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Research on Incorporating Carbon Emissions under Atmospheric Physical Environment into Environmental Impact Assessment System

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Abstract: *This paper starts from the background and development process of carbon emission assessment, compares China's carbon emission assessment system, analyzes the main aspects, and puts forward the future development direction, hoping to promote and promote carbon emission Emission assessment can also promote the development of this industry. In the current environmental protection environment, this paper must seriously consider the relationship between carbon emissions and the environmental impact assessment system. By analyzing the status quo of carbon emission management in China's existing Environmental Assessment system and from the perspectives of carbon emission measurement, carbon emission reduction measures, carbon management and regulatory requirements, etc., the pilot project of carbon emission environmental impact assessment of China's current key industry construction projects The policy requirements of China were analyzed, and the role of China's carbon peaking and carbon neutralization mechanism was predicted.*

Keywords: *Atmospheric physics, carbon dioxide emissions, environmental assessment*

1. Introduction

With the continuous development of the global economy, the content of environmental impact assessment covers the atmospheric environment, water environment, solid waste, and physical pollution. It is precisely because of the continuous innovation of the concept of environmental protection that the traditional rigid constraints of environmental protection and environmental management can be continuously broken through so that the Environmental Assessment can continually adapt to the new environmental requirements. China is the world's largest carbon emitter, and it has been included in the medium and long-term strategy for national economic and social development[1]. To achieve carbon peaking and carbon neutrality, the country should organically combine the idea of low-carbon development with environmental protection. This paper controls greenhouse gas emissions from the source, and the whole process promotes the low-carbon development of industry and protects the ecological environment[2].

2. Current carbon emission policy environment

2.1. Policy Summary

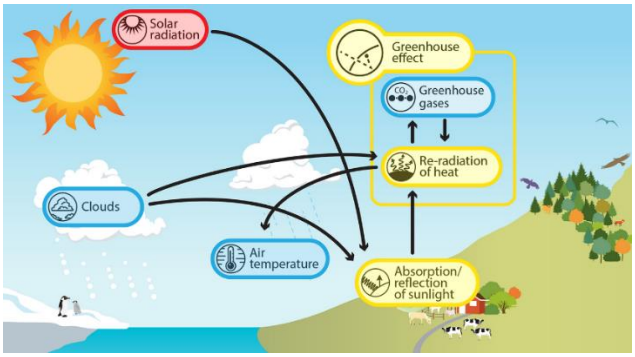

Figure 1: The Greenhouse Effect of Geophysics and Climate Change on Earth

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In recent years, due to the rapid development of the global economy, especially the rapid development of emerging economies, energy consumption has increased sharply, energy consumption has been increasing, energy, oil, and other energy sources have become increasingly depleted, and environmental pollution has become increasingly severe. Greenhouse gas emissions have continued to increase[3]. Energy supply and sustainable economic and social development have become significant issues facing today. The country must establish a new development concept of innovation, coordination, greenness, openness, and sharing, and grasp the historical opportunities of new technologies and industrial transformation, to gather the powerful forces of global sustainable development.see Fig. 1.

2.2. Responses from different industries and regions

In order to achieve the carbon neutrality target of peak carbon, many relevant policies have been introduced all over the country to combine carbon emissions with the current environmental impact assessment system. The Environmental Assessment approval and the responsibilities of the industry competent authorities have been defined, and the "Environmental Protection Completion Acceptance" system to be implemented in conjunction with the Environmental Assessment system has been proposed, which has dramatically improved the operability of the Environmental Assessment system[4]. The Environmental Assessment system has gradually been recognized and implemented by enterprises. The "Environmental Impact Assessment Law" promulgation has dramatically improved its status, popularity, and implementation rate in the public's mind. The environmental impact assessment system focuses on the pollution of enterprises, formulates emission standards for various pollutants, stipulates the concentration and speed of pollutants, and implements total amount control. The current definition of air pollution is generally in the gaseous form, such as nitrogen oxides, oxides, oxides, dust, suspended particles, etc., and other harmful gases harmful to humans and ecosystems. Greenhouse gases such as carbon dioxide are initially a kind of air, so they have not been included in the scope of pollution, and in the existing various emission standards, the emission of CO_2 has not been included in it. Because of this, the current environmental impact assessment system does not impose mandatory regulations on carbon emissions. Even in thermal power, building materials, chemicals, fermentation, and other industries, carbon emissions will not be calculated separately, and some projects will also propose to enterprises. Some technical suggestions, but because there are no mandatory standard specifications, it is difficult for most enterprises to implement them[5].

3. The Greenhouse Effect of Geophysical and Climate Change on Earth

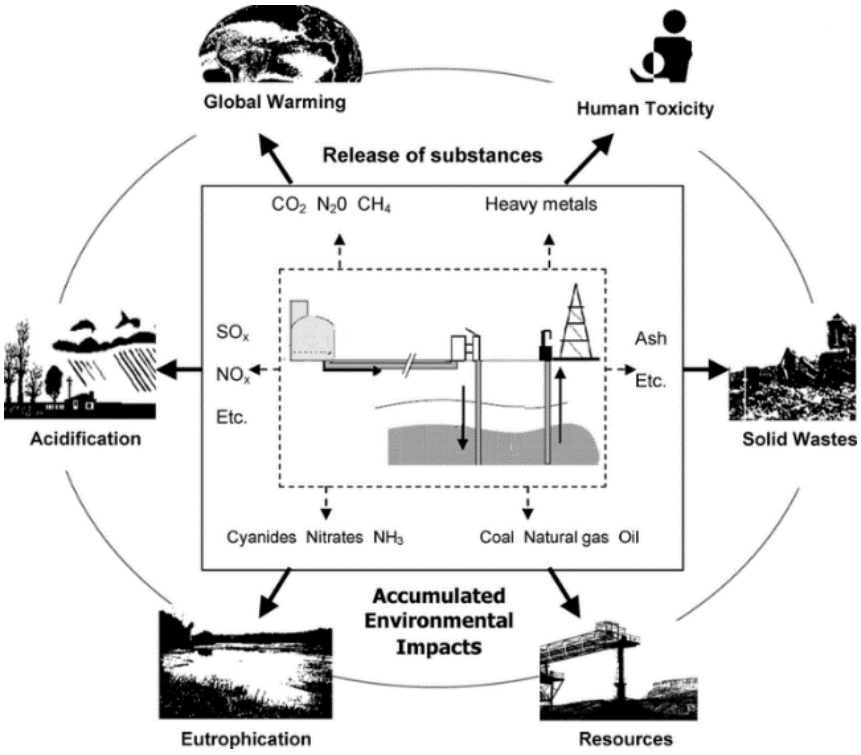

Figure 2: Include carbon emissions studies in environmental impact assessments

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Driven by technological and industrial development, human activities have significantly increased atmospheric emissions. In the control items, CO_2, methane, NO_2, and CO_2 concentrations increased by 35.2%, 147%, and 18.1%, respectively. Although the increase in nitrous oxide levels is slight, it is 200 times more calorific than carbon dioxide and can last for 180 years. In addition, because of the invention and application of chemical compounds, these three halogenated hydrocarbons, which do not exist in nature, have become a new type of greenhouse gas with a heat absorption efficiency of more than 1600 times higher than that of carbon dioxide.see Fig. 2.

The greenhouse effect is caused by disrupting the Earth's radiation balance. If the radiation influx is more significant than the outflow, the Earth will heat up, restoring the balance of radiation levels. When the temperature rises to a certain level, it will cause significant damage to the earth's ecological environment. Since the Industrial Revolution, urbanization and industrialization have changed the flow of energy and materials. Environmental CO_2 emissions caused by burning fossil fuels continue to rise. At the same time, the growth of consumer goods, the growth of transportation, and the employment of industries will all lead to rising CO_2 emissions. Keeling measured the concentration of CO_2, which increased rapidly in the atmosphere. 2.9 percent. On the other hand, manufactured actions reduce the ability of nature to absorb and convert carbon dioxide. Large-scale deforestation is caused by industrial production such as paper pulp, civil construction, furniture manufacturing, rail sleepers, etc. Take the chain saw, which appeared in 1917, and in North America, a mix of chainsaws and air-cooled engines and aluminum was a hundred to a thousand times faster than a typical ax.

4. Atmospheric physics and climate warming effects and their technical logic

Technological innovation, especially the research and development of new products, is the leading cause of global warming. The investigation found that the greenhouse effect produced by different industrial technologies and CO_2 production technologies can be divided into two categories: one is the technologies related to energy production. About 60% of carbon dioxide is produced by energy production, and it is the primary contributor to human emission of CO_2 into the atmosphere. Technological inventions, such as automobiles, household appliances, etc., increase energy consumption through large-scale production and utilization. From the history of technology and industry, we can see that the technical logic of technology can be carried out from three levels: product, technology group, and technology-economic system.

4.1. Superposition of Environmental Emissions in the Product Life Cycle

From a micro perspective, the impact of technology on the environment can be measured from a product's entire life cycle. The entire life cycle refers to the entire process from raw material acquisition to production, transportation, use, and disposal (from birth to death). In the whole production process, the environmental load of the product is the accumulation of CO_2 in the four crucial processes of production, transportation, use, and disposal.see Fig. 3.

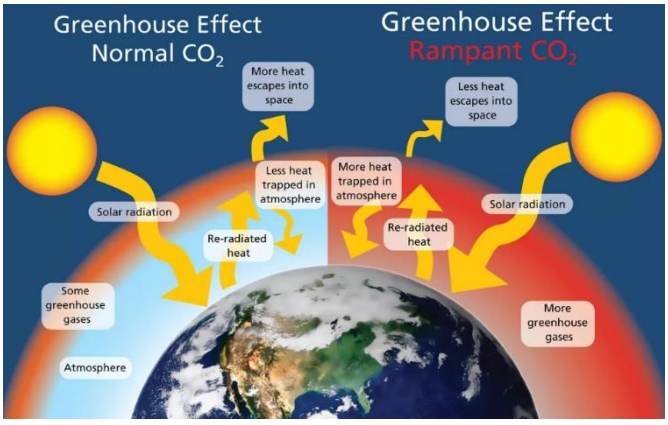

Figure 3: Environmental Impact Assessment System and Carbon Dioxide Control Research

4.2. The impact of integrated technology groups on the environment

From a medium perspective, the impact of technology on the environment is mainly reflected in the

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technical group (technical system). The ecological impact of technology can be large or small, but this is only a slight change in the consequences of social forces. Furthermore, with the influence of tech groups, individual technologies will come together to share groups and goals of phenomena or share the same theories. A technology cluster is a combination of a primary product and ancillary products, and its overall impact on the environment is more significant than that of a single product.

4.3. Industrial Amplification Technology - Impact of Economic Systems on Environment

From a macroscopic point of view, the impact of technology on the environment is produced by the techno-economic system, which is amplified by the industrialization process, resulting in scale and amplification. According to IPC2007, energy and electricity account for 26% of total human emissions, compared with 19% and 13% for industry and transportation. The emergence and development of new technologies such as artificial intelligence, the Internet of Things, big data, and cloud computing have brought about tremendous changes in people's network, network, network, networks, network, network etc. By empowering traditional industries, a new techno-economic system can be built. The new technological and economic system can optimize the allocation of resources, provide an ecological and green economic operation mode, and then reduce the CO_2 emissions of human activities.

5. Feasibility of including carbon emissions

In terms of its content, CO_2 is the main greenhouse gas, and its primary source is fossil fuels (80% of which are emitted from CO_2 from energy consumption), and the combustion of fossil fuels is precisely the air pollution (SO_2 and soot).) and there are similarities between the two, so they can be used for reference in the expression in the Environmental Assessment. In 2020, the central and local government institutions were reformed to integrate the functions of addressing climate change into the newly established Ministry of Ecology and Environment so that the system and institutions were coordinated with environmental governance, protection, and restoration. Since the unified department can give full play to the advantages of existing policy tools, measures, and basic capabilities while coordinating and strengthening relevant work, it is logical to help reduce carbon emissions. It has become an inevitable trend to accelerate the introduction of China's carbon emission environmental impact assessment. In some developed countries, much successful experience has been achieved. Canada took the lead in proposing environmental impact assessment standards. This paper has been actively exploring policies and related programs and measures to deal with climate change for a long time.

6. Strengthen the relationship between the current environmental impact assessment system and carbon dioxide control

The current environmental impact assessment system is a relatively mature and complete pre-project management. Therefore, regarding how to organically combine the environmental impact assessment system with carbon emission control, the author believes that the following aspects should be mainly focused on: Measure carbon emissions. At present, for the projects that have been completed and in operation, it is generally required to prepare a carbon emission verification report and calculate the carbon emission. However, for the proposed project, the carbon emission forms generated by the project implementation should be analyzed from the Environmental Assessment stage, and the possible carbon emissions should be analyzed. Measure and calculate to facilitate environmental protection and energy conservation management departments to adjust the allocation of total carbon emissions in advance. Propose measures to reduce carbon emissions. For projects with high carbon emissions, suggestions and needs for carbon reduction should be put forward from the source, such as process improvement, clean energy substitution, clean transportation, waste heat and waste energy, etc.; in the environmental impact assessment, it is necessary to The above measures are compared and analyzed, and the best economic and technical solutions are formulated for different project types. Develop an inventory of carbon emissions from projects and monitor them. It is proposed to formulate relevant indicators for monitoring and managing the ledger and to clarify the information and frequency of monitoring and recording according to the indicators required for accounting.

The currently widely used calculated carbon emission standard is multiplied by the CO_2 emission factor caused by energy consumption. The final result is that the CO_2 emission factor is related to the emission form, type, and fuel type. However, this method is usually only applicable to the total emissions of a specific country or region. The results are often very biased for a specific industry or a particular

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project. Therefore, when assessing carbon emissions, it is necessary to use a more scientific and rational method to determine its emission level. In various industries, especially in some critical industrial fields, much research and discussion on the carbon emission accounting system has been carried out. In thermal power. proposed an online detection of the carbon oxidation rate of coal-fired power units through the relationship between boiler capacity, combustion mode, coal composition, load rate, and unit carbon oxidation rate. made a more accurate calculation of coal based on coal quality, carbon content, and volatile content.

7. Conclusion

China's environmental impact assessment, which is still in the exploratory stage, has not yet formed the same index system and standard as the environmental impact factor analysis. At present, China's carbon emission assessment is mainly based on the results of carbon emission calculation, combining the carbon emission policies and emission reduction measures of various industries, and conducting qualitative analysis in terms of carbon emissions, carbon emission coefficients, and carbon intensity. In order to measure whether a project is feasible and whether it achieves emission reduction targets from the perspective of carbon emissions, it is necessary to establish an evaluation index system and standards that conform to regional characteristics. According to the carbon emissions of the industry and the degree of industrial development, indicators for optimizing emission intensity and improving resource utilization efficiency should be proposed.

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