**Introduction**

Purpose:

This report will explore wind energy and solar energy for the goal of recommending which is the best option to meet our future energy use.

Background:

In the twenty-first century, energy is a very difficult issue for human survival. For example, in the next few hundred years, oil energy will be exhausted and people will need to find some other energy sources to replace it for necessary productive work. This will require something else that can replace oil energy. Wind and solar energy are two very good clean energy sources. Some people think that solar energy is more practical than wind energy because solar energy is easier to obtain, etc. So which way of obtaining energy will be beneficial for the future of life?

First, an introduction to these two forms of energy expression will be shown. As the name implies, wind energy is a way to generate electricity by converting the kinetic energy of the wind, a principle we learned in high school by rotating a magnet to produce a weak alternating current. In addition, solar energy is the absorption and conversion of solar radiation through solar panels to convert energy into electricity. Both of these sources are ideal for clean energy. These two sources of energy are also known as renewable energy. Both wind and solar energy are widely used nowadays, and wind energy is popular for generating electricity anytime and anywhere. You can see many wind power installations in the northeast and northwest of China. Solar energy can only be used during the daytime but it does not receive much atmospheric influence. As long as the weather is clear in high pressure areas, solar energy can always produce more electricity.

Scope:

In order to give a more convincing conclusion, this report will analyze the issue from two aspects: economic efficiency and objective conditions of use. This report is intended for use in the Chinese context only, as the data are derived from mainland China. Some country data may not be applicable, so this is a disclaimer.

**Discussion**

Economic Efficiency:

Explanation

"Economic Efficiency" means the economic efficiency of wind and solar energy. For example, who produces more energy for the same cost. If the same amount of money is spent, A generates more energy than B. Then we can assume that A is more economically efficient than B. But this comparison is actually inaccurate. For example, if we can consider the environmental index or the carbon emission index, then this will be more complicated. But since both energy sources are clean energy, the environmental index is not a big part and can be disregarded. Here is a comparison of the economic efficiency of the two energy sources.

Data

This is a data provided by two creators of the Baidu Bajia website, "Xiao Ning Home"[1] and "Dong Jian Economy"[2] (the data is only supported in China). Sohu [3] also provided us with the data in Table 1. (Time and efficiency of wind and solar energy use)

|  |  |  |
| --- | --- | --- |
| Types of energy | Lifespan of energy (years) | Conversion efficiency of energy |
| Wind Energy | 40~50 | 30%~40% |
| Solar Energy | 10 | 25% |

Table 1. The data were obtained from two 2

As the data in Table 1 shows, it is easy to see that the economic benefits of wind energy are much greater than those of solar energy (now in China).

Interpretation

The lifetime of wind energy in Table 1 is 4 to 5 times longer than that of solar energy. This shows that wind energy is far superior to solar energy in terms of length of time. And the efficiency of wind energy is also generally better than that of solar energy. From these data, we can clearly conclude that wind energy is more economically efficient than solar energy.

Objective conditions of use

Explanation

" Objective conditions of use " means what are the conditions for using this energy. Every type of machinery has its conditions of use. Machines that can convert wind and solar energy into electricity or other energy also have conditions of use. For example, the temperature and the initial energy conditions (the intensity of wind and light required for wind and solar energy). As a simple example, if you put your cell phone at -30 degrees (Celsius), it will hardly be able to turn on. That's how it works.

Data

These are some data on the conditions of use of the device. These data are obtained from Maigoo [1], Baidu [2] and Global New Energy Network (China) [3].

|  |  |  |
| --- | --- | --- |
| Types of energy | Temperature(degree) | Initial Energy Conditions |
| Wind energy | -20 ~ +45 | 2-30m/s effective wind speed |
| Solar energy | 20 ~ -30 (lowest) | 4 hours sun shines |

Table 2. Data are from [4], [5] and [6]

By comparing these datas we can clearly see who has the greater advantage of these two energy sources.

Interpretation

As the data shown in Table 1. We can find that the temperature of wind energy is within the daily temperature range, however, the temperature range of solar energy is much larger than that of wind energy we can conclude that the sun is very little affected by the temperature. For both energy sources, it seems that wind energy is more suitable for development in highland or plain areas. Solar energy is suitable for sunny climates.

**References**

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