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Analysis of Influencing Factors of Per Capita Domestic Electricity Consumption in China

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Abstract

Since the 1980s, China's economy has maintained rapid development and people's living standards have been improving. Behind the rapid growth of gross output value is the rapid improvement of various industrial indicators. As a basic industry supporting the development of national economy, the electric power industry has made increasingly prominent contributions to economic growth in this period and has gradually become a pillar industry worthy of the name with strong strength and development speed. 2020 marks the end of China's 13th Five-Year Plan. China's installed power generation capacity increased from 1.5 billion kW at the end of 2015 to 2.2 billion kW at the end of 2020, but the unbalanced development of power supply and demand still persists for a long time.

Keywords

Per capita household electricity consumption, multiple linear regression model, electricity supply and demand.

1. Introduction

In late September 2021, a number of cities in Northeast China imposed power rationing, affecting residents' electricity consumption and causing widespread public concern. This phenomenon of power shortage has been evident since 2010. Whether it is power rationing or shutting down units, it has brought great impact on the living electricity consumption of residents and caused huge economic losses. China's per capita domestic electricity consumption was 115 kilowatt-hour in 2000, and reached 722 kilowatt-hour in 2018, data showed. Therefore, it is of great significance to study the per capita consumption of domestic electricity for China to accelerate energy transformation, adjust industrial structure, eliminate backward production capacity, reduce energy waste and ensure the residents' electricity consumption. Therefore, this paper conducts a quantitative study on China's per capita domestic electricity consumption and its main influencing factors from 2000 to 2018.

2. Background

At present, some domestic scholars have studied the influencing factors of per capita domestic electricity consumption in China. Boqiang Lin [1] used the method of macroeconomics to analyze the main factors affecting China's power demand, and took GDP, electricity price, population, industrial structure, energy utilization rate and other influencing factors as variables to conduct unit root test, followed by co-integration test. It is concluded that there is a long-term stable relationship between China's electricity demand and GDP, electricity price, population factor, economic industrial structure and energy utilization rate, and the study finds that there is an endogenous relationship between electricity demand and China's economic growth, and there is a positive correlation between electricity demand and economic growth. Chao Li [2] used the same method to establish a long-term model, and granger causality test results showed that GDP and population had a significant impact on power demand, and there was a significant single causal relationship between each explanatory variable and power demand. Xingping Zhang et al [3] in the production of theory framework, explain the economic growth from 1978 to 2007 in Beijing, power consumption, the co-integration relationship between capital and labor, using error correction model is analyzed, the results showed: the growth of short-term electricity consumption there exists a granger causality, there is a bidirectional causality between electric power consumption for a long time.

In addition, some scholars study the effect of industrial structure adjustment of electricity demand: Junchao Zhen[4] from the perspective of the three industrial development trend, by studying the social power consumption and the relationship between the industrial structure change and the change trend, using cointegration test and error correction model, the correlation analysis was carried out on the electricity consumption and industry structure, the last instance analysis, The results show that the adjustment of industrial structure affects the power consumption in China, and the power consumption basically keeps the same trend with the adjustment of economic development and industry.

The contribution of this paper mainly includes the following two aspects: First, this article through multiple linear regression method, the selection is electric power consumption per capita life as explained variable, gross national product (GNP), urban population, power capacity, per capita disposable income as explanatory variables, through quantitative analysis, the urban population and power capacity greatly affect the electricity consumption per capita life conclusion, The research on this subject is improved. Second, this paper selects two explanatory variables of installed power generation capacity and household disposable income, which can reflect the impact of power supply and demand imbalance and income difference on power consumption.

3. Construction of Econometric Model

3.1. Selection of Explained Variables

In this paper, China's per capita domestic electricity consumption is selected as the explained variable. With the rapid development of China's economy, the power industry as a basic industry to support the development of national economy is also growing. However, the unbalanced development of power supply and demand still has a great impact on the lives of residents in some areas and brings economic losses. Especially in the current government vigorously promote the pluralistic construction of power sources, resolutely carry out industrial structure adjustment under the background, it is of great significance to study China's per capita living electricity consumption to adjust the power demand, solve the imbalance factors in the power supply, and guide the sustainable development of economy.

3.2. Selection of Explanatory Variables

In this paper, gross national Product (100 million yuan), urban population (10,000 people), installed power generation capacity (10,000 kw) and per capita disposable income (yuan) were selected as explanatory variables for the study. The reasons are as follows:

(1) GROSS National Product (100 million yuan): Gross national product is an intuitive indicator reflecting the social and economic level. With the economic growth, the development and utilization of energy will inevitably increase, and it is an important indicator affecting the per capita consumption of electricity.

(2) Urban population (ten thousand): With the acceleration of urbanization in China, the urban population keeps increasing, and the improvement of housing conditions will also have a great impact on the demand for domestic electricity.

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(3) Installed power generation capacity (million kw): With the development of China's power industry, the scale of power grid continues to expand, the total installed power generation capacity continues to increase, and consumer demand is also increasing, so the imbalance of regional resource distribution may be the reason why the total power supply still cannot meet the needs of rapid economic development.

(4) Per capita disposable income of residents (Yuan): The increase of per capita disposable income of residents indicates the improvement of economic level. Accordingly, the demand for consumption will further increase, and the household electricity consumption will be affected.

The above variables are defined in Table 1.

Table 1. Variable selection, unit and indication code

variable	unit	Instruction code
Per capita household electricity consumption	KWH	y
Gross national product	One hundred million yuan	x_1
Urban population	Ten thousand people	x_2
Installed generating capacity	kilowatts	x_3
Per capita disposable income	Yuan	x_4

3.3. Data Sources and Description Statistical Analysis

Table 2. Variable selection, unit and indication code

year	y Per capita domestic electricity consumption (KWH)	X_1 Gross national product (One hundred million yuan)	X_2 Urban population (Ten thousand people)	X_3 Installed generating capacity(kilowatts)	X_4 Per capita disposable income(yuan)
2000	114.9927	100280.1393	45906	31932	3721.335
2001	126.5267	110863.123	48064	33849	4070.3766
2002	138.349	121717.4247	50212	35657	4531.6459
2003	159.7361	137422.0349	52376	39141	5006.6946
2004	183.9777	161840.1609	54283	44239	5660.9039
2005	221.2753	187318.9031	56212	51718	6384.7254
2006	255.6467	219438.4748	58288	62370	7228.8202
2007	308.275	270092.3237	60633	71822	8583.5353
2008	331.8675	319244.6128	62403	79273	9956.5132
2009	365.9811	348517.7437	64512	87410	10977.4977
2010	383.0912	412119.2558	66978	96641	12519.5051
2011	418.1188	487940.1805	69079	106253	14550.7488
2012	460.42	538579.9535	71182	114676	16509.5475
2013	515	592963.2295	73111	125768	18310.757
2014	526.0029	643563.1045	74916	137887	20167.1237
2015	551.7138	688858.218	77116	152527	21966.1852
2016	610.7793	746395.0595	79298	165051	23820.9754
2017	654.3278	832035.9486	81347	177708	25973.7875
2018	722.1466	919281.1291	83137	190012	28228.0486

The data selected in this paper come from EPS database, and the variable data are shown in Table 2.

In Figure 1, the horizontal axis represents year, and the vertical axis represents per capita domestic electricity consumption in China. It can be seen from Figure 1 that in the past 20 years, China's per capita domestic electricity consumption has been increasing continuously.

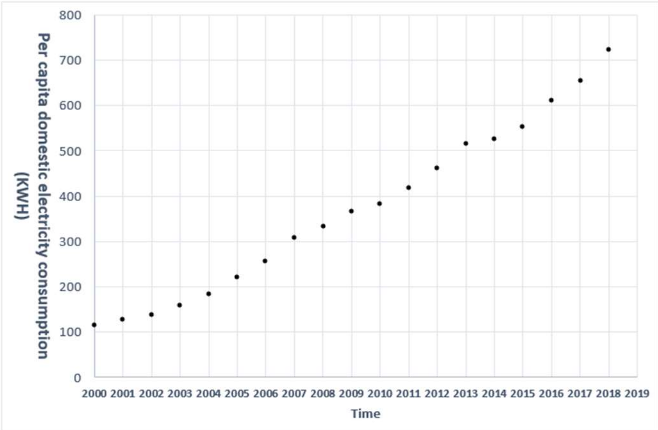

Figure 1. Per capita Domestic electricity consumption in China 2000-2018

4. Model Results and Related Tests

4.1. Estimation Results of Basic Model

Excel was used to draw the correlation chart of each explanatory variable. It can be concluded that per capita domestic electricity consumption in China is positively correlated with GDP, urban population, installed power generation capacity and per capita disposable income of residents, and the basic performance is linear correlation. Therefore, multiple regression model was established for analysis.

The preliminary model is established as follows:

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + u$$

Where u is the random error term.

Multiple linear regression was performed on the model, and the results were shown in Table 3.

Table 3. Preliminary regression results

y	Coef.	Std.Error.	t-value	p-value
x_1	0.000613	0.000273	2.243729	0.0415
x_2	0.004848	0.001737	2.791071	0.0144
x_3	0.002706	0.001076	2.5159	0.0247
x_4	-0.021073	0.009717	-2.168664	0.0478

R-squared	0.997069	Mean dependent var	370.9594
Adjusted R-squared	0.996231	S.D. dependent var	189.8994
S.E. of regression	11.65760	Akaike info criterion	7.970727
Sum squared resid	1902.593	Schwarz criterion	8.219264
F-statistic	1190.603	Durbin-Watson stat	1.760994

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4.1.1. Test Results and Analysis of Goodness of Fit of Model

It can be seen from Table 3 that the determination coefficient is 0.997069, indicating that the goodness of fit of the model is good, and the F value is 1190.603. The model as a whole passes the significance test.

4.1.2. Parameter Significance Test Results and Analysis

As can be seen from the results, P=0.0415<0.05 of explanatory variable X1 did not pass the significance test of 1%, but passed the significance test of 5%. P=0.0144<0.05 for explanatory variable X2, which did not pass the significance test of 1%, but passed the significance test of 5%. The explanatory variable X3, P= 0.0247<0.05, failed the significance test of 1%, but passed the significance test of 5%. The explanatory variable X4, P=0.0478<0.05, failed the significance test of 1%, but passed the significance test of 5%. Multicollinearity, autocorrelation and heteroscedasticity tests were carried out for the model.

4.1.3. Test Results and Treatment of Multicollinearity, Autocorrelation and Heteroscedasticity, etc

(1) Multicollinearity test

Multicollinearity test of model explanatory variables is performed using Eviews, as shown in Table 4.

Table 4. Results of linear correlation between explanatory variables

Variables	Y	x_1	x_2	x_3	x_4
Y	1.000				
		1.000			
x_1	0.993363				
	(0.000)	0.982203			
x_2	0.993278	(0.000)	1.000		
	(0.000)	0.997728			
x_3	0.995598	(0.000)	0.986254	1.000	
	(0.000)	0.999023	(0.000)		
x_4	0.990440	(0.000)	0.978508	0.997571	1.00
	(0.000)	1.000	(0.000)	(0.000)	

The test results show that the model has more serious multicollinearity, so stepwise regression method is used to get more accurate results.

Y regression to x1, and the output results are shown in the Table 5.

Table 5. stepwise regression results

Variable	Coef.	Std.Error.	t-value	p-value
c	76.90953	9.735242	7.900115	0.0000
x_1	0.000713	0.00002	35.60936	0.0000

R-squared	0.986771	Mean dependent var	370.9594
Adjusted R-squared	0.985993	S.D. dependent var	189.8994
S.E. of regression	22.47521	Akaike info criterion	9.162004
Sum squared resid	8587.300	Schwarz criterion	9.261419
F-statistic	1268.027	Durbin-Watson stat	0.470769
Prob(F-statistic)	0.000000		

$$\hat{Y} = 76.90953 + 0.000713X_1$$
$$r^2 = 0.986771 \;\; d = 0.470769$$

Y regression to x2, and the output results are shown in the Table 6.

Table 6. stepwise regression results

Variable	Coef.	Std.Error.	t-value	p-value
c	-672.5241	29.94569	-22.45813	0.0000
x_2	0.016131	0.000456	35.38109	0.0000

R-squared	0.986602	Mean dependent var	370.9594
Adjusted R-squared	0.985993	S.D. dependent var	189.8994
S.E. of regression	22.61829	Akaike info criterion	9.174695
Sum squared resid	8696.977	Schwarz criterion	9.274110
F-statistic	1251.821	Durbin-Watson stat	0.612504
Prob(F-statistic)	0.000000		

$$\hat{Y} = -672.5241 + 0.016131X_2$$
$$r^2 = 0.986602 \;\; d = 0.612504$$

Y regression to x3, and the output results are shown in the Table 7.

Table 7. stepwise regression results

Variable	Coef.	Std.Error.	t-value	p-value
c	23.72158	8.973320	2.643567	0.0171
x_3	0.003657	0.0000835	43.79490	0.0000

R-squared	0.991214	Mean dependent var	370.9594
Adjusted R-squared	0.990698	S.D. dependent var	189.8994
S.E. of regression	18.31556	Akaike info criterion	8.752680
Sum squared resid	5702.815	Schwarz criterion	8.852094
F-statistic	1917.994	Durbin-Watson stat	0.671036
Prob(F-statistic)	0.000000		

$$\hat{Y} = 23.72158 + 0.003657X_3$$
$$r^2 = 0.991214 \;\; d = 0.671036$$

Y regression to x4, and the output results are shown in the Table 8.

Table 8. stepwise regression results

Variable	Coef.	Std.Error.	t-value	p-value
c	64.59097	12.05567	5.357726	0.0001
x_4	0.023456	0.000792	29.60407	0.0000

R-squared	0.980972	Mean dependent var	370.9594
Adjusted R-squared	0.979852	S.D. dependent var	189.8994
S.E. of regression	26.95484	Akaike info criterion	9.525503
Sum squared resid	12351.58	Schwarz criterion	8.852094
F-statistic	876.4009	Durbin-Watson stat	0.321092
Prob(F-statistic)	0.000000		

$$\hat{Y} = 64.59097 + 0.023456X_4$$
$$r^2 = 0.980972 \;\; d = 0.321092$$

According to the four basic regression equations and economic theory, X_3 (installed capacity of power generation) is the most important explanatory variable, so the third basic regression equation is selected as the first step of analysis.

Introduce the X_2. Y is regressive to X_3 , X_2, and the output results are shown in the Table 9.

Table 9. stepwise regression results

Variable	Coef.	Std.Error.	t-value	p-value
c	-270.4201	68.35499	-3.956114	0.0011
x_3	0.002149	0.000354	6.072915	0.0000
x_2	0.006761	0.001564	4.321443	0.0005

R-squared	0.995946	Mean dependent var	370.9594
Adjusted R-squared	0.995439	S.D. dependent var	189.8994
S.E. of regression	12.82441	Akaike info criterion	8.084516
Sum squared resid	2631.446	Schwarz criterion	8.233638
F-statistic	1965.401	Durbin-Watson stat	1.363451
Prob(F-statistic)	0.000000		

After the introduction of X_2 , r^2 increases, and the coefficient of X_2 is positive, which is consistent with the actual economic significance, that is, the number of urban population increases, and the relative increase of per capita living electricity consumption. Assume that the regression coefficient is statistically significant as shown in the T-test of $\widehat{b_3}$=0.002149; Assume $\widehat{b_2}$ =0.006761 is statistically significant and X_2 should be retained in the model as an explanatory variable.

Introduce the X_1. Y is regressive to X_3, X_2, X_1, and the output results are shown in the Table 10.

Table 10. stepwise regression results

Variable	Coef.	Std.Error.	t-value	p-value
c	-269.5128	69.39423	-3.883792	0.0015
x_3	0.001458	0.001015	1.437179	0.1712
x_2	0.006951	0.001609	4.319060	0.0006
x_1	0.000127	0.000174	0.727584	0.4781

R-squared	0.996084	Mean dependent var	370.9594
Adjusted R-squared	0.995301	S.D. dependent var	189.8994
S.E. of regression	13.01728	Akaike info criterion	8.155096
Sum squared resid	2541.743	Schwarz criterion	8.353925
F-statistic	1271.904	Durbin-Watson stat	1.323034
Prob(F-statistic)	0.000000		

After the introduction of X_1, r^2 has increased, and the coefficient of X_1 is positive, which is consistent with the actual economic significance, that is, the GDP increases, the relative increase of per capita living electricity consumption. As can be seen from the T-test of the regression coefficient, X_1 is not found to be the explanatory variable as found on $\widehat{b_3}$ and $\widehat{b_1}$ is not statistically significant.

Introduce the X_4. Y is regressive to X_3, X_2, X_4, and the output results are shown in the Table 11.

Table 11. stepwise regression results

Variable	Coef.	Std.Error.	t-value	p-value
c	-256.9854	74.80460	-3.435423	0.0037
x_3	0.002738	0.001212	2.259573	0.0392
x_2	0.006333	0.001809	3.499920	0.0032
x_4	-0.003186	0.0062597	-0.509068	0.6181

R-squared	0.996015	Mean dependent var	370.9594
Adjusted R-squared	0.995218	S.D. dependent var	189.8994
S.E. of regression	13.13204	Akaike info criterion	8.172650
Sum squared resid	2586.755	Schwarz criterion	8.371480
F-statistic	1249.685	Durbin-Watson stat	1.434675
Prob(F-statistic)	0.000000		

After the introduction of X_4, r^2 increases, and the coefficient of X_4 is negative, which is inconsistent with the actual economic significance, that is, the per capita disposable income of residents increases, and the per capita living power consumption should increase. As shown in the T-test of the regression coefficient, it is also found that $\widehat{b_3}, \widehat{b_2}$is significant, and $\widehat{b_4}$ is not statistically significant. The addition of X_4brings no benefit to the model, so X_4does not enter the model as an explanatory variable.

In summary, the variable $X_4$was eliminated by stepwise regression method, and $X_2$and X_3were retained.

(2) Autocorrelation test.

In this paper, Dubin-Watson (D-W) test method was used to test the autocorrelation of the model. Given sample size n=19, variable K =5, the D-W value of the model was 1.76. By looking up the D-W table, dl=0.75, du=2.02, dl <1.76<du at the significance level of α=5%, Therefore, it is impossible to judge whether there is autocorrelation.

The Serial Correlation LM Test was used to Test the autocorrelation. The original hypothesis was that there was no autocorrelation. The Test results are shown in Table 12.

Table 12. Breusch-Godfrey LM test results

F-statistic	$\text{Obs}^{*}R-squared$
0.083467	0.121213

According to the test results, F=0.083467, n=19, variable K =5, $F_{0.05}(5,19)=2.74$, $F=0.016693<F_{0.05}(5,19)$, accept the null hypothesis, that is, there is no first-order autocorrelation.

(3) Heteroscedasticity test.

In this paper, the White test method was used to test the heteroscedasticity of the model, and the null hypothesis was isoscedasticity. The test results were shown in Table 13.

Table 13. White test results

F-statistic	$\text{Obs}^{*}R-squared$	Prob F(14, 4)
0.707757	13.53575	0.7194

Where, F value is the F value of the auxiliary regression model, P=0.7194>0.05, and the null hypothesis is accepted, that is, the model does not have heteroscedasticity.

4.2. Estimation Results of the Improved Model

From the estimation result of 3.1, the gross national product (X_1) and per capita disposable income (X_4) can be omitted. Now, the improved model is estimated, and multicollinearity, autocorrelation and heteroscedasticity tests are carried out.

4.2.1. Goodness of Fit Results

Multiple linear regression was performed on the improved model, and the estimation results were shown in Table 14.

Table 14. Improved model regression results

Variable		Coef.	Std.Error.	t-value	p-value
c		-270.4201	68.35499	-3.956114	0.0011
x_2		0.006761	0.001564	4.321443	0.0005
x_3		0.002149	0.000354	6.072915	0.0000

R-squared	0.995946	Mean dependent var	370.9594
Adjusted R-squared	0.995439	S.D. dependent var	189.8994
S.E. of regression	12.82441	Akaike info criterion	8.084516
Sum squared resid	2631.446	Schwarz criterion	8.233638
F-statistic	1965.401	Durbin-Watson stat	1.363451
Prob(F-statistic)	0.000000		

It can be seen from Table 14 that the determination coefficient of the improved model is 0.995946, indicating that the model has a good fitting effect and the F value is 1965.401. The model as a whole passes the significance test.

4.2.2. Comparison of Multicollinearity, Autocorrelation and Heteroscedasticity Test Results

(1) Multicollinearity test.

Multicollinearity test is performed on the retained variables, and the test results are shown in Table 15. If the VIF value is below 10, it is generally considered that there is no multicollinearity. Table 9 shows that the model still has serious multicollinearity. However, since all explanatory variables have passed the T test and the regression equation as a whole has passed the F test, the existence of multicollinearity can be tolerated here.

Table 15. VIF test results of all explanatory variables

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
c	4672.405	539.7836	NA
x_2	2.45E-06	1219.828	36.62653
x_3	1.25E-07	167.0380	36.62653

(2) autocorrelation.

Dubin-watson (D-W) test method was used to test the autocorrelation of the model. Given sample size n =19, variable k =3, the D-W value of the model was 1.3635, which was obtained by checking the D-W table. At the significance level of α=5%, dl=0.97, du=1.68, dl<1.3635<du, so it is impossible to judge whether there is an autocorrelation.

The Breusch-Godfrey LM test was continued, and its original hypothesis was no autocorrelation. The test results are shown in Table 16.

Table 16. Breusch-Godfrey LM test results of the improved model

F-statistic	$\text{Obs}^{*}R-squared$
1.889721	4.038900

According to the test results, F =1.889721 A known n=19, k=2, $F_{0.05}(2,19)=3.52, F=1.889721<F_{0.05}(2,19)$, accept the null hypothesis, that is, there is no first-order autocorrelation.

(3) Heteroscedasticity test.

The White test method was used to conduct heteroscedasticity test for the model, and the null hypothesis was isoscedasticity. The test results were shown in Table 17.

Table 17. White test results of the improved model

F-statistic	$\text{Obs}^{*}R-squared$	Prob F(5, 13)
1.095276	5.631580	0.4085

According to the results of White's test, P=0.4085>0.05, which accepted the null hypothesis, that is, there was no heteroscedasticity in the model.

4.3. Analysis of Key Drivers based on Regression Results

Through the regression results of 3.1 and 3.2, the following regression equation can be obtained:

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$$y = -270.4201 + 0.006761x_2 + 0.002149x_3$$

The regression equation shows that the coefficient of x2 is 0.006761, and its economic significance means that the per capita living electricity consumption in China will increase by 0.006761 KWH when the urban population increases by 10,000. The coefficient of x3 is 0.002149, and its economic significance is that every increase of installed power generation capacity by 10,000 kW, China's per capita domestic electricity consumption will increase by 0.002149 KWH on average.

Based on the regression results, it can be judged that the number of urban population and installed power generation capacity have a strong promotion effect on the per capita domestic electricity consumption in China.

5. Research Conclusions and Policy Implications

5.1. Main Conclusions

First, China's per capita consumption of domestic electricity is closely related to GDP, urban population, installed power generation capacity and per capita disposable income of residents. The increase of urban population and installed power generation capacity significantly promotes the growth of China's per capita consumption of domestic electricity. The per capita disposable income of residents is negatively correlated with the per capita consumption of electricity in China, which may be due to the fact that the increase of per capita disposable income does not represent the narrowing of income gap. The unification of electricity price ignores the widening of the current income gap of residents, which will deepen the unreasonable phenomenon of income distribution system.

Second, according to the regression results, there is a close relationship between GNP and per capita domestic electricity consumption in China, which can be further studied. In addition, the form of the mathematical model needs to be improved in order to get more acceptable regression results.

5.2. Policy Implications

Can be seen from the above analysis, with the development of economy, our country electric power industry achieved rapid development, power capacity, but also should see at the same time, due to the rapid growth of economy in our country, in the economic and social life the accelerating electric power consumption for electricity demand growth and total power supply still cannot meet the needs of rapid economic growth. Therefore, the following suggestions are put forward for the imbalance of power supply and demand in China.

5.2.1. Accelerate the Construction of Power Supply Network

One of the most prominent aspects of the imbalance between power supply and demand in China is the unreasonable distribution of power supply among various provinces, while the location and distribution of resources are natural factors, which cannot be solved from the source. The only viable solution is to build an ultra-high voltage grid to carry surplus power from the west to the power-hungry east. Only in this way can we fundamentally solve the problem of optimal allocation of resources and balance of electric power.

5.2.2. Vigorously Promote the Construction of Diversified Power Sources

At present, the main component of China's power supply is coal power, while other hydropower, nuclear, wind, solar and tidal power are not high in proportion. This kind of power supply structure is bound to cause China's power supply to rely too much on thermal power, but also put forward great pressure on China's future energy guarantee. Therefore, in order to change this situation, in the future power supply construction, should be inclined to other energy components, especially green clean energy. Due to the cost, local governments often lack motivation in the construction of these power sources, so the central government needs to invest heavily in these clean energy sources, and provide preferential prices for Internet access and strong support for technological research and development. Only in this way can we promote the rapid development of clean energy in China and get rid of the situation of coal power dominance.

5.2.3. Resolutely Adjust the Industrial Structure and Eliminate Backward Production Capacity that Consumes Too Much Energy

As for industrial restructuring, the central government has clearly pointed out that its direction and focus is to support the widespread use of advanced technologies, equipment and products that save energy, reduce energy consumption, save water and protect the environment, and to force out backward production capacities, processes and products that are costly, polluting and of poor quality. Adjusting and optimizing energy structure is regarded as an important content of China's future energy development strategy. At the same time, the adjustment of industrial structure should also take into account the interests of local governments. First, the assessment of local government officials should stop relying solely on economic growth, establish a sound assessment system, and include energy conservation and environmental protection as an important part of the assessment system. At the same time, the state should provide subsidies and technical support for the upgrading of local industrial structure to guide the sustainable development of local economy.

5.2.4. Make Reasonable Use of the Price Mechanism to Adjust the Power Demand

First of all, different electricity prices should be used for the regions with abundant and scarce electricity resources, and relatively high prices should be implemented in the regions where the power itself is lacking and requires external power input, so as to encourage enterprises and residents in the regions with limited power supply to save electricity. At the same time, enterprises with high power consumption will be encouraged to relocate to western provinces with relatively adequate power supply to promote the economic development of these provinces. At the same time, enterprises and residents as soon as possible to implement a tiered electricity price. The implementation of tiered differential pricing is not only conducive to promoting enterprises and residents to save electricity, but also to alleviate the contradiction of unfair income distribution.

6. Conclusion

Based on the above analysis, only through various ways to solve the imbalance factor in the power supply, to suppress the unreasonable factors in the power demand, can we really solve the problem of the imbalance of power supply and demand in China.

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