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Exploration on the Ecological Restoration Path of Hulestai

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Abstract

The contradiction between ecological environmental protection and economic development has been plaguing all walks of life. The process of balancing the two and finding the optimal solution is still under exploration. This study is based on the method of field investigation to investigate the semi-agricultural and semi-pastoral area of Hulestai. The ecological problems reflected by Hulestai include the decline of grassland production capacity and the intensification of desertification. The main reasons for this are the shrinking of grassland area due to reclamation, the destruction of mountain vegetation caused by mining and excavation, and the decline in the ability of pasture regeneration due to overload grazing and predatory operations. Therefore, it is necessary to solve the ecological and environmental problems of Hulestai through the anti-grazing policy, the control of grassland desertification in accordance with the law, and using blockchain technology to connect industries with farmers and herdsmen to develop the economy. The case of Hulestai can reflect the overall environment of the pastoral areas in western Inner Mongolia to a certain extent, so the relevant measures are also applicable in the central and western regions of Inner Mongolia.

Keywords: Hulestai, ecological governance, technology support

1. Status Quo of Hulestai Grassland Ecology

To build a strong ecological security barrier in the northern of the motherland is the mission entrusted to Inner Mongolia by the national ecological security strategy. Since the reform and opening up, the grassland desertification problem in Inner Mongolia Autonomous Region has been prominent, and the ecosystem's self-recovery ability has declined. The grassland ecological restoration has become an important event related to the well-being of the Chinese nation and the country's future ecological security. (Shu Xinxin & Zhao Chunjiang, 2020)

Hulestai belongs to Urad Middle Banner of Bayannur City, Inner Mongolia Autonomous Region,with an area of 1956.49 square kilometers is located in Erlang mountain in the Yinshan Mountains. Hulestai is an area where the Mongolian people are the main body and the Han people are the majority. It is a semi-agricultural and semi-pastoral combination area. In the early days, the area and vegetation coverage of Hulestai were very high, the area of lakes and rivers was large, and the inhabitants were mainly nomadic as their main way of life. Pastoralists welcome foreigners to move in. As the migrationof more and more Han people, the carrying capacity of the land has decreased. Many herdsmen cede their grasslands to farmers for farming. In addition, people united to fill Hulestai Lake, the largest lake in the area, for agricultural production, forming the semi-agricultural and semi-pastoral area that exists today. The disappearance of Hulesitai Lake affected the ecosystem of the entire grassland. The rivers originating from this lake dried up rapidly, the grasslands that absorbed nutrients through these rivers began to degenerate, and the vegetation coverage decreased significantly. Now it seems that the traces of the river washed by water are obvious. Only the watery ground exists large playgrounds.

On June 18, 2017, Hulesitai established the leading group for self-inspection of eco-environmental protection in

accordance with the deployment of the Urat eco-environmental protection inspection work. They formulated and issued the Hulesitai's Self-examination Work Plan for Eco-environmental Protection. It was decided that we will start to carry out environmental protection self-examination throughout Hulesitai from June 19, 2017, focus on solving prominent environmental problems that harm people's health and affect sustainable development, and comprehensively investigate and rectify environmental pollution. The point includes industrial enterprises in sand, gravel, mining and other industries, as well as centralized disposal units for pollutants such as sewage, hazardous waste and garbage.

At present, although initial progress has been made in ecological restoration, the desertification area of pastoral grasslands is still expanding. There is a phenomenon of border control and destruction in the ecological problems of pastoral grasslands, which leads to the fundamental solution of their ecological problems and new ecological problems have also arisen. The artificial filling of Hulesitai Lake not only had a great impact on the ecological problems caused by the area, but also caused some negative emotions of the Mongolians towards the Han people to emerge.

2. Manifestations and Causes of Environmental Damage in Hulesitai

Grassland is a natural complex composed of natural vegetation dominated by herbaceous plants and its land, which is the largest natural ecosystem. Grassland vegetation absorbs harmful gases and releases oxygen, which directly affects climate change and has very important environmental benefits for human survival. (Yang Hongmei, 2017)

2.1 Reclamation Leads to a Reduction in the Area of Grasslands

When the Han initially moved into the grassland, many herders distributed the grassland to farmers for farming, and later filled in Hulesitai Lake to develop agriculture. This series of transformations violates the development of the local natural environment. The act of grassland reclamation into cultivated land also causes land desertification. Since crops grown in cultivated land are cyclical, there is no guarantee of long-term crops or vegetation growth in the land. When there are no crops to fix the soil and withstand wind, sunlight and rain, grasslands are prone to deserts and animal habitats on the grasslands are gradually reduced.

The floor of Hulesitai is predominantly stony Gobi or sand dunes, with only a few drought-tolerant plants such as grasses and thorns growing. Due to the excessive reclamation of pastoral areas and the destruction of vegetation by population growth, the desertification of grasslands have become more serious. Local residents have also become direct victims of desertification and sandstorms. The environmental problems of Hulestai pose a threat to the ecological security of the central banner of Urat and even the city of Bayannaoer.

2.2 Mining and Road Digging Lead to Environmental Damage in the Mountains

There are many construction teams in the mountains where Hulestai is located. The rubble on the road is piled up and mining and digging the road occurs from time to time. Although the Inner Mongolia Autonomous Region has vigorously promoted the rectification of environmental protection inspectors, due to the fragility of the local grassland ecosystem, inadequate ideological understanding, perfunctory rectification, surface rectification and pretending to rectification, the local ecological environment has been severely damaged and the economic development is slow.

2.3 Overloading Grazing and Predatory Management Leads to a Decline in Forage Regeneration Capacity

Overgrazing refers to the behavior of grazing livestock in grasslands that is too vigorous and exceeds the ability of ecosystems regulation. An important indicator of grassland yield capacity is called livestock capacity. If the amount of livestock raised exceeds the amount of livestock, it will cause overgrazing and degradation of grassland, and overgrazing can easily cause grassland degradation and land desertification.

Plants are a mirror of the natural environment and the main sign of grassland degradation. The population coverage of grassland plants declines rapidly with the increase of grazing intensity. Due to the increasing problem of overloading and overgrazing in Hulestai, the plant species on its main grassland have undergone significant changes. The variety of high-quality pasture plants has decreased, the height, coverage and quality of plants have decreased and the number of toxic and harmful plants has increased. (Yang Hongmei, 2017) The decline of population coverage led to an increase in soil bare area, which promoted evaporation of the soil surface and increased soil salinization. Such a cycle eventually leads to the emergency of exposed alkaline spots, the weakening of the regeneration capacity of the pasture and the disappearance of plants.

Goats also have a very strict choice of grass plants. The few plant types left on the mountain where Hulestai is now located are also rejected by goats. The grass that cattle and goat like to eat grows slowly and is very sparsely distributed. The grazing ban policy in recent years has alleviated the ecological damage of grasslands, but it has not been completely solved. The degraded, sandy and salinized grassland area accounts for a very large proportion of the available grassland area. Of course, the restoration of grassland production capacity is not a

matter overnight, which takes a long process.

3. Environmental Governance Measures

3.1 Prohibition of Grazing Policy

The state has issued a policy of banning grazing and has also established a grassland ecological compensation mechanism. At present, the system of grassland fences, rotational grazing, fallow grazing, and forbidden grazing has been implemented. Experimental demonstrations have been carried out in herdsmen, villages, townships, counties, or certain river basins and regions. The reasonable livestock carrying capacity of grassland has been calculated in detail and a grassland management model suitable for Hulestai has been established, which can make overloaded livestock been decisively reduced, the grazing of livestock been limited or completely not grazed and the production or use of grassland and forage been monitored.

But in practice, mining and lake reclamation are far more harmful than the damage caused by grazing. Nomadic production methods are an inherent requirement of arid grassland ecosystems. Relatively speaking, nomadic production not only does not consume resources and destroy the ecological environment, but on the contrary, it is a production of resources, which is a production method that improves the ecological environment. The famous British historian Toynbee also emphasized this point in his later works. After the cessation of nomadic pastoralism, herders have no possibility of avoiding disasters. They must completely invest in it, resulting in a doubling of the production costs and risks of grassland animal husbandry, which is the main reason for the large-scale non-livestock and poverty of herders today (about half of the total number of herdsmen). Although various state subsidies have increased, mechanisms for the deprivation of pastoralists are far from being addressed.

3.2 Protect Grasslands in Accordance with Law and Strengthen the Ecological Management of the Grassland

It is necessary to make full use of existing grass slopes, woodlands and wastelands to build forests to plant trees, so as to expand the area of forest and grass planting. Afforestation should be effective focusing on water and soil conservation forests. In degraded grasslands, the natural vegetation of the grassland is restored through protection and cultivation measures, and the farmland is restored to grassland in combination with the return of farmland to forests and grasslands.

Governments at all levels and relevant departments should vigorously publicize the important practical and historical significance of grasslands to the people's livelihood, the ecological environment and economy through various ways and channels. State and local governments should establish a clear and effective rule of law system and responsibility system for grassland protection, conscientiously implement the Grassland Law of the People's Republic of China, strictly implement the balance between grass and livestock, seriously deal with poor management of grasslands and crack down on all kinds of acts that damage grasslands according to law. Use legal means to ensure the rational development and utilization of grassland resources and lay the foundation for the scientific management and sustainable development of grassland. (Yang Hongmei, 2017)

3.3 Use Blockchain Technology to Develop Economic Activities Adapted to the Local Ecology

The boundaries of blockchain-enabled real economy are constantly expanding, which also provides greater possibilities for the development of minority markets. The products available for market circulation in Hulestai's pastoral system are composed of two parts—the sale of cashmere wool and the output of fresh meat and dairy products. The specific application of blockchain technology at this level can be reflected in the following two aspects. First, in the breeding process of cattle and sheep in pastoral areas. All kinds of data generated during daily operation can be collected in the form of network software or intelligent sensors, such as monitoring the body temperature of livestock and monitoring the daily activity trajectory of goats on the mountain with a positioning system. By recording the writing time of block data through timestamps can ensure the transparency and traceability of all operations in the ranch. Second, in the transaction process, the intelligent contract technology in blockchain is mainly used to provide an open, fair and transparent platform for inter-ethnic trade and transaction activities through the program code writing process. Different codes are used to fix the norms of their activities and transactions for people to comply with and to regulate misconduct that occurs in the interaction between ethnic groups. For example, for buyers of cattle and sheep in pastoral areas, blockchain technology can be used to monitor the origin of cattle and sheep, food materials, the slaughtering process, the transportation process to achieve openness and transparency in consumption. On this basis, personalized data portraits based on the consumption ability and interest preferences of digital citizens are made to formulate more targeted differential treatment rules to provide consumers with the best choice and more humane services. (Tian Van-ping & Zhang Yao, 2022) Similarly, the application of blockchain technology in pastoral areas is also applicable to agricultural areas.

The characteristics of blockchain decentralization allow different development needs and product outputs between any two ethnic groups to be realized in the smart Internet. Farmers and herdsmen play a very important

role in the governance and protection of grassland ecological environment. Although Hulestai actively carry out infrastructure construction, the overall is still relatively weak. Nature, market and other risks seriously affect the development of animal husbandry. At the same time, many herders still continue the extensive and backward production and operation model. Large-scale breeding only accounts for a small proportion, making it difficult to efficiently use animal husbandry resources. However, at this stage, the education level of the people in the Hulestai pastoral area is in a low state and does not have a good ability to accept new technologies. (Ma Hongyi, 2021)

4. Epilogue

The environmental problems of Hulestai are also widespread in other pastoral areas in the country. The vulnerability of pastoral areas is becoming more and more prominent due to reclamation, mining and overgrazing. The ecological restoration and construction of grassland in the pastoral areas of Hulestai should not only rely on the intervention of policies, but more importantly, we should pay attention to the specific implementation process of farmers and herdsmen. It is important to increase the investment of manpower and material resources. The trend of emerging technologies has gradually spread from the cities to the rural areas, the support of technology will also become inevitable. In addition, as the living place where Han and Mongolian people live together, the emotional identity between ethnic groups plays a huge role in local production and life. The disappearance of Hulestai Lake has affected the Mongolian feelings for the Han people, but it has also provided living conditions for the common life of the Mongols and the Han people. Nowadays the protection of Hulestai has condensed the strength of the local people and become a cohesive event to unite the Mongolian and Han people. The unity and harmonious relationship between ethnic groups will provide conditions for local economic development and targeted restoration of the ecological environment of agricultural and pastoral areas

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