Potential Evaluation of Wind Energy Use in China

A Focus on the Estimation of Actual Available Amount

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1. OBJECTIVE AND METHOD

The electric power demand of China increases remarkably with high growth. There is an increasing pressure on the electric industry and the large power failure comes one after another in the southeast coast and the northeast region where the expansion of the electric power demand is high. For the inland region, there is still 1061 villages, with a total of 3 000 million people has no electricity[1)]. Thus, region difference of the power supply of China is exposed, and the supply-demand gap is 30 million kW during the peak time in 2004[2)].

Renewable energy development is a feasible solution to solving the energy crisis problem. Renewable energy includes solar, wind, biomass, geothermal, and ocean energy. Among them, China's wind energy potential ranks highly in the world scale, and the generation is developing most rapidly. In the key wind energy regions, there is a potential to develop a succession of wind power generation.

However, it is a gap between abundant resources storage and Actual Available Amount. In order to accelerate the development of China's wind energy, in this paper, the author will illustrate the factors which affect the actual available amount, and estimate the actual available amount by different regions, especially non-electrified region. Based on all of them, the paper will discuss the social and economic factor of development of the wind power generation in the non-electrified region.

The research method of this paper will be considered to estimate the Actual Available Amount, and consider the possibility of wind power energy based on an existing case study.

2. ESTIMATATION AND COSIDERATION

1.) Province Level: The totally amount of use of the wind power generation by 2004 belows10% of the Actual Available Amount. Among them, Inner Mongolia shows 8.85% rate of the Actual Available Amount. It is considered the highest ration than others and the most advanced region of using wind power generation.

2.) Non-Electrified Region: The aspect of these regions is population dispersal, low income but rich in wind resource. The estimation of the Actual Available Amount of the region is assumed to be high, and possible to cover all the region's electric power.

3.) A society and an economic factor are considered important as the development of wind energy use in the non-electrified region. First of all, the wind power generation cost is assumed to be positive from comparison with other renewables. In terms of comparison with thermal and water power generation, the generation cost of wind power is high, but the distribution cost is lower. Next, based on a case study of small scale wind power generation development in Inner Mongolia, it is clearly shown that people are willing to pay the money for wind power generation due to the benefits from electrification even the high power generating cost.

CITATION

1.) National electric information net http://www.sp.com.cn/dlyw/gndlyw/200302110015.htm

2.) Ministry of Foreign Affairs http://www.mofa.go.jp/mofaj/gaiko/energy/pdfs/shiryo_04.pdf