

# The Study for the Obstacles and Countermeasures in China Electric Power New Energy Development

## FREINS DANS DEVELOPPEMENT DES NOUVELLES ENERGIES ELECTRIQUES EN CHINE ET SOLUTIONS

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**Abstract:** Our government has prospectively realized the strategic sense for developing the renewable energy source, and released some necessary laws and regulations promulgated one after another, As the future energy development direction, the renewable energy source still have some insufficiencies in the initial development period, they are eager for quick success and instant benefits, so some forceful measures should be taken to urge the its development orderly and rationalized.

This article conducts the preliminary research for the new energy development problem, and further proposed the corresponding countermeasures, thus to provide certain references for our national developmental strategy further study.

**Key words:** New renewable energy sources (new energy), wind power, obstacles and countermeasures

**Résumé:** Le gouvernement chinois a aperçu la signification stratégique du développement des énergies renouvelables, ou des nouvelles énergies autrement dit, et a fait des lois et règles correspondantes. Pourtant, en tant que la perspective du développement des énergies, les énergies renouvelables ont connu des problèmes dans la première phase du développement. Il existe des phénomènes d'agir avec trop de précipitation ou de développer dans un désordre. Nous devons du coup prendre des mesures efficaces pour

Pousser l'industrie électrique à se développer d'une façon bien ordonnée et progressivement.

Cet article fait des recherches préliminaires sur les problèmes existants dans le développement de nouvelles énergies et nous propose des solutions. Il est d'une valeur référentielle.

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**Mots-Clés:** énergies renouvelables (nouvelles énergies), électricité éolienne, problèmes et solutions

## INTRODUCTION

Our government has prospectively realized the strategic sense for developing the renewable energy source, and "the People's Republic of China Renewable energy source Law" promulgated in January 1, 2006 has been implemented, some necessary laws and regulations are promulgated one after another. But from the research in the first paper ,we can get the conclusion that the renewable energy source being as the future energy development direction ,still has some insufficiencies in the initial development period, it needs us making it to rationalize gradually through the economical, the technical development.

### 1. THE PROBLEM CONFRONTED IN CHINA'S NEW ELECTRIC POWER ENERGY DEVELOPMENT

#### 1.1 The development of new energy resources depends on the administrative support excessively

In the past several decades, the management of energy sources in China is carried out by the administrative resort. Although our government takes much count of the interrelated laws and regulations, but these laws it have many flaws: which lacked implementers detailed rules, the corresponding economical drive measure as well as the administrative oversight method. The reason is that the long range target was undefined on the lawmaking about developing reproducible energy sources and the orientation of executing the law in the governmental functions.<sup>4</sup>

The law is essential method, to realize the national development goal. It will be possible to legislate about reproducible energy sources if we have the clear motive and target. We need the items that are specific, exoteric and operable. It is the guarantee realizing the development of reproducible energy source that the items can be carried out.

#### 1.2 The development of new energy resources are limited by high cost

Generally speaking, our country renewable energy source's development cost is high, take burns coal the cost as 1, then the small water electricity cost approximately for coal electricity's 1.2 times, the biomass energy electricity generation (methane electricity generation) approximately for coal electricity's 1.5 times, the wind electricity is 1.7 times, but the photovoltaic electric generation comes higher to be 11~18 times. In 2003, our country thermoelectricity generation surfer average electricity price was 0.35 Yuan /kWh, the wind power generation surfer average electricity price about 0.6 Yuan/kWh, the biomass energy surfer average electricity price approximately was 0.6 Yuan/kWh, the photovoltaic electricity generation surfer average electricity price approximately is 3 Yuan/k Wh.

The photovoltaic electricity generation: The world photovoltaic battery's year productivity amounts to 560,000 kilowatts, photovoltaic module's production cost from the 70s's 80 US dollar /W; Dropped to 2002 2 US dollar /W. According to the predict that in 2020, the light will bend down module's price to

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<sup>4</sup> WANG Changgui, CUI Rongqiang, ZHOU Bamboo. (2003). *New energy power technology* [M]. Beijing: Chinese Electric power Publishing house.

drop to 1 US dollar /W below, the electric quantity cost will drop to each kilowatt-hour 10 cents below. To 2002, our country photovoltaic battery module's year seal ability is 31.SMW. And: Crystal silicon cell approximately 28.5MW, crystallizes silicon cell 3MW. photovoltaic off net electricity cost is still about 5~6 Yuan/kWh each degree, parallel the electric grid cost is also about 3 Yuan/kWh. According to surveys the photovoltaic electricity generation investment hopes to fall to 10000 Yuan/kWh by 2020 year.

Biomass energy electricity generation : Our country rice husk gasification electricity generation's electricity price approximately is 0.35 Yuan/kWh, the straw stalk gasification electricity generation electricity price is approximately 0.40 Yuan/kWh, surveys the straw stalk to burn the steam electricity generation straight initially the electricity price about 0.45 Yuan/kWh. According to domestic unit concerned reckoning, if need equipment can be realized the manufacture domestically, the cost of investment for biomass electricity generation can be controlled below ten thousand Yuan /kW, investment recumbent period is in 10~15 years.

Wind power generation : The wind electric field's construction and the run cost, the initial outlay reduced from 1994 approximately 12000 Yuan /kW to present approximately 8000 Yuan /kW. The wind electricity's electricity price from surpasses 1 Yuan/kWh to reduce to 0.55~0.65 Yuan/kWh. The world wind electricity installed capacity grew 15 times ten years ago, the generating cost dropped more half , which might achieve about 5 cent/kWh. It is estimated that to 2010, the generating cost may fall to 3 cent/kWh below.

### **1.3 The new energy's development lacks the native core technologies, and faced with investment risk**

Very difficult to imagine lacking the native core technologies, the profession will be restrained by the international market change. Take our country's wind energy development as an example, because our country independently producing the wind power generation equipment start slate, at the beginning, all wind electricity equipment must be imported from the overseas. With the wind electricity demand swiftly growing, the overseas wind power generation manufacturer enters domestic to build their plant. Specially the European Enterprise, they successively construct some large-scale factory to produce wind power generation in China, which has occupied biggest share gradually in the Chinese wind electricity installing equipment addition. At present, the European Enterprise has become the main item in Chinese wind power generation manufacturing industry.

Facing the giant wind electricity equipment market, under the national policy's encouragement, our domestic manufacturers have expanded the investment for producing the wind electricity equipment , seeking the cooperation outward, in order to stable and expands own status. However, some experts has forewarn that the over speed development for wind electricity will cause to produce surplus. The reason is that the place or the large-scale state-owned enterprise air blower manufacturer excessively pursue expansion of the installed capacity, the expansion speed goes far beyond the speed which the market grows. And the native place air blower manufacturer likes plagiarism imitation, which creates the good and evil product in the market intermingled. The market is getting more and harsher to air blower's request, as the matter stands is very easy to eliminate.

Therefore facing the scorching competition with little domestic market development opportunities, the enterprises especially the Chinese domestic enterprises should not invest blindly under the condition of lacking knowing the core technologies, if they have not enough risk awareness, otherwise, they will face with a bigger risk.

## 2. SUGGESTIONS FOR THE DEVELOPMENT OF CHINA NEW SOURCES OF ELECTRIC POWER

“Develop new energy is the must for the sustainable development of China. China’s renewable sources have the base for the development to a great extent, and in the future it can lead a mainstream even dominant role.” The development of renewable sources in electric power undoubtedly needs the hard work and support of every party, and many difficulties and challenges unpredictable are in the way of searching the special development mode. The suggestions collected here are for the use of academic discussion only and still need practical inspection.

### 2.1 Dominant by the government urge

China must make the strategic position of the renewable sources much more clear in the development of sources, so as to stipulate the due responsibility of the government and the obligation of the society. By doing so, the State may be possibly required to take the requirement of commercialized development of the renewable technique into account during the reform of electric power system, investment and financing system, and environment legislation, and encourage the commercialized development of renewable sources.

China’s government has stipulated the policies on electrovalence, taxes and investment related to supporting the development of renewable sources, established the special funds for supporting the renewable sources, and give allowance for the electrovalence of renewable sources apportioned by the whole Power Net. However, the effect still needs testing by time. For the supporting policies and measures proposed or being implemented by some countries in the world, they can be divided into three kinds: the first is mandatory method, the second is by economic stimulations, the third is voluntary. China’s government combines the first two methods in the supporting policies of the renewable sources, and uses the third one as accessorial.

#### 2.1.1 Impelling mandatory policy and legislation actively

Mandatory method consists of objective kind and task kind. The quota system of America, green certificate of Holland, high electrovalence system of Germany is the mandatory method for managing the objective. The quota system and the mandatory purchasing are based on certain development objective, so the development objective is the base of the implement of the mandatory method, and the mandatory method is the guarantee of the fulfillment of the development objective.

#### 2.1.2 Encourage investment mainly through economic stimulation

The conflict between the economic stimulation and the source distribution relied on market economic, so as to relieve the inner contradiction of ignoring new things development and acquiring monopolistic profit in the monopolistic industry to some extent, and develop renewable sources. The policy including value policy should acquire guidance from the State. The government encourages the use of wind power and solar power, the cost which is higher than that of the conventional source will be apportioned by the whole State, and that is the Cost Apportion System. Favorable policy on finance and tax should be adopted appropriately, including establish special funds, give allowance and debate taxes.<sup>5</sup>

The policies of allowance, taxes, value, and low interest loan and government procurement can be adopted to encourage and stimulate the investment.

#### 2.1.3 Voluntary system can be adopted in some economically developed areas

Voluntary system is one of measures studied and implemented in some developed countries to develop

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<sup>5</sup> WANG Changgui, CUI Rongqiang, ZHOU Bamboo. (2003). *New energy power technology* [M]. Beijing: Chinese Electric power Publishing house.

renewable sources, and its nature is some residents or enterprises buy the sources (including electric power) voluntarily for a higher price, and the price difference is used to encourage the renewable sources development, e.g. the Green Electrovalence in Holand, etc. The base of voluntary system is the environmental consciousness of the enterprises and the people. The European especially North European people has a higher environmental consciousness, so there is a firm base for the implement of voluntary consumption system in the renewable sources.

Voluntary system is not applicable in most areas in China. The government can take some measures to implement this system.

## **2.2 Commercial investment as the main body**

Commercial renewable energy and large-scale development are established on the premises that a renewable energy market exists, and to create a market need to adjust the various interest groups in the economic and political interests; therefore, it should focus on eliminating the development of renewable energy market barriers. For example, by the fixed price system and notices to the public, it will make clear the relations between renewable energy generating companies and power companies, and at the same time the renewable energy could eliminate the obstacles to the construction of electric power access network; and by the implementation of subject average tariff system, enterprises can reduce the loss to power grids and turn the negative factors from power grid companies into positive ones, and so on. Therefore, to improve the commercial investment environment, to adjust the relations of interests, to establish a market rules and to eliminate the barriers in the development of renewable energy market, all should be the important goals to the renewable energy development.

To create a bushiness environment for renewable energy, it needs a clear goal and a road map for development. Although the Chinese Academy of Engineering has come up with the government and society of China's renewable energy development road map, but how it will put the content of the road map into the consensus of a vast number of commercial main investor, for which the long-term efforts and operations are wanted too. International experience shows that it is only to set up a renewable energy market environment to draw the potential market players truly involved in renewable energy development and utilization.

## **2.3 Technological innovation as the base**

China cannot promote comprehensively all kinds of renewable energy technology development and promotion regardless of the differences in basis size, so a reasonable range of resources and technology must be determined at the beginning. For example, Germany and some Nordic countries will take the wind power and biomass energy development as the focus, and in some southern European countries, such as Spain, the wind power and solar energy will be used as a focus. Since in those countries these energy technology economies have been high, or close to the level of commercial development, it is relatively less economic cost and smaller resistance to promote the overall implementation of renewable energy development there. Some of the most developed countries or regions hope to cover all renewable energy, for example, in Texas, the implementation of the qualified energy includes solar, wind, geothermal, hydroelectric, tidal energy, biomass energy, biological waste and landfill gas, but due to various differences in the cost of energy, either the law is more complicated, or actual implementation of the difficulty increases will cost these areas the implementation of a comprehensive renewable energy development much more, thus being reduced the effectiveness of measures.

In order to achieve commercial development of renewable energy technologies, we must support the establishment and the development of a comprehensive technology and equipment manufacturing system, to establish the independent intellectual property rights of a complete industrial system of renewable energy of China. At the same time it should also strengthen the development of renewable energy capacity-building, which mainly refers to research investment, investment in education and

personnel training in the field of renewable energy.

#### **2.4 The social environment as the atmosphere**

All the following jobs will be the key to a successful development and utilization of renewable energy, which includes the education of energy shortage, treasuring resources and protecting the environment, the enhancement of the entire community consciousness to use renewable energy and the establishment to promote renewable energy development into the cultural atmosphere. Through the necessary means may require government agencies take the lead in the use of renewable energy, encouraging large enterprises to use renewable sources of energy, in some localities where conditions permit, the establishment of demonstration projects will guide the development. And to be actively involved in renewable energy technology development, equipment manufacturing and renewable energy production, while, by the implementation of the voluntary use of green energy plan of action, it can gradually develop a new concept of energy consumption. Through the strengthening of the significance of renewable energy and the use of methods, means of publicity, it can increase the awareness of civil society as a whole, raising the level of participation of all citizens. For example, the 2008 Olympic Games My Government is committed to Olympic venues that 20% of energy consumption will use green energy, which is a good model.

#### **REFERENCES**

- WANG Xiaoning. (2008). Chinese new energy development present situation and tendency [J]. *High tech and industrial production*.
- China sustainable development reports the [EB]. China net, 2006-03-20
- CHEN Deming. (2007). Renewable energy source Medium and long-term Development project.
- LI Shijing, LI Junfeng. (2006). To promote Our country Renewable Resources Development through Legislative Method by drawing from Overseas Experience.
- World energy council. The world energy efficiency policy reviews and appraises.
- National Development and Planning Commission Energy Bureau data statistical data.
- ZHANG Xiaoqiang. (2008). In the nation electric power industry in big pressure small workshop's speech [R]. National Development and Planning Commission website:  
[http://www.sdpc.gov.cn/nyjt/nyzywx/t20080203\\_190030.htm](http://www.sdpc.gov.cn/nyjt/nyzywx/t20080203_190030.htm)
- World energy council. The world energy efficiency policy reviews and appraises [R]. 2008.