



Is the “Sun” still hot in China? The study of the present situation, problems and trends of the photovoltaic industry in China



Zeng Ming, Ouyang Shaojie*, Shi Hui, Ge Yujian

School of Economics and Management, North China Electric Power University, Box 611, Beijing 102206, China

ARTICLE INFO

Article history:

Received 20 April 2014

Received in revised form

29 November 2014

Accepted 3 December 2014

Keywords:

Photovoltaic

Industry chain

Electricity generation technology

Industrial policy

ABSTRACT

Currently, energy development and utilisation are facing two problems in China: the energy crisis and the effects of global warming. An important means to solve the above problems effectively is to increase the intensity of the development and utilisation of photovoltaic system, which directly transforms the inexhaustible solar energy into the powerful green electrical energy. However, some problems plague the development of the photovoltaic industry. Due to these problems, the photovoltaic industry is seriously hindered in its efforts to develop sustainable. Therefore, accurately understanding the developing situation of the photovoltaic industry and analysing and solving the problems that occur during the development process of the photovoltaic industry in China are important topics of current research. This paper presents research results regarding these topics. First, this paper considers the present situation of the photovoltaic industry in China from three aspects: the power market, power generation industry policy and power generation technology level. Second, a discussion of the existing problems of the above three aspects is presented; in addition, based on the developing trends of renewable energy in China, development orientation of the photovoltaic industry are identified for years to come. Finally, strategies are proposed to promote the rapid development of the distributed photovoltaic industry in China.

© 2014 Elsevier Ltd. All rights reserved.

Contents

1. Introduction	1225
2. The present situation analysis of the photovoltaic industry in China	1226
2.1. The present situation of the photovoltaic power generation market in China	1226
2.1.1. The present situation of the photovoltaic scale in China	1226
2.1.2. The present situation of the photovoltaic industry chain in China	1227
2.1.3. The present situation of the photovoltaic market in China	1228
2.2. The present situation of the photovoltaic industry policies	1228
2.3. Photovoltaic technology level in China	1228
3. The existing problems hindering photovoltaic industry development in China	1230
3.1. The existing problems of the market development	1232
3.2. The existing problems of industrial policies	1233
3.3. The existing problems of power technology	1233
4. The development orientation of the photovoltaic industry in China	1233
4.1. The development orientation of the photovoltaic power generation market in China	1234
4.2. The development orientation of the photovoltaic industry policy in China	1234
4.3. The development orientation of photovoltaic power generation technology in China	1234
5. Strategy of the photovoltaic industry in China	1234
5.1. Strategy of the power generation market	1235
5.2. Strategy of industrial policy	1235

* Corresponding author. Tel.: +86 13426197078.

E-mail address: oysj0216@163.com (O. Shaojie).

5.3. Strategy of the development of power generation technologies 1235
 6. Conclusion 1236
 Acknowledgements 1236
 References 1236

1. Introduction

Currently, in China, energy development and utilisation are facing two types of problems. One problem is the contradiction between the draining of traditional energy sources and the rapid growth of energy demand, and the other problem is the contradiction between the energy structure that is primarily composed of coal-based plants and the sustained increase of environmental pressures [1,2]. Renewable energy sources, such as wind and solar power, have the characteristics of being clean, environmentally friendly, and renewable. Strengthening the development and utilisation of renewable energy is an important means to solve the previously mentioned problems effectively [3,4]. Currently, developing renewable energy

sources and promoting energy structure adjustment has become a basic national policy in China [5]. Among the renewable energy sources used to generate electricity, solar energy is an inexhaustible renewable source of energy has been gained the attention of the Chinese government [6].

In China, the land area is vast and the amount of solar radiation is enormous. Solar energy resources are quite abundant [7]. According to incomplete statistics, in China, the solar radiation amount that the land surface receives is equivalent to approximately 4.9 trillion tons of standard coal. Two-thirds of the land area has solar irradiation for over 2200 h per year, and the average annual solar energy per unit area is more than 5000 MJ/m² (equivalent to 170 kg of standard coal/m²) (as shown in Fig. 1)

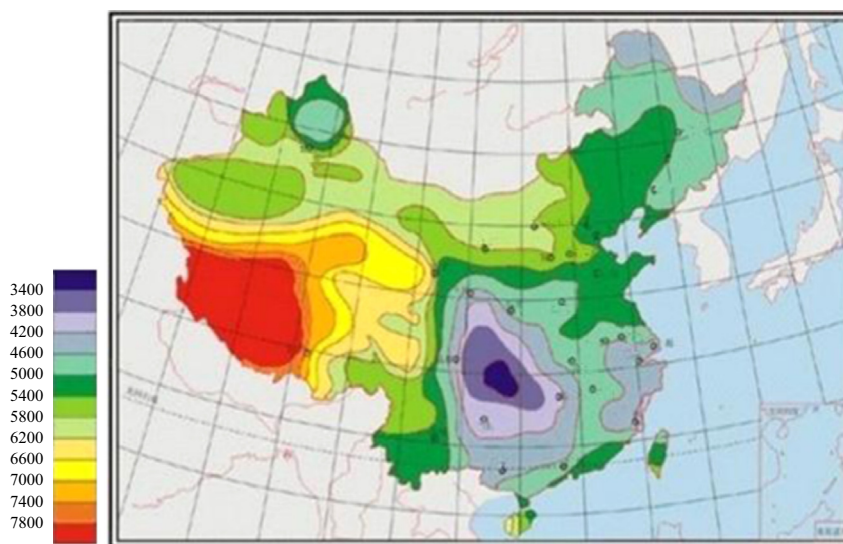


Fig. 1. Solar energy resources distribution in China.

Table 1
Solar energy resources region and characteristics in China.

Geographic classification	Total radiation (MJ/m ² · year)	Annual lighting time (h)	Percentage of sunshine (%)	Equivalent to the combustion of standard coal (kg)	Representative area
Most abundant resources region	6700–8370	2800–3300	> 75	230–280	Northern of Ningxia and Gansu, Southeast of Xinjiang, west of Qinghai, Tibet
More abundant resources region	5860–6700	3000–3200	~75	200–230	Northern of Hebei and Shanxi, South of Mongolia and Ningxia, central Gansu, east of Qinghai, Southeast of Tibet, west of Xinjiang
Abundant resources region	5020–5860	2200–3000	~65	170–200	Beijing, Shandong, Henan, east of Hebei, south of Shanxi, Northern of Xinjiang, Yunnan, Shaanxi, Gansu, Guangdong
Medium resources region	4190–5020	1400–2200	> 60	140–170	Hunan, Hubei, Jiangxi, Zhejiang, Guangxi, Guangdong, Shanxi, Jiangsu, south of Anhui, Heilongjiang
Exhausted resources region	3350–4190	1000–1400	< 60	110–140	Sichuan, Guizhou, Jiangxi, Guangxi regions

Note: Sourced from various resources and compiled by the authors.

Download English Version:

<https://daneshyari.com/en/article/8118285>

Download Persian Version:

<https://daneshyari.com/article/8118285>

[Daneshyari.com](https://daneshyari.com)