

## Research on energy consumption and sustainable development

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**Abstract:** Energy is the material basis of all production and life, and also an important resource for human survival. In recent years, with the acceleration of industrialization and urbanization, the rapid consumption of energy, environmental pollution is becoming a serious problem facing our country. In view of the current situation of energy shortage and environmental pollution in China, this paper analyzes the energy utilization and its main impact on the environment from the perspective of social sustainable development, studies the content and significance of energy conservation and environmental protection as well as the importance of renewable energy, and looks forward to the tasks and requirements for the coordinated development of energy utilization and environmental protection.

### 1. Introduction

Resources themselves are not infinite. With the increasing demand for resources in economic development, resources are increasingly scarce. The scarcity of resources determines that human beings are faced with various choices in economic activities, so the scarcity of resources becomes the first principle of economics. In the process of economic and social development, the scarcity of resources has experienced the evolution from relative constraints to absolute constraints. When human beings do not realize that environmental pollution and ecological damage come from the massive use of natural resources and the overload of capacity resources, economic development and environmental problems are relatively independent. The occurrence of the eight major public hazards in the world has sounded the alarm to mankind, aroused the environmental protection consciousness of the people all over the world, and constantly improved and deepened the unity of opposites between environmental protection and economic development. Its essence is that human beings are reflecting on the relationship between human beings and nature, and it is the result of deepening the understanding of environmental problems. Its core is to study the economic roots of environmental problems and the sustainable utilization of their inherent development laws. It is necessary to fully consider the capacity of resources and environment, and the economy should develop within the scope of ecological carrying capacity.

### 2. Current problems

Since China's reform and opening up 40 years ago, the urban population has increased from 172.45 million in 1978 to 792.98 million in 2016, and the GDP has increased from 365.02 billion yuan in 1978 to 82712.2 billion yuan in 2017. But behind the rapid economic development is a series of environmental problems, such as water pollution, air pollution, soil pollution, etc., collectively known as "urban environmental diseases". While promoting the economic and social development, the city also destroys the urban ecological environment that people must rely on. At the same time, the loss of urban ecological environment function in turn restricts the development of the city. According to the Research Report on China's environmental economic accounting released by the Ministry of ecological environment, the damage to the ecological environment has caused huge economic losses in China, including 511.82 billion yuan in 2004, 894.76 billion yuan in 2008, 1391.62 billion yuan in 2009 and 1538.95 billion yuan in 2010, accounting for 3.05%, 3%, 3.8% and 3.8% of the GDP of that year. 5%. In the development process of our country, we must change the traditional extensive development and turn to the intensive development that takes into

account the coordination of society, environment and economy, then we can achieve sustainable development.

### **3. The origin of the concept of environmental sustainability**

At the beginning of the concept of sustainability, in most cases, its connotation is the same as today's environmental sustainability, that is, economic and social development under the condition of maintaining environmental sustainability (moldanetal., 2012). For example, in 1980, the world conservation strategy jointly prepared by the World Conservation Union (IUCN), the United Nations Environment Programmers (UNEP) and the World Wide Fund (WWF) proposed the concept of sustainable development for the first time. It believed that human beings must understand Since environmental resources are limited, resources should be saved to ensure the sustainable development of all lives. However, in the subsequent development, sustainability has developed from a rather vague original concept to a more accurate "three pillar" concept paradigm. People gradually realize that in addition to environmental sustainability, economic sustainability and social, sustainable Each has its own characteristics and values.

It is generally believed that the term "environmental sustainability" comes from the research team of the World Bank. In 1992, the World Bank referred to "environmentally responsible development" in its development report. Subsequently, the team represented by Ismail Serageldin, vice president of environmental sustainable development of the World Bank, compiled and published a number of collections, including the environmental sustainable development series. Water supply, sanitation, and environmental sustainability: the financing Challenge, etc., gradually promoted the concepts of "environmental sustainable development" and "environmental sustainability". Robert, then environmental adviser to the World Bank? In 1995, Dr. goulard also wrote an article to clarify the values and differences of the three concepts of environmental sustainability, economic sustainability and social sustainability (Goodland, 1995).

### **4. Connotation of the concept of environmental sustainability**

The concept of environmental sustainability has attracted more and more academic attention. According to the original definition of Goodland (1995), environmental sustainability is to protect the material sources used to meet human needs, and ensure that the waste discharge does not exceed the natural carrying capacity, so as to prevent natural disasters and improve human welfare. He also pointed out that environmental sustainability imposes constraints on the economic subsystem from both sides of the source and sink to maintain the stability of the environmental system. Hddren Etc. (1995) from the perspective of Geophysics, environmental sustainability means to maintain or improve the integrity of the earth's life support system, so as to ensure the economic and social development of contemporary and future human beings.

In the field of practical application, environmental sustainability has also been widely recognized by various organizations and institutions. For example, the National Science Foundation of the United States (NSF) has set up a series of environmental sustainability programs to support engineering projects that are committed to balancing ecological protection and economic stability, as well as social, behavioral and economic sciences. Research. In addition, Victoria, Australia has set up an environmental sustainability specialist. In the strategic advisory report received, environmental sustainability is defined as "the ability to maintain valuable elements in the natural environment". Valuable elements include human life, necessary environmental bases for survival, renewable and non renewable means of production, livable living environment, etc. (s Utton, 2004) in addition, the environmental strategy for the first decade of the 21st century (OECD, 2001) issued by OECD is of great value to the concept of environmental sustainability. This strategy not only defines four specific characteristics of Environmental Sustainability (renewability, substitutability, digestibility, avoidance of irreversibility), but also determines The five interrelated environmental policy objectives can improve the cost-effectiveness and operability of sustainable development, thus effectively linking up the concept and practice of environmental sustainability. The five policy

objectives are respectively to maintain the integrity of the ecosystem, realize the decoupling of environmental impact and economic growth, improve the quality of life, increase process regulatory data and decision-making information sources, and enhance global environmental governance and cooperation.

Urban environmental sustainability policy. In short, the urban environmental sustainability policy is the environmental policy that the urban government implements to achieve the goal of environmental sustainability.

## **5. Sustainable development theory of urban environment**

Sustainable development of urban environment, including “city”, “environment” and “sustainable development”, is the application of sustainable development in urban development. From the perspective of resources and environment, the sustainable development of urban environment is to promote the improvement of people's living standards on the basis of maintaining their own carrying capacity. People here refer to not only the contemporary people, but also the future generations. From the perspective of economy, the sustainable development of urban environment refers to taking economic development as the center, doing well in environmental protection and social welfare construction, and damaging the environment. And the loss of social welfare level is minimized; from the social perspective, the sustainable development of urban environment aims to improve social welfare through economic development and environmental protection, and its ultimate purpose is for the people's livelihood. Only the people live a happier life.

More healthy, all development is meaningful. The basic contents of urban environmental sustainable development include urban infrastructure construction, environmental protection and improvement, and sustainable utilization of resources. On the premise of not destroying the environment, the ultimate goal is to make human life happier and the environment, economy and society more harmonious by taking some policy measures to improve the environmental carrying capacity and environmental quality.

### **5.1 Natural environment**

The natural environment is to develop the economy within the scope of maintaining the environmental carrying capacity, thoroughly implement the concept of “green water and green mountains are golden mountains and silver mountains”, reasonably develop and utilize resources, pay attention to environmental protection, governance and improvement, and maintain the environmental carrying capacity. At the same time, the development and utilization of new energy to replace non renewable energy, the use of renewable energy should be controlled within its regeneration speed.

### **5.2 Economic environment**

Economic development is a sign of national progress. Only by solving the basic problems of people's livelihood can individuals think about protecting the environment and pursuing a better life; only by improving infrastructure and improving the level of scientific and technological innovation can they be able to develop new energy and environment-friendly economy.

### **5.3 Social environment**

The development of social environment is the improvement of life quality, the promotion of happiness, the more comprehensive development of individuals, and the harmony of social civilization. The social environment also includes many aspects: narrowing the income gap, improving medical services, improving the education system, improving social security and solving the problems of housing, transportation, food safety, etc.

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