



Brief Analysis of Outstanding Issues of Coal Consumption and Atmospheric Environment

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Abstract

Under the market economy environment, the demand for coal resources is increasing year by year, which is conducive to enhancing the vitality of economic development and accelerating the pace of social transformation and upgrading. However, the combustion of coal will produce a large number of pollutants, causing atmospheric environmental pollution and threatening people's life, health and safety. This article will analyze the prominent problems of atmospheric environment caused by coal consumption and explore solutions to the prominent problems of coal consumption and atmospheric environment.

Keywords

Coal consumption; atmospheric environment; outstanding issues

Introduction

Coal consumption has become the focus of the current energy consumption field. Only by ensuring the efficiency of coal supply can we provide energy security for the construction and development of various fields. Especially after entering the new era, coal resources have been widely used in the power industry, metal smelting industry and chemical industry, and coal consumption has also shown an increasing trend year by year. However, coal is not a clean energy source. During the combustion process, sulfur dioxide and smoke will be produced, which will cause the surrounding atmospheric environment to be damaged. It will not only have a negative impact on the production and living environment, but also limit the sustainable development of my country's economy, and it does not meet the current requirements of green development. Under the goal of energy conservation and emission reduction, the coal consumption structure should be reasonably adjusted. From the perspective of sustainable development, we should strengthen the effective control of atmospheric environmental pollution, truly achieve effective coordination between economic development and environmental capacity, and avoid a series of contradictions and problems caused by exceeding the environmental carrying capacity.

1. Prominent atmospheric environmental problems caused by coal consumption

1.1 Sulfur dioxide pollution

Sulfur dioxide is the main pollutant of coal combustion. It will react chemically in the air under the influence of external factors, which is also the main reason for the formation of sulfate and sulfuric acid. At the same time, with the increase of coal combustion, more particulate matter will be produced, which will lead to the appearance of sulfuric acid smoke and cause smog weather, which will not only affect people's normal life, but also be a key factor in inducing diseases. Nitrogen oxides will also react with sulfur dioxide. With the increase of nitric acid and sulfuric

acid content, the problem of atmospheric acid deposition will appear, causing large-scale acid rain weather. Since the implementation of energy conservation and emission reduction policies, it has played an effective role in improving the problem of sulfur dioxide pollution, and the investment has been increasing, and sulfur dioxide emissions have been controlled. Against the background of economic downturn, China's coal consumption is still at the forefront of the world, so the total sulfur dioxide emissions remain high, which has become the main factor restricting economic transformation and upgrading. Therefore, China still has a long way to go on the road of energy conservation and emission reduction.

1.2 Smoke pollution

Smoke pollution is also the main type of pollution caused by coal combustion. In particular, the presence of minerals such as aluminum silicates prevents coal from fully burning, resulting in the appearance of fine solid particles, which will form a large amount of gray dust aerosols when directly discharged into the air. Coal gangue will be affected by external environmental factors, and under chemical and physical effects, dust will appear, and emission into the air will also cause smoke pollution. In addition, the problem of spontaneous combustion is also the main problem faced by coal gangue in use. Once it reaches the ignition point, it will release toxic and harmful gases, including sulfur dioxide and carbon monoxide, which will not only cause an imbalance in the ecosystem, but also become the main factor threatening health and safety. In addition, smoke pollution will also cause an increase in the content of heavy metals, especially arsenic, cadmium and mercury, which will exist for a long time after entering the natural environment, causing great difficulty in governance. At the same time, heavy metals will also enter the human body through the food chain, causing functional damage.

2. Solutions to the outstanding problems of coal consumption and atmospheric environment

2.1 Introduction of advanced technology

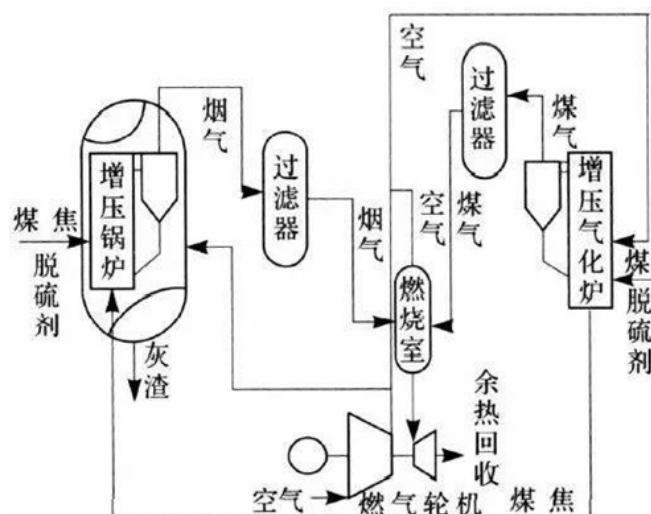


Figure 1. Pressurized circulating fluidized bed coal-fired combined cycle unit.

In order to solve the problem of atmospheric pollution caused by the continuous increase in coal consumption, we must rely on advanced technology to strengthen effective prevention and control of pollution, so as to implement relevant policy requirements in China and promote sustainable economic development. We should make a good overall plan, select appropriate technology types according to China's coal consumption structure and level, and ensure the applicability and effectiveness of technology application. Compared with Western developed countries, China started late in the research and development of clean coal technology. Therefore, we should introduce advanced technology and integrate it with China's basic national conditions. We should encourage independent research and development, increase the investment of funds and talents in scientific research activities, and ensure the efficiency of technology application. We should comprehensively transform and upgrade the current washing and processing equipment to make it more in line with the characteristics of current coal consumption and promote the improvement

of coal quality. Gradually expand coal deep processing projects, which is conducive to the efficient utilization of resources and ensure clean output [1]. For example, in the use of coal in the power industry, pressurized fluidized bed combustion technology and integrated coal gasification combined cycle technology can be used to implement control, and at the same time, advanced coal clean conversion technology can be used to control pollution. In production practice, carbon sequestration technology has also been widely used, especially the integration with conversion technology can achieve twice the result with half the effort. The pressurized circulating fluidized bed coal-fired combined cycle device is shown in Figure 1.

2.2 Adjusting consumption structure

In coal consumption, the basic goals and requirements of energy conservation and efficiency improvement should be clarified to promote the improvement of coal resource utilization and continuously improve the current energy-saving industrial system. An energy consumption standard system should be established to classify and evaluate coal consumption in different fields, formulate mandatory thresholds, and prevent high-energy-consuming industries from having a negative impact on the current consumption structure. The consumption structure in the power industry, construction industry, transportation industry and other fields should be optimized and upgraded to promote the smooth implementation of energy conservation. In order to adapt to the consumption characteristics of the new era, it is necessary to accelerate the development and utilization of clean energy, including wind energy, geothermal energy and solar energy, etc., to form an effective complement to coal consumption. Focus on the application of low-carbon energy and meet the goal requirements of energy quality improvement. For example, in the power industry, hydropower projects and wind power projects can be actively promoted to ensure ecological security. The incremental control of coal consumption should be done well, the current management goals should be comprehensively refined, and effective constraints on production work should be strengthened to control the current incremental consumption. In order to effectively control the current non-point source pollution problem, the use of civilian coal should be gradually reduced, and the construction of natural gas projects should be actively promoted. After combustion, carbon dioxide and water will be produced, which will not pollute and damage the atmospheric environment. In the adjustment of consumption structure, comprehensive and detailed investigation and analysis should be carried out to clarify the local energy structure, reserves and development status, so as to improve the utilization rate of clean energy, prevent the blind pursuit of cleanliness from affecting the economic development of the local area, and truly ensure the balanced control of coal consumption.

2.3 Strengthening macroeconomic regulation

Government departments should actively transform their functions, recognize their own responsibilities and obligations in atmospheric environmental governance, and take effective macro-control measures to achieve reasonable optimization of coal consumption. Focus on adjusting the current industrial structure, especially creating a good environment for the development of the tertiary industry, solving the high energy consumption problem in the development of the secondary industry, preventing large-scale pollution problems, and achieving energy conservation and emission reduction effects. In view of the economic development status and coal consumption trends in the region, actively introduce relevant policies, clarify energy conservation and emission reduction indicators in different fields, enhance the coordination between various departments, and jointly implement policy requirements. The mining of high-sulfur coal should also be effectively supervised. It is strictly forbidden to mine coal with a sulfur content of more than 3%. If enterprises fail to comply with relevant policy requirements, effective administrative penalties should be taken [2]. Based on the actual situation, the current coal consumption industry planning should be comprehensively optimized, especially paying attention to the production status of coal enterprises and strengthening quota management.

2.4 Conducting environmental impact assessment

The implementation of environmental impact assessment can also be used to scientifically evaluate the current coal consumption situation, understand the impact of project construction on the atmospheric environment, and take effective prevention and control measures. For large-scale coal consumption projects, full-process control should be carried out, combining pre-control, in-process control and post-control methods to obtain reliable environmental impact assessment results, pay attention to regular assessment and evaluation of relevant responsible units and publish

them, and use the power of news media and the public to strengthen the supervision effect to prevent the situation of exhausting resources. While adjusting the coal consumption structure, it is necessary to strengthen the effective constraints and control of enterprises in combination with the license system, build a complete accountability mechanism, and enhance the sense of responsibility of enterprises [3]. Improve the current evaluation standards, strictly follow the requirements of relevant national laws and regulations, and help decision-makers clarify the impact and characteristics of coal consumption on the atmospheric environment so as to carry out governance work in a timely manner. In the implementation of environmental impact assessment work, the relevant national policies and laws and regulations should be strictly followed. At the same time, it is necessary to do a good job in linking with the pollutant discharge permit system, implement control from the early, mid-term and late stages of project construction, and reduce the impact of coal combustion on the natural environment [4]. Government departments should give full play to their leading role, do a good job of supervision in the connection between environmental impact assessment and pollutant discharge permit system, clarify the types and total amount of pollutants discharged during project planning and construction, and the degree of pollution they may cause, etc., strengthen supervision of relevant enterprises with the help of temporary pollutant discharge permits, and effectively coordinate economic development and environmental protection work.

2.5 Carry out publicity and education

Actively carry out publicity and education work to guide people to realize the urgency of energy structure transformation and upgrading, so as to create a good social atmosphere and speed up the process of green economic construction in China. The traditional publicity model is too backward and has insufficient influence. Therefore, we should gradually expand the channels and methods of publicity, strengthen people's awareness of atmospheric environmental problems in various fields, actively optimize the coal consumption structure, and create good living conditions for people. We should use WeChat, Weibo and short video platforms to carry out publicity, especially formulate corresponding publicity plans for large coal-consuming enterprises, promote the reform and innovation of enterprises, and gradually expand the scale of clean production [5]. Actively publicize relevant policies and laws and regulations in China, strengthen the restraining effect on enterprises, and gradually achieve the goal of energy conservation and emission reduction. We should conduct a visual analysis of the overall situation of China's current coal consumption, and publicize it through charts and videos to help relevant enterprises and persons in charge understand the severe situation of environmental protection work, so as to actively promote the clean production and industrial upgrading of enterprises and form a strong synergy.

3. Conclusion

Coal consumption is the key to promoting economic development, but the atmospheric pollution caused by it has also attracted great attention from the society. Only by strengthening the protection of the atmospheric environment can we truly achieve the requirements of green development. Sulfur dioxide pollution and smoke pollution are the main types of pollution caused by coal consumption, which have caused great pressure on economic construction and are also prone to cause human health problems. To this end, we should enhance the rationality and scientific nature of coal consumption and solve the current environmental problems by introducing advanced technologies, adjusting consumption structure, strengthening macro-control, carrying out environmental impact assessment and carrying out publicity and education.

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