Opportunities and Risks in Alternative Energy

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Executive Summary

The long-term outlook for the alternative energy sector is bright. Government investment in renewable energy technology is viewed as a way to create jobs and stimulate the economy while reducing reliance on greenhouse gas-producing fossil fuels and foreign suppliers. Many countries have set ambitious goals for the percentage of total energy produced by renewable energy sources.

This optimistic outlook is clouded, however, by an array of risks that have the potential to undermine growth. In the near term, growth could hit a snag as governments across the world scramble for solutions to a faltering global economy and uncertain financial markets. Growth also is threatened by challenges from both ends of the political spectrum. Left-leaning environmental groups have sought to stop the construction of wind farms and biodiesel production facilities, which they claim are more damaging than helpful to the environment, while conservative factions refute scientific claims of man-made global warming and oppose government subsidies as a matter of principle.

The renewable energy sector also faces serious liability exposures that must be addressed to assure continued growth. Some are similar to those faced by conventional energy producers, but others are specific to the production of renewable energy. The insurance industry will play an important role in managing these risks as alternative energy sector grows.

The Growth of Alternative Energy

As of the end of 2010, renewable sources supplied an estimated 16 percent of global final energy consumption.¹

Despite current economic conditions and other challenges, alternative energy has continued to grow. According to the Renewable Energy Policy Network for the 21st Century (REN21), unlike traditional energy sources, renewable energy experienced no downturn in 2009. In 2010, renewable energy grew strongly in all end-use sectors – power, heat and transport. From the end of 2005 through 2010, total global capacity of renewable energy technologies such as solar photovoltaic, wind power, concentrating solar thermal power, solar water heating systems, and biofuels, grew at average rates ranging from around 15 percent to nearly 50 percent annually.²

The U.S. and Europe

The U.S. represents vibrant growth prospects in the alternative energy sector. Renewable energy accounted for 10.9 percent of domestic primary energy production in 2010, an increase of 5.6 percent relative to 2009.³ In a report released by the White House last year, the U.S. government said it is on track to double its renewable energy generating capacity, as well as its renewable energy manufacturing capacity, by 2012.⁴ The same report also suggested the U.S. would see its share of the global solar photovoltaic market jump from 6 percent to 14 percent.⁵ Thirty-seven states have set standards for the amount of electricity utilities must generate from renewable or alternative energy sources.⁶
The Renewable Energy Directive of 2009 calls for the EU to achieve a 20 percent share of renewable energy by 2020. The European Commission, earlier this year, presented a report concluding that the 2020 renewable energy policy goals can be met, and even exceeded, if Member States fully implement their national renewable energy action plans and if financing instruments are improved. According to the report, renewable energy constituted 62 percent of 2009 European energy generation investments. Renewable sources accounted for 11 percent of Germany’s total final energy consumption in 2010, which comprised 16.8 percent of electricity consumption, 9.8 percent of heat production, and 5.8 percent of transport fuel consumption.

Asia, Latin America and Africa
Preference for alternative energy is growing in emerging economies. Collectively, developing countries represent more than half of the global renewable power capacity. In 2010 China was the top installer of wind turbines and solar thermal systems and was the top hydropower producer. India is the fifth worldwide in wind capacity. Brazil produces most of the world’s sugar-derived ethanol. Meanwhile, offshore wind installations in Latin America are expected to have an annual growth rate of 34 percent. The use of alternative energy is likewise increasing in African economies, with total investment on the continent surging from $750 million in 2009 to $3.6 billion in 2010, according to the United Nations Environment Program.

The Fukushima nuclear crisis
The crisis at Japan’s Fukushima nuclear power plant following the earthquake and tsunami in March has created increased potential for alternative energy industries. Japan has passed a law set to come into force mid-2012 which requires 20 percent of its energy to come from renewable sources by 2020. Additionally, as a result of the disaster the German government decided to phase out its nuclear reactors by 2022. As a result, much of Germany’s nuclear capacity will need to be replaced by alternative energy sources. Among the alternative energy sources being considered include solar, wind and biofuels.

Risk Factors and Impediments to Growth
The demand for energy produced by alternative sources is expected to expand over the long-term, but in the near-term, robust growth is threatened by reduced investment by cash-strapped governments, tighter credit, lower fossil fuel prices, and changing attitudes towards global warming. Additionally, some renewable energy technologies have yet to be proven at commercial scale deployment levels, and concerns remain that renewable energy sources cannot provide consistent delivery on demand. Another potential impediment to growth is challenges to some types of alternative energy producers by environmental groups.

Political and economic impediments
Government subsidies play a significant role in investments in alternative energy. Although governments in many countries continued to invest in alternative energy during the economic downturn, several governments announced incentive cuts for solar energy. Standard & Poor’s (S&P), in a recent report, expressed concern that fiscal realities may result in less government support for alternative energy.
production. In the U.S., President Barack Obama strongly supports government investment in alternative energy, stating that “a transition to clean energy has the potential to grow our economy and create millions of jobs.” However, he will need to overcome a Republican-led House of Representatives focused on cost-cutting, philosophically opposed to government subsidies, and doubtful of claims that fossil fuel use contributes to global warming.

Renewable energy struggles to compete price-wise with fossil fuels, making government regulation and subsidies essential. Solar energy and offshore wind farms are among the most expensive sources of electricity. Prices for solar panels and wind turbines have fallen, but still not enough to bring costs in line with fossil fuel-generated power. Low natural gas prices, due to advances in technology for extracting gas from shale rock, has further reduced the competitiveness of renewable energy. Consumer protection price systems such as public utility commissions in the U.S. require low-cost prioritization. Absent regulatory changes or subsidies, renewable energy solutions inevitably lose out.

**Technological impediments: Consistent delivery on demand**

Since power is an essential service, consumers expect consistent delivery on demand. A significant problem with wind and solar is variability, which the current energy grid is not designed to handle. As a result, solar and wind power sources can be major disruptive forces. For example, when a cloud passes over a solar farm, up to 75 percent of the farm’s output can disappear. In order for current renewable energy targets to be met, grid operators will need access to alternative sources of instantaneously available power to deal with the variability of wind and solar power.

**Environmental challenges**

A growing number of lawsuits seek to stop solar, biofuel and wind farm projects. The lawsuits typically allege that companies failed to follow specific government environmental and safety standards. In one representative lawsuit, the Sierra Club and the Center for Biological Diversity initiated litigation against Inyo County, California. The lawsuit demanded that the county revoke a plan for setting up renewable solar energy zones. The complainants said Inyo County was required to conduct an environmental review before adopting the plan. In September 2011, Inyo County officials settled with the complainants by rescinding the plan due to the cost it would incur to defend the action.

A frequent concern of environmental activists is the impact on wildlife. For example, in June 2009, the Washington-based Animal Welfare Institute sued to stop construction of a West Virginia wind farm. An assessment of the project estimated that it would annually kill 6,746 bats of all kinds, including the endangered Indiana bat. A federal judge ordered the project halted until the developers are granted an incidental take permit, which under the Endangered Species Act, allows the inadvertent killing of protected wildlife if other measures are taken to safeguard the animals.

**To help achieve success, everyone, including operators, maintenance technicians, risk managers and safety professionals, must value safety and embrace it daily.**

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Liability Issues

Although renewable energy is touted for its environmental benefits, owners and operators of alternative energy facilities are increasingly targeted as polluters in lawsuits. A number of ethanol manufacturers, for example, have been named in suits alleging violation of air and water pollution control laws. An article in *Biodiesel Magazine* warns that “Pollution Violations May Test Public Support for Biodiesel.” Biodiesel produced from algae is one of the most promising alternatives to gasoline, but liability concerns are beginning to surface. Algae can be destructive to aquatic ecosystems, and alarm bells are sounding in some quarters about the practicality of restricting algae growth to algae farms.

Renewable energy technologies also have been the source of serious bodily injury and property damage claims. Wind turbines, for example, are large, powerful machines that can cause considerable damage if they fail. Large pieces of debris can be ejected from damaged or malfunctioning turbines, sometimes traveling hundreds of yards. Wind turbine fires, which are difficult to extinguish, can generate toxic fumes and can scatter flaming debris over a wide area. Dozens of fatalities have been attributed to the construction, operation, and maintenance of wind turbines.

Insurance Solutions

As renewable and clean energy technology continues to evolve so do the exposures associated with it. For this reason, consultation with an insurance broker with specialization in alternative energy is advisable to identify exposures and recommend essential insurance protections. For some exposures, standard property and liability coverages are appropriate, but increasingly the insurance industry is introducing products specifically tailored to the risks of the alternative energy sector.

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2 REN21, p.11
3 REN21, p.11
5 Ibid.
6 Pew Center on Global Climate Change, http://www.pewclimate.org/what_s_being_done/in_the_states/rps.cfm
7 Renewable Energy: Progressing towards the 2020 target, pp. 2-3
8 REN21, p.11
9 REN21, p.11
12 Ibid.
16 Animal Welfare Institute vs. Beech Ridge Energy LLC, Case ID 20751128, U.S. District Court, District of Maryland. (MSCAd case ID 639496) - Advisen’s Master Significant Cases and Actions Database (MSCAd) is an online Large Loss database. With 90,000 cases totaling over $4.5 trillion in losses, MSCAd is the most comprehensive database of large and potentially significant losses, class actions, suits, cases, events, and fines