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Short Communication

Prospect of Biofuels Compared with other Renewable Energy

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With the rapidly growing world population and rising consumption of energy, human being are pushed into a dangerous situation and face some serious problems. Based on known oil reserves and the worldwide consumption rate, most estimates suggest this reserve has only 50 more years of production left in it. In other words, the traditional energy may be used up before 2060 if human being do not take any actions. Another big problem is about environment. Greenhouse gas emission from burning fossil fuels has drawn worldwide attention. In order to settle these problems, scientist makes an effort to develop some renewable energy technologies, such as bio-fuel, wind, water and solar energy. Biofuel has numerous advantages compared with traditional fossil fuels. However, what if biofuel compared with other renewable energy? Is biofuel the best choice to alleviate energy crisis. We will only focus on the third generation of biofuels - Algae fuel.

Advantages of Biofuel Relative to other Renewable Energies

The first and the most important aspect is the price and cost. Also, this is the Aspect that are paid the most attention by the government and energy companies. Based on the data provided by U.S. Department of Energy, wind and biomass have relative lower average cost ($0.04-$0.12 perkWh) than solar ($0.21-$0.81 perkWh) and water ($0.24-$0.86 perkWh). Why are biofuel and wind energy cheaper than solar and water? One reason is that to use water and solar energy, a large amount of money need to be invested on the infrastructure construction. A hydropower station has to be built up in order to utilize hydro energy. In solar energy industry, polysilicon is necessary, which is quite expensive. Another reason is that, in water energy and solar energy industries, the operation and maintenance Costs are quite high. The last reason is value-added by-products. The third-generation biofuel, also as known as Algae fuel, can produce lots of value added chemicals, such as: vitamin, nutrition food and so on. For the above three reasons, the biofuel has relative lower cost. The second advantage is environmental-friendly. Someone may believe that all of this renewableare environment friendly product. But in fact, wind, water and solar energy have some detrimental effects on the environment. Wind turbines, which are the key component of wind power plant, can produce great noise. Another most significant impact of a wind turbine on the surrounding environment is mainly argued by wildlife groups. In some areas of wind farm developments, birds have been found dead around the base of turbines. Regarding to hydropower station, large reservoirs required for the operation of hydroelectric power plants result in submersion of extensive areas upstream of the dams, destroying biologically rich and productive lowland and riverine valley forests, marshland and grasslands, which significantly change the surrounding ecosystem and cause lots of species distinguish. When referred to solar energy, environmental hazards, silicon tetrachloride is produced, which is a toxic byproduct of polysilicon production. Polysilicon is the basic material to produce solar panel. These toxicants are quite hard to degradation and have deleterious Effects on the health of human being. In contrast, Microalgae can not only generate biofuel, but also can be used in wastewater treatment where they provide O_2 for bacterial breakdown of the organic component in the wastes.

The third advantage is that biomass has huge available capacity and high capacity factor. Solar energy is the most abundant resource, because all of the energy in the earth comes from the sun. The biomass has 3000 exajoules capacity, however, human consume less than 600 exajoules every year. So, if human being can utilize this energy efficiently, the energy crisis will be resolve quickly.The fourth advantage is that Bio-fuels can be a complete substitute for fossil fuels. According to the statistics, fossil fuel still is the primary energy in using. Most cars and factories use oil instead of electricity as their energy resource. So, biofuel can be easily used by these cars and factories, but not need to make any change. There are also a large number of storage and transport facility available now. So, biofuel can completely replace fossil fuel. Because biofuel have so many advantages, some energy experts believe that algae fuel in the future that will significantly decrease the need for fossil fuels, and with it helps reduce the total amount of harmful greenhouse gases responsible for climate change problem. However, every coin has two sides and biofuels have some disadvantages as well. While

there are still some serious disadvantages that Scientists need to find solutions before algae-based fuel industry becomes commercial.

Disadvantage of Biofuel

Even though the third generation of biofuel has been discussed for very long time, it just a concept and just exists in the lab and still has not been commercialized and really deployed yet. But the technology of wind water and solar energy using is quite mature. Why the third-generation biofuel is developed so slowly? One reason is that the study of that technology starts late relative to others. Another reason is intellectual property protections. Intellectual property protections for proprietary strains of algae are carefully protected and proprietary production methods undermine scientific collaboration. Numerous scientists at algal conferences complain that they have signed nondisclosure agreements with their companies and cannot share critical details about what they have learned from their algal production experiences. The consequence of secrecy is that new firms are sentenced to repeat past mistakes. Companies have gone out of business repeating the same algal production mistakes because prior knowledge was locked up in intellectual property protection.

Conclusion

In conclusion, algae biofuel has great potential for producing biomass to replace traditional energy. Nevertheless, it is still very unlikely that any significant commercial production will occur in the next decade or so. Biofuel production from algae is a relatively new technology; more researches are required to be conducted to develop standardized protocols for cultivation and biofuel production. A lot more fundings and researches are needed to turn this great potential into commercially viable production, and it is still too early to say whether the future of biofuels lies in algae.