountains and South Nyainqentanglha Mountains	Desertification, mudslides, collapse in some areas, landslides, freezing and thawing	18.96	18.96%
Minor Geological Disaster Area in the Southern Tibetan Plateau	Gangdisi Mountain-north of Nyainqentanglha Mountain, south of Anshi Road	Freeze-thaw, desertification	22.56	22.56%
Areas with weak geological disasters in the northern Tibetan Plateau	No Man's Land in Northern Tibet north of Anshi Highway	Freezing and thawing, mild desertification	30.63	30.63%

Through the long-term positioning and monitoring of the ecological environment elements in Tibet Plateau. Lhasa Station studies the structure and function of agriculture and animal husbandry ecosystem under the unique natural environment of plateau, and develops and constructs the theoretical and technical system of protection and construction of ecological security barrier in plateau countries. The maximum value of Plateau ecosystem lies in its huge ecological balance service function and economic development value. The value of ecological environmental protection and human survival far exceeds the value of its participation in economic development as a resource element or means of production. Therefore, the value orientation of plateau ecological benefit and economic benefit are different.

3. Tibet's ecological environment protection and construction countermeasures

3.1. Carry out investigation and research on the resource and environment capacity of Tibet to ensure the sustainable development of Tibet

In the report of the 18th National Congress of the Communist Party of China, the construction of

"five major civilizations" of politics, economy, culture, society and ecology is juxtaposed. Summarized by "integration", it shows that the construction in various fields should not be separated artificially, but should be coordinated and promoted. This guiding ideology is particularly important to the development of Tibet. With the opening of the Qinghai-Tibet Railway, it will also help foster a big environment for the development of Tibet's tourism industry and promote the regional joint development of tourism. Tourism is the development of related natural resources and human resources, but it does not necessarily lead to industrialization. With China's entry into the global economic integration, the acceleration of its pace and the formation of a unified national market, there is a better economic environment for giving full play to regional comparative advantages. Tibet does not need to take the road of traditional industrialization to realize the self-sufficiency of industrial and agricultural products, but should establish its own economic structure and industry. But the mechanism of vegetation restoration and stability in alpine grassland ecosystem is not clear. In the new era, ecological civilization construction must adhere to the establishment of the concept of human and natural harmonious and symbiotic environmental human rights, promote the green development, focus on solving the environmental problems, and protect is the foundation and premise of the construction. We should establish various nature reserves, standardize various protection systems, strictly control economic development, restore natural ecosystems and promote the benign circulation and sustainable utilization of biological resources.

3.2. Strengthen the protection and construction of the Tibetan Plateau's characteristic livestock product base to increase the income of farmers and herdsmen

The imbalance between grass and livestock is a prominent problem facing the alpine grassland ecosystem in Tibet Plateau, and it is also one of the important threats affecting ecological security. On the other hand, it should be recognized that domestic and international requirements for food hygiene and safety are getting higher and higher. The plateau environment, which is basically pollution-free, is the best area for producing green, pollution-free and organic food, so the food policy and planting structure should be adjusted strategically in time. Aiming at the problems of alpine grassland degradation, productivity decline, serious rodents and pests, and widespread poisonous weeds, the ecological security barrier area of alpine grassland in northern Tibet was selected. According to the local conditions, we should develop the technologies of alpine grassland ecosystem protection, degraded ecosystem restoration, poisonous weed control, rat and insect pest control, and establish the comprehensive management mode of degraded alpine grassland ecosystem. Persisting in monitoring the quality and quantity of cultivated land for a long time is conducive to the production safety of agricultural products and the improvement of comprehensive production capacity, so as to realize the purpose of protecting cultivated land and improving comprehensive agricultural production capacity.

4. Conclusions

Therefore, the overall scientific assessment and rational utilization design of ecological environment are the cornerstone of stabilizing the ecological security barrier function in Tibet. By comprehensively evaluating the changing trend, environmental capacity and early warning regulation of the ecosystem. Making a more scientific and rational resource utilization plan, ecological protection paradigm and ecological restoration countermeasures will help promote the leap-forward development of Tibet's economy and society based on the carrying capacity of resources and environment. Tibet is a region with a low level of economic and social development. Accelerating development and protecting ecological environment are equally important, and it is even more necessary to strengthen capacity building. It has been widely promoted and

demonstrated, and put forward the regional optimization and transformation development mode of plateau agriculture and animal husbandry, which plays a key guiding role in the protection and construction of Tibetan plateau ecological security barrier and the practice of sustainable development of agriculture and animal husbandry. Tibet will continue to face the international scientific frontier, actively carry out cooperation and exchanges at home and abroad, strive to improve its scientific research level and strength, and further expand its influence at home and abroad.

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