

life and the environment. Lots of the enterprises are the labor-intensive, resource dependence, energy consumption. Although these enterprises have brought the growth value, the contradiction among the economic development, shortage of energy resources and fragile ecological environment is aggravated. It also reflects on the high weight of index of the economic and energy consumption.

In addition, the technical indexes are also occupy a certain weight, in the case of the attention of structural adjustment, it's also a measure that energy saving and low carbon of the technology. And under the condition of the structure adjustment resistance, a technology innovation will play a key role on construction of low carbon.

In order to calculate the low carbon development level. Firstly, calculate the score of the each single index. Secondly make sure the standard value of each index. Lastly, adding the all scores of the same year. Then obtain the comprehensive index of the low carbon development of that year.

The calculation process can be expressed as: Single index score = weight × standard values

The calculation of each annual comprehensive index process can be expressed by the follow equation:

$$S_j = \sum X_{ij} \quad (4)$$

Where, $i=1,2,3\cdots 22$; $j=1,2\cdots 10$. i refers to the specific index of the low carbon city of the Huludao. j refers to the year, it from the year 2005 to the year 2014.

Through the equation we can calculate the each comprehensive index of the low carbon development of the year from 2005 to the year 2014 on Huludao as follow.

Table 3 Low carbon development level index in 2005-2014 on Huludao

Low carbon comprehensive index evaluation on Huludao	2005	2006	2007	2008	2009
	0.2880	0.2707	0.3329	0.5820	0.5419
Resource Index Y_1	0.0601	0.0593	0.0326	0.0258	0.0281
Technical Index Y_2	0.0722	0.0952	0.1213	0.1969	0.2154
Life index Y_3	0.0838	0.0818	0.1065	0.1135	0.1137
Economic Index Y_4	0.0335	0.0098	0.0345	0.0973	0.0915
The index of energy consumption and carbon emission Y_5	0.0384	0.0246	0.0380	0.1484	0.0931
Low carbon comprehensive index evaluation on Huludao	2010	2011	2012	2013	2014
	0.5380	0.5207	0.7067	0.7023	0.7882
Resource Index Y_1	0.0919	0.1171	0.2140	0.1422	0.1556
Technical Index Y_2	0.2114	0.1627	0.1688	0.1839	0.2241
Life index Y_3	0.1097	0.1294	0.1513	0.1267	0.1479
Economic Index Y_4	0.0721	0.0814	0.0812	0.1762	0.1603
The index of energy consumption and carbon emission Y_5	0.0529	0.0302	0.0914	0.0732	0.1004

From the figure we can know that, compared with the year of the 2005, the low carbon comprehensive evaluation target level index and the first level index are raised in 2014. But it didn't rise all the time, it's usually went up after dropping. For target index as an example, it's in a rising trend from 2006 to 2008, show that low carbon development towards good direction. But from 2009 to 2011, there was a little decline, it shows that the low carbon level towards the direction of deterioration, and it turned better after 2011, and began to recover, and arrived the maximum in 2014. The curve is same as the energy consumption curve and the economic curve from the past of the decade. This is because the energy consumption arrived the peak in 2011, while the energy conversion efficiency of processing reached the valley, under the various factors, these indexes values were almost the lowest in nearly five years. Similarly, each first level index also presents the fluctuation type growth, after a slight drop from 2009 to 2011, and arrive the maximum value in 2014. In proportion, technical index and life index occupy larger proportion.

Reference to domestic scholars Ma, Zhou[7], according to the result of the above calculation, from 2005 to 2007, Huludao is during the ultra-high carbon level, and rise later, in 2008, Huludao entered the middle high carbon level and keeping the level, but it declines a bit from the 2008 to 2011, then it rose in 2012. Nowadays, Huludao is in the middle high carbon economic range. It's about 2.9 times to 2006, the minimum. Because in 2010, Liaoning become the first areas of the low carbon, when maintain economic growth, paid more attention to the greenhouse gas emissions and pollution, so the low carbon development level of the Huludao is maintain rising since 2011. This suggests that there are some certain results in the low carbon development of Huludao, at the same time, it greatly accelerates the economic development. According to the current trend of development, Huludao will be into the middle carbon economy in 2016, and it will be into the middle low carbon economy at the end of the "13th Five year plan".

Conclusions and Recommendations

In this paper, the low carbon economy in the past 10 years of the Huludao was evaluated by using the entropy weigh method, the level of the low carbon economic development and the development trend in the future from the perspective of five indicators were analyzed. In the past decade of the "11th five-year" and "12th five-year", the low carbon development level Huludao has been improved obviously, but it is undeniable that there are ups and downs in the progress of the development. In the "13th five-year plan", the press of our country and Liaoning province is still big, the difficult and the challenge is unprecedented, at the same time the quality of the economic development and the benefit still is not high, the lack of the economic growth and the economic structure are unreasonable. The ecological environment pressure is bigger. The task of the energy conservation and emissions reduction is still heavy.

From the perspective of the current development, the low carbon economic of the Huludao need to develop the circular economic, make the development planning scientific, arrangement the industry development reasonable, gradually reduce the weight of the high carbon industry especially the heavy industry, strengthen the requirements of the low carbon industry, implement the low carbon production. For specific engineering, strengthen protection and management of the coastline. Build the Longxing national wetland park. Carry out the gas haze special projects, control the air pollution, dust pollution and mobile source pollution, promote upgrading coal fired boiler, eliminated the town old boiler s of below 10 ton, promote the new energy vehicles and implement new bus "greening". Support key enterprises to implement technical innovation of energy conservation and environmental protection, promoting the projects of Jinxi petrochemical waste hydrogen energy utilizations. Encourage public participation in the environmental protection enterprise, form the government corporate social work system of environmental governance.

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