



Book Profiting from Clean Energy

A Complete Guide to Trading Green in Solar, Wind, Ethanol, Fuel Cell, Carbon Credit Industries, and More

Richard W. Asplund
Wiley, 2008
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Recommendation

Clean energy’s time has come. President Barack Obama’s administration is emphasizing this point and communities worldwide are confirming it. As a result, clean energy research has become one of today’s hottest topics, which makes Richard W. Asplund’s book especially timely. This comprehensive, scholarly guide teaches investors about the factors that drive the clean energy business. Asplund explains the critical variables of various clean energy resources and identifies major companies in each specialized area. *BooksInShort* recommends this reference work to active, self-guided investors who are interested in exploring clean energy’s profit potential. They will appreciate Asplund’s valuable research, which includes detailed explanations of green technology innovations and other current industry data.

Take-Aways

- The clean energy industry may see “double-digit growth” over the next two decades.
- Technological developments are accelerating society’s clean energy revolution.
- Though many clean energy resources are promising replacements for carbon fuels, none stand out as the sole solution.
- Successful clean energy companies focus on technology, scale and cost reduction.
- Evaluate equity performance in the clean energy sector using the Melvin Securities Clean Energy Index.
- In the U.S., wind power is growing faster than any other utility-scale energy source.
- The heat that exists beneath Earth’s crust contains at least 50,000 times more energy than all the oil and natural-gas reserves worldwide.
- Together, cellulose- and corn-based products can produce enough ethanol to meet about two-thirds of the U.S.’s current fuel needs.
- However, over the next few decades, gasoline-electric or battery technology could replace the internal combustion engine, reducing the importance of biofuels.
- The U.S. has the world’s largest coal reserves and should prioritize developy clean coal technologies.

Summary

Investing in Clean Energy

The clean energy sector covers a range of alternative power sources and their related industries. Although many of these energy sources are promising replacements for carbon fuels, none stand out as the sole solution. Instead, current research indicates that a variety of these resources will have specific industry applications, such as in cars, in homes or in commercial contexts.

“The clean energy industry is a new high-growth industry in which the business opportunities are restricted only by one’s imagination.”

As an investor, you can get involved in the clean energy market in several ways, including “angel investing,” or early-stage, direct investing in companies, and venture capital investing. Or, you could buy mutual funds, exchange-traded funds (ETFs) or publicly traded stocks. Many large-cap U.S. stocks – those of the country’s largest companies with the highest market capitalizations – will do well in the clean energy sector. General Electric may be one of this market’s biggest success stories; its executives project that it will generate more than \$20 billion in clean energy sales by 2010. Other large energy companies, such as Marathon Oil and Andersons, are pursuing opportunities in the clean energy field. Many small and emerging businesses also show great potential. Whatever the size of the firms you invest in, hold your long-term green energy stocks for at least three to five years for best results.

“Products and services succeed in the marketplace if they can solve buyers’ problems.”

To evaluate equity performance in the clean energy sector, use the Melvin Securities Clean Energy Index, which indicates the stock-price activity of “about 50 U.S.-listed clean energy companies.” Consider this index a benchmark for measuring against the performance of businesses in other indexes, such as the Standard & Poor’s 500.

International Appeal

Clean energy has become a critical international issue. Researchers working for the U.S. Energy Information Administration predict that, by 2030, worldwide fossil fuel use will double from 1995 levels. They expect energy consumption to expand by as much as 57% from 2004 to 2030, primarily as a result of rising living standards in developing countries, such as China, India and Russia. Those three countries’ populations are collectively more than eight times larger than the U.S.’s. Their rapid growth is increasing pollution, already a pressing global concern.

“There is little doubt that the long-term direction of oil prices will be upward, thus providing more pain for global consumers down the road.”

Technological developments are accelerating society’s clean energy revolution. Innovations in semiconductors, “biotechnology, materials science, nanotechnology, information technology and communications” are alleviating demands on the U.S. electrical grid, which has suffered blackouts and brownouts during peak use. These advanced technologies can also help curtail the rising cost of electricity. Since 2000, electricity prices have increased significantly. By 2006, average consumer prices had increased 30% from their 2000 levels. As a result, consumers are seeking alternative energy sources, such as wind and solar power, to help reduce their electricity bills. Electricity is economically and politically important in the U.S. because, unlike ethanol, shifting oil prices only minimally affect its generation, costs and stock prices. However, two variables do influence its stock values: “climate change and energy security.”

“The clean energy sector enjoys strong drivers and catalysts that will provide a strong tailwind for the industry for decades to come.”

Overall, the clean energy sector has delivered “double-digit” investment returns in the past five years. These growth rates should continue in the coming decades, due to an increasing number of government support programs and declining clean energy costs. As green technologies advance, clean energy will also be in a better position to compete against the fossil fuel industry. Already, Brazil has broken free from its dependence on foreign oil, thanks to an ethanol program it began in 1975. However, U.S. and world energy consumption currently remains dependent on fossil fuels. The U.S. gets about 85% of its energy from fossil fuels, compared with 86% worldwide.

“Even a Nose Under the Tent Is Worth Billions”

Assuming that clean energy will, at least partially, become a substitute for fossil fuels, the fossil fuel market is a good indicator of the opportunities for clean, low-carbon energy solutions. In 2004, the fossil fuel market was worth \$2.7 trillion, and it is expected to grow to \$4 trillion by 2030, according to the U.S. Energy Information Administration. Given that size, the growth potential for clean energy is very large. For example, if solar energy grew at a 30% annual rate, it would only account for 1% of total U.S. power consumption by 2017. Clean energies can significantly increase their profits and still have incredible potential for growth.

“Pressure on Washington to implement a stronger push for clean energy is coming not only from the public, but also from the state and city levels, and even from big business.”

Before investing in the clean energy sector, get to know the various clean energy sources and their related technologies. This will help you assess each one’s profit potential.

Solar Power

Every day, the sun sends enough energy to Earth to provide the planet’s 6.6 billion residents with energy that could sustain them for 27 years. Scientists have learned how to convert that sunlight into usable electricity through thermal solar power and solar photovoltaic power (solar PV). Thermal solar power draws on the sun’s energy to heat liquids that, in turn, help generate electricity; solar PV converts sunlight into electric current by way of semiconductors. Solar power is an especially attractive energy source for rural areas or for stand-alone monitoring systems. This type of energy can save consumers money. When people use solar water heaters instead of electric water heaters in their homes, they cut their utility bills by 50% to 80%. Investors in solar power should look for companies that have a technological advantage, low production costs and unlimited access to raw materials.

Wind Power

The international wind turbine industry posted an annual 20% average growth rate from 2002 to 2006. In the U.S., wind power is growing faster than any other utility-scale electricity source. However, American investors face a hurdle to investing in this industry: Most publicly traded wind power companies are European and, therefore, listed on European stock exchanges.

“The world is so dependent on fossil fuels that even moderate penetration levels mean literally hundreds of billions of dollars of revenues for clean energy producers.”

Wind power is popular because it is renewable and pollution-free, and because it emits no greenhouse gases. The cost of producing electricity from wind has plunged by more than 80% in the past 20 years and may drop even further, thanks to new technologies. Although installing wind turbines is still expensive, there are no subsequent fuel costs. However, due to significant industry growth, some wind power companies have encountered shortages in necessary turbine components and parts. Overall, turbine and component manufacturers as well as wind power companies have become prime investment opportunities in the clean energy sector.

Fuel Cells

For years, people have touted the virtues of fuel cells, devices that generate electricity using hydrogen and oxygen. However, the technology is still expensive and it has failed to reach the crucial “mass market stage.” The resulting lack of investor confidence has caused declining stock prices, but this may soon change. Some types of fuel cells are becoming more popular in certain applications, for example, as backup power sources.

“Some utility companies have recognized that they have a serious public relations problem and have decided to be proactive in ‘going green’.”

Before you invest in the fuel cell industry, get to know the many different technologies and their uses. Two main categories of fuel cells have developed: those grouped by operating temperature and those classified by how the cell receives its hydrogen source. With fuel cell technology, the challenge is to find a constant supply of hydrogen, which does not naturally exist in pure form. One fuel cell technology with significant market potential is the proton exchange membrane (PEM), which has applications in small-scale power supplies, lighting and remote monitoring. Investors should consider a fuel cell company’s mass production capabilities and whether it has a focused business plan.

Geothermal Power

Geothermal power uses the heat-energy beneath Earth’s crust to create electricity. Geologists estimate that the heat within 33,000 feet of the planet’s surface holds 50,000 times more energy than all oil and natural-gas reserves worldwide. People used this energy source as early as the Roman era, though it wasn’t until 1904 that Giovanni Conti, an Italian, discovered how to convert it into electricity. In the U.S., the best geothermal spots are in the western states, particularly, the Pacific Rim area.

“While the oceans of the world contain a huge amount of energy, systems to harness the energy and convert it into power are still in the early stages of development.”

Advantages of geothermal power include stable operating costs and pollution-free technologies. However, geothermal energy is expensive to produce; it requires drilling, exploration and plant construction. The three main power-plant systems, “dry steam, flash steam and binary cycle,” transform steam into electricity. Thus, the economics of plant construction depend on the temperature of the heat source, the composition of the underground water, the depth of the drilled well and the composition of the surrounding rock. Production costs for geothermal energy have decreased 50% since the 1980s and the technology promises to be an important part of how society meets its future energy needs.

Biofuels

Biofuels are gas or liquid fuels that come from “crops, crop waste, wood, plant oils and similar organic materials.” Ethanol, a type of alcohol, derives from corn and beet sugars as well as other plant matter. Contrary to common belief, this fuel is not new; engineers designed the first Ford Model T to use ethanol. Manufacturers of a second biofuel, biodiesel, convert animal fats or vegetable oils into a biodegradable, nontoxic oil.

“There are presently 800 million vehicles on the world’s roads, with more than 200 million of those vehicles operating in the United States.”

One major disadvantage of biofuels is that they sap the food supply. This raises food prices, which can cause social unrest, such as the corn-related protests in Mexico. Relying on corn crops for large-scale ethanol production is impractical. The U.S. does not have enough farmland to grow the corn needed to meet market demand for fuel. A solution to this problem is using sugar- or cellulose-based products – for example, switchgrass and paper pulp – to make fuel. According to one U.S. Department of Energy researcher, a combination of cellulose- and corn-based products can produce enough ethanol to meet about two-thirds of the U.S.’s current fuel needs.

“Service stations that are owned by oil companies will certainly not be installing ethanol pumps any time in the near future, unless they are required to do so by law.”

In the U.S., most biofuel companies depend largely on corn. Investors should look for companies that are focusing their research and development on cellulose-based ethanol. Consider investing in railroad companies (manufacturers transport ethanol by train), seed companies, fertilizer product manufacturers and farm tool manufacturers. Although ethanol has profit potential, oil company executives consider it a threat and oppose its expansion. They are preventing many gas stations from selling gas with higher ethanol content. Another risk is that “the U.S. government may eventually drop or dilute the 54-cent import tariff that protects U.S. farmers” from foreign competition. Also, over the next few decades, gasoline-electric or battery technology could replace the internal combustion engine. This could reduce the importance of biofuels.

Cleaner Coal

Coal is a cheap, plentiful source of energy. Unlike solar and wind energy, coal powers electrical plants night and day, and in all types of weather. As a result, coal will continue to be the dominant fuel for electricity generation in the immediate future. Globally, it is the “fastest-growing fossil fuel.” However, it is responsible for 40% of the world’s carbon dioxide (CO₂) emissions – as much as petroleum.

“Solar and wind power cannot grow fast enough to completely replace coal.”

The U.S. has the world’s largest coal reserves, so it should make clean coal technologies a priority. To date, efforts have involved improving the quality of coal, installing scrubbers at coal plants to reduce emissions, removing impurities from coal before use, capturing or burying CO2 gas emissions, and liquefying coal that will power cars. Coal liquefaction began in 1925 and involves the Fischer-Tropsch process of using heat and steam to transform coal into synthetic gas. That gas, once cleaned, has applications in creating synthetic petroleum and, in turn, diesel fuel. However, in spite of these cleaner processes, environmental groups continue to criticize coal’s negative impact. Thus, use of this fuel could drop or even disappear over the next 30 to 40 years.

No Silver Bullet

Each source of clean energy offers investors a variety of profit opportunities. In the years ahead, successful clean energy companies will focus on technology, scale and cost reduction. Clean energy is clearly a strong investment trend that will transform the global market.

About the Author

Richard W. Asplund founded his investment research firm in 1983, and is now an equity analyst and adviser specializing in clean energy stocks.
