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Study on the environmental impact of Saihanba Forest Farm

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Abstract: This paper mainly studies the environmental impact of Saihanba Forest Farm, an eco-environmental protection area in China. Based on the fuzzy analysis and AHP to establish the mathematical model, using the model to evaluate the current situation of the ecological environment in Saihanba Forest Farm, and based on the data obtained, to expound the changes of the environment in this area in the past 60 years and take this ecological protection model as an example, so that China and even the asia-pacific region to effectively improve the ecological environment.After several generations of nearly 60 years of hard struggle, will eventually “Sand cover the sky, birds and animals without habitat,”the wilderness into the protection of North China’s boundless green barrier. In this paper, AHP is used to analyze whether the data accord with the analytic hierarchy process (AHP) , and then calculate the weight of each factor. SAIHANBA’s ecological protection mode is to improve the ecological quality steadily.China’s current one-off energy results account for a large proportion of carbon emissions, carbon peak to carbon neutral buffer time is short, to achieve carbon neutral goal is very difficult. We should formulate the right measures for the areas where ecological reform can be carried out at present, and analyze and plan for them by regional system. This topic takes the asia-pacific Country Vietnam as the research object, through the search material as well as the survey and so on way carries on the analysis to this country overall ecological environment, by this country geographical environment, natural disasters, population living, carbon dioxide emissions and other background factors, according to local conditions to formulate specific measures for ecological construction.

1. Foreword

After the founding ceremony of the People’s Republic of China in 1949, the Communist Party of China established a large number of state owned forest farms throughout the country under the strategy of restoring the ecological environment and pursuing ecological civilization. With the opening of paddocks, the ecological environment in the early SAIHANBA area deteriorated year by year, and the area became a wasteland in the early days of the People’s Republic of China. Our country has been insisting on the construction of ecological civilization, the early Afforestation has greatly improved the environment in SAIHANBA area. Subsequently, the forest farm also realized the transformation from timber production to ecological construction.

The SAIHANBA area before and after restoration has improved in many aspects such as species diversity, natural climate. By constructing . The evaluation model was used to compare the effects of vegetation, water source, sand and other environmental factors on the environment from 1962 to 2021, it shows that after several generations of unremitting improvement of the natural environment in SAIHANBA area, the state of the ecological environment has been steadily improved. Based on this, the impact of environmental remediation is obtained.

In the 1960s and 1970s, desertification in the SAIHANBA region was extremely serious due to long-term neglect. There is no vegetation cover, and thenorthern wind has been maintaining a high level, leading to sand in the region in the form of wind and sand damage Beijing and other places. This paper analyzes the process of transition from barren land to vegetation cover in Saihanba area by AHP. Has been selected average wind velocity,content of Pm2.5,sand duststorm weather .In order to evaluate the index, the influence of ecological environment restoration on resisting sandstorm in Beijing area was obtained by comparing the data.

The ecological protection in SAIHANBA area has played a leading role in the environmental impact of our country. Based on the discussion and study of problem 1 and problem 2 and the establishment of the model, the policies and methods adopted in the SAIHANBA area should be taken as a model for the construction of the balance of nature for sustainable green environmental protection in our country, look for areas that can be retrofitted under this model. According to the actual situation of each area environment construction……Model to implement appropriate environmental protection measures for the area . With element C as the primary measure and carbon neutrality as the reform goal, the paper explores the effectiveness of the continuous pursuit of this goal in the block time. Finally make our country quickly realize the green development, restore the ecological environment.

The world has been advocating a common destiny of mankind, and the environment around us is the home of all human survival. Only by continuously importing environmental protection to more people can the world’s ecological civilization keep growing. Many countries in the asia-pacific region have gradually carried out ecological and environmental protection work according to the effect of environmental management in SAIHANBA area and even in China. We take Vietnam as an example. After Geological Survey and climate survey, it is found that the environmental problems are mainly caused by natural disasters such as flood and waterlogging. Reducing greenhouse gases in the atmosphere by increasing the area of green vegetation, and using data to study how much greenhouse gases and carbon emissions are being destroyed by protected ecosystems.

2. Assumptions and conventions of the model

1) Through the calculation of the main environmental factors in SAIHANBA area, the influence of each factor on the intensity of its.

2) By comparing the damage of windblown sand to Beijing area before and after the restoration of forest farm in Saihanba area, it shows that forest farm can effectively block windblown sand.

3) Comparing the environmental condition of Tianjin area with that of Saihanba area, this paper indicates whether the Ecological Protection Area should be established and the effect of vegetation increase on carbon neutrality.

4) A comparison of Viet Nam with the SAIHANBA region illustrates where and how the country should improve the environment and the effect of increased green vegetation on the atmosphere globally.

3. Symbol explanation and symbol interpretation

Symbols	Meaning
A_i	Weight of factors in A
B_i	Weight of factors in B
C_i	Weight of factors in B
W	Eigenvectors and eigenvalues
λ_{max}	Maximum characteristic root
a_{ij}	The exact ratio of scalars

4. Model building

Problem 1: to establish the evaluation model of ecological environment

Aiming at problem one, it is necessary to establish AHP model to solve it.

(1) analytic hierarchy process

The basic idea is to decompose a problem into its constituent elements and group them according to their dominant relations, thus forming an orderly hierarchical structure. The relative importance of the factors in the hierarchy is determined by two-to-two comparison, and then the total order of relative importance of the factors is determined by the judgment of human beings.

In this paper, we divide the influence factors of Saihanba on the ecological environment into three points: the influence of species diversity on the ecological environment, the influence of element cycle (carbon, oxygen, carbon dioxide) on the ecological environment, and the influence of natural environment (precipitation, temperature, soil) on the ecological environment.

5. Problem solving

Question One: by collecting data and summarizing the three impacts on the environment, and using AHP, according to these three factors (species diversity a, element composition B, natural environment C) on the intensity of the impact on the environment, the results of the analysis.

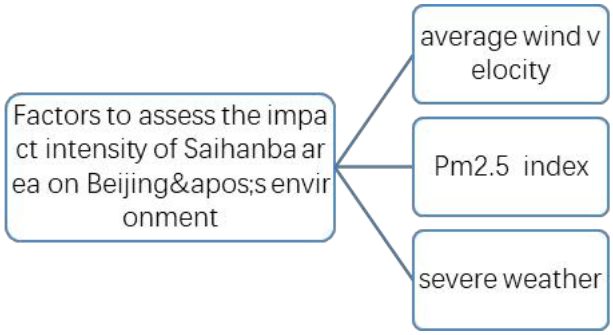
(1) Species diversity a includes three factors: animals, plants and microorganisms. According to the fact that the natural conditions in SAIHANBA area were barren hills and wasteland, which were turned into forest garden after restoration, we set the corresponding scale of the three indexes artificially. On this basis, we use AHP to calculate the impact of these three factors on species diversity and the consistency index, so as to explain the impact of species diversity on the ecological environment in SAIHANBA area.

(2) Element diversity B consists of two elements, carbon and oxygen. The SAIHANBA region has gone from being virtually devoid of life to now being rich in chemical element, this great and great achievement was the result of the wisdom and sweat of countless people who did the right thing and gave their lives. After nearly 60 years, we have finally achieved carbon-oxygen balance in this barren and barren land. The realization of this balance can reflect the important achievement of ecological construction in SAIHANBA area.

Based on the above data, we can see that the ecological protection project in SAIHANBA area plays an important role in species diversity, natural environment and element cycle. Through the joint efforts of the country and the people, the barren and barren dry soil has been turned into a lush green forest. Without water, the desert is covered or even barren, a series of problems that many people thought were unsolvable. But now, SAIHANBA area is a miracle to restore the ecological

environment in our country and even in the world. On this land, we have achieved multi-vegetation coverage, the normal operation of the ecosystem, the mutual conversion of elements between different regions, and even for its surrounding areas have a positive impact on the ecological environment, some natural disasters have prevented damage to other areas.

Question 2:

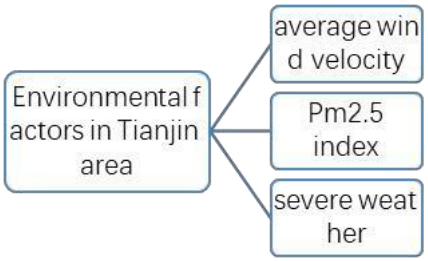


The following three indicators are the basis for judging the impact of environmental restoration in SAIHANBA area on the ecological environment of Beijing.

Assessment factors included average wind speed, PM2.5 content, and dust storm weather. According to the information, a number of cities around the Sahanba areacontinued to suffer from natural disasters before the state and the government took any measures to rehabilitate the barren area. Beijing is the first to suffer. According to the survey, Beijing today is rarely threatened by natural weather. The main reason is that forests in the SAIHANBA region have effectively improved the soil's fertility and reduced the amount of dust that can be blown by the wind. And large areas of forest cover, but also for the city to block off gusts of wind. According to whether these three indexes are important to Beijing's environmental impact assessment, we divide them into three scales. On this basis, we use AHP to calculate the impact degree and consistency index of these three factors on the environment of Beijing, therefore, the success of the ecological environment in SAIHANBA area plays an important role in blocking the bad weather in Beijing.

According to the above calculation, it is concluded that SAIHANBA area has an important influence on Beijing area before and after the control. It turned out that Beijing's sand and dust weather is very serious, and Beijing people are also subject to the persecution of natural weather. Through the evaluation of the three indicators, we can clearly show that the environment in Beijing has changed a lot. Dust storms gradually reduced to almost no occurrence, PM2.5 indicators first fell to a stable,more than six levels of wind is also rare. These are all the beneficial effects that SAIHANBA's ecological environment changes bring to Beijing area.

Question 3:

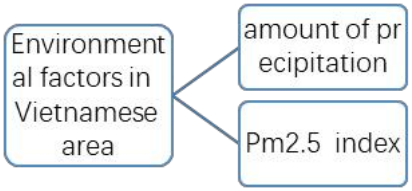


The Tianjin area of our country is compared to the Beijing area. There are many similar cities and areas in the local area. According to the second question of the three indicators to determine the level of ecological environment in Tianjin. After building the model, we came to the conclusion that a corresponding ecological reserve should be established around Tianjin to better reach the balance of nature.

By comparing the data from Beijing and Tianjin, we can see that the bad weather in the two

cities is similar; the wind speed in Tianjin area is not big compared to Beijing; but the PM2.5 index is far higher than Beijing. In order to improve the ecological environment in Tianjin, we should increase the planting area around Tianjin to reduce the PM2.5 index by using the successful case of SAIHANBA, and the planted tree species should be able to quickly absorb pollutants and convert it into other harmless substances to reduce its indicators. The area of ecological environment around Tianjin is about 3500 square kilometers, and the new greening can be implemented in seven parts.

Question 4:



Vietnam is located in the south of the Tropic of Capricorn, the annual rainfall is large, deeply affected by tropical monsoon climate. The region has numerous rivers criss-crossing, and easy to form flood season leading to frequent floods. Increasing vegetation area has a great effect on increasing soil moisture, reducing surface runoff and reducing flood disaster. The increase in green vegetation in the atmosphere for the reduction of greenhouse gases have a great impact. On this basis, we are concerned about the two major factors affecting the environment of Vietnam. . . . . For modeling and analysis. Taking the effective improvement of the ecological environment in SAIHANBA area as an example, after obtaining the data and combining with the concrete situation, the suitable environmental improvement scheme is found.

Based on the analysis of the importance of the two factors, the eco-environmental foundation of Vietnam is relatively optimistic compared with the initial environment of SAIHANBA area. Our first task is to solve the flood disaster. By increasing the area of green plants, not only to effectively prevent flooding, but also to carbon dioxide and other greenhouse gases absorption has a strong role. Because of the small size of Vietnam, there are not many natural ecological zones for improving the environment. Based on the analysis of the data that has been completed, the team recommends that the total area of ecological governance be assumed to be 2-3 km2 and that the overall plan be subdivided into 11 regions for small areas, each part will be based on the local soil conditions, the distribution of surrounding rivers for specific analysis, to take the most correct measures, so as to achieve better implementation.

Question 5:

After the investigation in Sanhanba area, the members of our group believe that there are four aspects to be improved, which are the popularization and implementation of forestry technology, the basic skills of professionals, the funds and the perfection of modern management methods. The Solution:

1) In accordance with the important measures taken by the state to actively develop forestry and the various programs to actively publicize environmental protection, the development of green industry in our country has gradually increased, and people’s awareness of environmental transformation and protection has become stronger and stronger. On the basis of this new situation, we should actively put forward a new ideological system, introduce the concept of ecological civilization development in the new era, and ensure that the economic and ecological benefits brought to us by forestry are steadily promoted. We should clarify the extension model to ensure the rationality and scientific nature of ecological development. At the same time, we should actively introduce and adopt the ideas put forward by the youngpeople of the new era. Young People’s ideas are ahead of the times and should be put into practice and drawn conclusions while listening to them.

2) Any time any place any matter, the human all plays the decisive role in these. In the

environmental protection project in SAIHANBA area, the workers as the main force should have sufficient theoretical knowledge, excellent practical skills and the ability to deal with sudden problems. In order to make the present and future workers ability level to meet the standard, we can work out the corresponding mechanism to achieve the goal. For example, standardize the entry criteria for grass-roots staff, select the staff with strong knowledge reserves. Periodically evaluate employees over a period of time, look for bright spots and vulnerabilities, and keep pushing them forward. Provide technical training and other courses for employees on a regular basis to keep their skills up to date.

3) On the premise that the basic work is well done, to better achieve some of the indicators, we also need to continue to state the case to the government, and get some economic help. We should seriously study the preferential policies given to us by the central government, increase project funds in all directions and strive for efforts to guide social capital input. At the same time, we should also pay attention to the integration with the market, the market brings us an inestimable economic. For example, tourism, agricultural products and other ways to bring us production benefits, can be used again in the context of environmental development. This continuous virtuous circle has not only changed the ecological environment of some bad areas, but also made the People's life in this area further developed and gradually moved towards beauty and brightness.

4) The various sectors should have an important agenda for the settlement of the present and future problems of the Saihan Dam. Clear tasks, detailed responsibility division, to ensure that the implementation of policies in place. Strengthen the forestry technology promotion, each department according to the duty division of Labor, coordination, strengthen the communication, form the development that negotiates promotes together. The scientific research personnel should play a full role.According to the problems to be dealt with at present, the expert personnel should set up discussion groups, research and development centers, and combine with the actual situation, to improve the scientific and technological content by means of investigation, experiment and public relations. Let Science and technology play a supporting role in the environmental protection of SAIHANBA, do the work of fine, deep and solid, improve the scientific and technological content of ecological and environmental protection, and enhance the effect of land greening.

6. Extension and evaluation of the model

The advantages are:

(1) simple and easy to understand. In AHP decision-making, the input information is mainly the decision-maker's choice and judgment, and the decision-making process fully reflects the decision-maker's understanding of the problem. AHP steps simple, clear decision-making process, easy to grasp.

(2) practicality and flexibility. AHP is both a qualitative analysis and a Quantitative analysis. By making full use of human experience and judgment and using relative scale to measure the indexes, the qualitative and quantitative factors can be organically combined.

Disadvantages:

(1) the reliability of the algorithm is poor. According to the principle of AHP, evaluation decision-making is inevitably restricted by subjective evaluation factors such as knowledge structure, personal preference and evaluation level of evaluator.

(2) can not solve the problem of uncertainty. In the decision-making process, due to the experts'incomplete grasp of information or personal preference, when experts make two judgments, it is impossible to give a certain number judgment or to obtain some incomplete judgment matrices with missing elements, which leads to the uncertainty and incomplete judgment matrices Consistency problem.

The index weight of each layer is calculated by the cut-off matrix, and then the total ranking weight of each scheme is calculated, according to which the scheme is optimized or ranked. In the first model, it is necessary to use other methods to determine the membership degree of indexes. Generally, the fuzzy comprehensive evaluation method is used to transform the qualitative and quantitative indexes as well as the indexes of different dimensions into cumulative and comparable forms, and then evaluate one or more objects. In the second model, if there are only qualitative indicators, then AHP can be used to make decision. If there are both qualitative and quantitative indicators, then when calculating the weight of each scheme based on a certain quantitative indicator, it is necessary to use other methods to construct judgment matrix according to the value of each scheme, and then calculate the weight.

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