Influence of Energy Saving and Emission Reduction on Innovation of Science, Technology, Industry and Enterprises in China

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Abstract: Energy saving and emission reduction policy is a long-term strategic choice in China, which will have a far-reaching impact on science and technology, economy and enterprise innovation. By controlling the growth rate of industries with high energy consumption and high pollution, the policy of energy conservation and emission reduction promotes the transformation of China's economic growth mode to resource conservation and clean environment. Service industry has the characteristics of low energy consumption and light pollution, which will be paid special attention to. The policy of energy conservation and emission reduction with promising medium and long-term prospects is a long-term strategic choice for China, which will have a far-reaching impact on the economy. During the 30 years of reform and opening up, traditional industries with high energy consumption, such as electric power, metallurgy, cement and chemical industry, have made great contributions to China's economic development by ensuring supply. Today, China has entered a new historical development stage, and the extensive growth mode with high energy consumption and high pollution is increasingly facing challenges. The intensive growth mode with the core of improving the utilization efficiency of production factors such as energy and the low-carbon economy with low energy consumption, low pollution and low emission have become the future economic development direction of China.

1. Introduction
China is a developing country. In recent years, China has entered an accelerated period of industrialization and urbanization, with rapid economic growth. However, the problems of resources and environment have become increasingly prominent, which has attracted more and more attention from the society. How to develop the economy rapidly, adjust the economic structure in time, change the development mode, and do a good job in energy conservation and emission reduction are the current problems. This paper analyzes the current situation of China's resources and environment, and discusses from four aspects: taking energy conservation and emission reduction as the administrative idea, speeding up the adjustment of industrial structure, strengthening energy conservation management, and making energy conservation and emission reduction the conscious action of the whole society, aiming at improving the awareness of energy conservation and emission reduction and promoting the sound and rapid development of China's economy. At the same time, China's environmental problems have gradually improved.
2. Changes in Science and Technology, Industry and Enterprises

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2.1.1. Scientific and technological work has stagnated
In recent years, it has grown at a compound rate of 20% every year; The background of China's transformation to informationization, digitalization and intelligence remains unchanged, and cyberspace security remains the top priority of national security in the future; Generally speaking, the epidemic in 2020 will have a certain impact on the network security industry, but the network security industry will still have a rapid growth in the next few years\(^1\).

![Source: IDC China, 2020](Image)

Figure 1 Forecast of China's network security market scale from 2018 to 2023

2.1.2. Influence of Low Carbon Environmental Protection on China
Over the past 200 years, with the deepening and development of industrialization, it is an indisputable fact that a large number of greenhouse gases, especially carbon dioxide, have been discharged, resulting in global temperature rise and climate change. The development of industry consumes a lot of fossil energy, and the emission of greenhouse gases has caused serious consequences\(^2\). Besides drought, abnormal climate and global warming, it also leads to many problems, such as shortage of water resources, deterioration of living environment, aggravation of economic loss, rise of sea level, threat to human health, aggravation of species change and so on\(^5\).

3. research methods and quantitative analysis

3.1. research technique
T-test refers to the statistical hypothesis test of students' T-distribution in any test statistics when nullity hypothesis holds, which belongs to parent statistics. T-test can be divided into single population test, double population test and paired sample test, which is mainly used to compare whether the difference between the two averages is significant. In this paper, the paired sample test method in T test is adopted.

3.2. Basic data processing
According to statistics, the data in Table 1 are obtained, including industrial income, total import and export volume, balance of local and foreign currency deposits of financial institutions (including foreign capital) and GDP of these six years in Liaoning Province from 2017 to 2020.
Table 1 Indicators of Liaoning Province from 2017 to 2020

| code | year | area        | industry | port     | financial | GDP        |
|------|------|-------------|----------|----------|-----------|------------|
| 1    | 2017 | Liaoning    | 22948.83 | 6423.13  | 54249.0285| 23409.24   |
| 2    | 2018 | Liaoning    | 26066.8111| 7392.86  | 59015.99   | 25315.35   |
| 3    | 2019 | Liaoning    | 27813.29 | 7255.1   | 62697.4    | 24909.5    |
| 4    | 2020 | Liaoning    | 26074.2  | 5961.1   | 67135.9    | 25315.4    |

Table 2 GDP

| Pairing difference | before-after | standard deviation | Mean of standard error | 95% confidence interval of difference | t    | freedom | Significance (double tail) |
|--------------------|-------------|--------------------|------------------------|--------------------------------------|------|---------|--------------------------|
| average value      | -750.15500  | 1060.80866         | 750.10500              | -10281.1427                         | 8780.8327 | -1.00 | .500                  |

Table 2 shows the statistics, correlation and test of paired samples between GDP of Liaoning Province in 2017-2018 and GDP of Liaoning Province in 2019-2020.

According to the statistics of paired samples, the average level of GDP before the epidemic (24362.2950) is lower than that after the epidemic (25112.4500). From the correlation of paired samples, the Pearson correlation coefficient between GDP before and after the epidemic is 1.000, with significant \( P = 0.000 < 0.05 \), indicating that the changes of GDP are consistent. From the paired sample test table, the paired sample T test of GDP before and after the epidemic showed that there was no significant change.

4. Solution of the problem

4.1. Solution of the problem

From the current ecological practice process, low-carbon ecological planning is an important way to achieve the goal of low-carbon city. It integrates low-carbon ecological strategies such as nature, space, transportation, energy, resources, environment and buildings to achieve the overall quantifiable development goal of "low carbon" and "low energy consumption". Low-carbon ecological planning generally includes two basic starting points: first, controlling the carbon footprint of human activities to reduce greenhouse gas emissions, that is, urban planning countermeasures to slow down climate change\(^4\).

5. Conclusion

5.1. Conclusion

"Low-carbon life" needs to meet the basic needs of healthy and comfortable life. On this premise, simple, moderate, green and low-carbon living and consumption methods should be adopted. "Low-carbon life is environmental responsibility and wisdom of life. It is both altruistic and self-interested, and it is the proper meaning of our pursuit of sustainable and high-quality life\(^3\)."Low carbon" and "good life" complement each other, and people should pursue a "low and beautiful" life. Enhancing the enforceability of low-carbon in life, making it more traceable and instructive to action, and forming "when I want to be low-carbon, I know how to do it" is the correct way to open
low-carbon life.

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