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## **THE RENEWABLE ENERGY DEVELOPMENT MODEL IN WESTERN REGION OF CHINA<sup>1</sup>**

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### **Overview**

The new energy and renewable energy sources mostly distribute in the western in China. Based on the per capita energy source, this figure in western is two times than the national average level in China. It will be an important issue to keep the sustainable development in western area. Most key issue is to keep harmonious development of energy and environment.

### **Methods**

Under the view of sustainability, a renewable energy development model considering the renewable energy reserve, growth rate, development cost and utility function was established. Through the dynamic optimization technology, the solution was concluded, including the economic explanation. Some development paths were described in phase plane. Based on the different natural growth rate assumptions, the energy shadow price was influenced by the discount rate changes.

### **Results**

At the conditions of high growth rate and low discounting rate, the shadow price of resources is very low. But with the increase of discounting rate, the price will also increase. Otherwise, for the low growth rate and low discounting rate, the shadow price is very high, with the decrease of discounting rate, the price will also decrease.

### **Conclusions**

In brief, the development path will show difference for different renewable energy resources. For the plausible development and utilization, the renewable energy resources would recovery, replace and reproduce and maintain continuously increase.

### **Keywords**

Renewable Energy; Sustainable Development; Natural Growth Rate

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