

# **A Sustainable Environment: Our Obligation to Protect God's Gift**

by  
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## **Can Renewable Energy Truly Replace Non-Renewables?**

During the past year, I am sure you have read many news articles predicting that we may very well run out of oil in the next few decades. Oil along with natural gas and coal are the major non-renewable sources of energy and scientists expect them to be depleted at the rate that we are currently consuming them. For example, during the period from 1860 to 1970, the U.S. consumed fifty percent of the known oil reserves. During this 110-year period, one-half of that quantity was consumed in the first 100 years, and the other half during the following 10 years. This is the major reason we have become so reliant on imported oil.

While the U.S. consumed 50% of its known oil reserves just 35 years ago, globally we expect to reach that 50% level within the next five to ten years. With one-third of the world population in China and India and their economies growing rapidly, consuming the other 50% of the known reserves will be very rapid. There is also a major problem in the third-world countries that have about five percent the purchasing power of the U.S., Western Europe and Japan. That means that they must pay the equivalent of twenty times as much for oil. In fact, there are about 40 countries that pay more for imported oil than they receive revenue for exports. These countries have little chance of surviving economically.

Some people think that nuclear energy may be the way to solve this problem. There are about 425 nuclear power plants in the world and about 250 of these are expected to close within the next 15 years because of age. It takes about 10 to 20 years to build a nuclear power plant and there are only 30 currently under construction. If anything, the use of nuclear power is decreasing rapidly.

There are three fundamental differences between non-renewable and renewable energy sources: 1) Renewable fuel is not exhaustible as long as the sun exists. Wind and solar energy is dependent on the sun and scientists expect the sun to be around for another five billion years. 2) Conventional (non-renewable) energy creates environmental problems by emitting pollutants that cause illnesses and others that cause global warming. The impact of these environmental problems will be greater than the impending shortage of conventional energy. The energy capacity of the sun is about 15,000 times that of what is currently being generated by all sources. Running out of fuel is not really a problem. 3) While energy is generated at central power stations, it is consumed where people live. About 75% of the oil is controlled by Islamic countries, whereas renewable energy sources are everywhere. With renewables, energy can be indigenous, meaning that we can decouple the spaces of energy consumption with the spaces of energy extraction.

There are high expectations in hydrogen being the answer to our energy problems. While the quantity of hydrogen is almost unlimited, it is not in the form where it can be used. It takes energy to convert the hydrogen to a usable form. About 25% is lost during the conversion and another 20% is lost for storage. For automobiles, it may make better sense to develop more efficient batteries.

The primary criticism with solar and wind energy is that it is intermittent. You cannot depend on solar energy at night and wind energy relies on the wind blowing all the time. However, storing the energy is not really a problem. There are many old technologies for storing energy such as air compressors. Energy is used to compress air when it is available, and the compressed air can drive a generator to produce energy. In the State of Michigan, there exists a large reservoir that uses low-priced energy at night to fill it with water, and during the day the reservoir generates higher priced energy while it is emptied.

It is believed that if the energy needs are satisfied, it may even curtail the population growth. The developed countries have not had any population growth from its citizens for many years. For example, all of the increase in population for the U.S. is due to immigration. Almost all of the world population growth is in the developing countries. One reason is that more family members are needed to work in the fields and to collect energy fuel in the form of wood. Wind or solar energy in these countries could very well stabilize the population, another critical issue with our environment.

The United States must produce more solar and wind energy. Of the ten largest solar panel manufacturers, none is in the U.S., and of the ten largest wind turbine manufacturers, only one is in the U.S. These forms of energy can solve our energy, climate change and population growth problems. On the other hand, the operations of the conventional energy companies remind me of a remark made by the Polish satirist Stanislaw Lec: "It's true that we're on the wrong track, but we're compensating for this shortcoming by accelerating."

I gathered some of these thoughts while attending a recent lecture by Dr. Hermann Scheer, a member of the German Bundestag (Parliament). For additional information on this topic, you may wish to read his new book, "Energy Autonomy".