

Epilogue

Turning Points

As we started our book, we began with the December 2008 date that has forever altered the landscape of investing and certainly of the hedge fund industry. On the other hand, several significant dates in history have created unparalleled economic opportunities because of the changing geopolitical climate at those historic times:

- **May 4, 1904.** With the support of President Theodore Roosevelt, construction began on the Panama Canal.
- **May 6, 1954.** President Dwight D. Eisenhower signed the Federal-Aid Highway Act of 1954 creating the Interstate Highway System.
- **May 25, 1962.** President John F. Kennedy announced an ambitious effort to send an American astronaut to the moon by the end of the decade.

A review of the historical background of these major ground-breaking projects shows that national security was the driving force behind each achievement. The construction of the Panama Canal was driven by the need to quickly move the U.S. Navy fleet from the Atlantic to the Pacific Ocean and to avoid the two months needed to travel around Cape Horn at the tip of South America—a 12,000-mile journey. The Interstate Highway System was created during the post-Korean, Russian Cold War era to allow troops to move quickly to different parts of the country in the event of a military attack. President Kennedy, in an announcement before a joint session of Congress, announced the space program to “catch up and overtake” the Soviet Union in the “space race.” The common theme connecting each of these major historic events was national security.

Although much less publicized, July 11, 2008 also marks a noteworthy date in the history of the nation and serves as an inflection point for nations around the world: crude oil peaked at \$147. With the United States fully engaged in a presidential campaign, a new term surfaced in

the national debate—energy security. Homeowners, drivers, truckers, and industrial users everywhere were suffering from record-high oil prices. In the United States, both major presidential candidates increased the rhetoric and created a heightened sense of awareness of the economic stress created by rising energy prices. Both of the candidates also expressed their commitments to invest in alternative and renewable energy as well as to develop a cap and trade market system to reduce greenhouse gases. The idea was simple: the planet was suffering, the economy was suffering, and something needed to be done. Discussions surrounding the use of alternative, cheaper, safer fuel solutions were now becoming part of both the national and international debate. Alternative energy became part of the global lexicon and is starting to create new financial opportunities for investors worldwide.

WHAT IS CLIMATE CHANGE?

Scientists have been evaluating the impact of climate change and global warming for several decades. However, the spike in crude oil prices in July of 2008 caused many to take this issue more seriously than ever before. Interest in alternative energy sources seemed to surpass the levels noted during the gasoline shortages of the 1970s.

Scientists' estimates of the increase in the Earth's temperature range from 1.8 to 4.0 degrees Celsius (or 3.2 to 7.2 degrees Fahrenheit) by the year 2100. Anyone who reads a newspaper, watches National Geographic, or simply pays attention to global warming issues, should be aware that the Arctic Cap is shrinking, glaciers are melting, and Australia and parts of Africa have been suffering from a year-long drought.

According to Rick Smolan and Jennifer Er Witt in *Blue Planet Run*, "Two-thirds of the world's population will suffer from water shortages by 2025."¹ That's 5.3 billion people.

Climate change is largely caused by human emissions, driven by economic growth, of greenhouse gases (GHG) into the earth's atmosphere. This is a process that has been accelerating since 1750, with the onset of the Industrial Revolution. Many believe that the resulting impact on our climate is significant. Climate-sensitive sectors of the global economy, including agriculture, fishing, forestry, and tourism are all experiencing some form of impact. Damage to coastal areas due to sea-level rise has been documented, as have increased energy expenditures for heating and cooling. With rising temperatures, we are also likely to see nonmarket impacts, such as the spread of infectious diseases, massive loss of biodiversity, and the

relocation of hundreds of millions of people due to rising sea levels, loss of water resources, and increasing desertification.

Countries around the world banded together in 1997 to adopt the Kyoto Protocol (Kyoto). Kyoto, which went into effect in 2005, was intended to reduce greenhouse gas emissions to 1990 levels by 2012. This has been recognized as a first attempt to decrease greenhouse gases and a first step toward acceptance by industrialized countries of the need to make the world a better place. In an attempt to curtail these emission practices, world leaders met in Kyoto, Japan in 1997 and negotiated a treaty that would lead industrialized countries to make a collective cut in emissions. The Kyoto treaty aimed to cut emissions by 5.2 percent globally over the period 2008–2012, compared with the base year 1990. The goal was to stabilize the concentrations of six greenhouse gases in the atmosphere by putting an individual cap on countries' emissions, which would effectively put a price on carbon by limiting the supply. The agreement would be implemented once it had at least 55 signatories, covering at least 55 percent of global emissions.²

The United States, which was the world's largest emitter at the time,³ was initially very much involved in the negotiations, but the Senate passed a 95–0 vote against committing to any agreement if it “would result in serious harm to the economy of the United States.” The United States was opposed to the differentiation of responsibilities under the Protocol, saying it would put developed nations at a disadvantage.⁴

Congressional leadership under both President Clinton and President Bush declined to support Kyoto, but a sea change occurred in the middle of the presidential campaign season in 2008. Following Barack Obama's election and with a high level of support in both the House and the Senate, as of mid-2009 it seemed as though legislation aimed at reducing the emissions of greenhouse gases in the United States was on track. Several facts are clear:

- World populations are growing, and affluence is increasing in many parts of the globe, putting greater stress on natural resources.
- The rise in the concentration of CO₂ in the atmosphere is raising the heat of the Earth with catastrophic impact.
- There is a shortage of water globally and an increase in contaminated water.
- There is a growing awareness of global warming and a resulting increase in carbon reduction strategies.

On the other hand, the causes of several phenomena are not as clear, including the increase in the number and severity of hurricanes to strike the

Gulf of Mexico in 2005. Storms on both sides of the equator in the Pacific also indicate that something is happening in the Earth's environment, but nobody really knows the cause of these changes. While the science is not clear—we are financial professionals and not climatologists—the evidence points to climate change.

Europe and parts of Asia have been pioneers in supporting climate change rules and have been approaching this problem over the past decade. Although California has been on the forefront of dealing with this issue since the 1980s, the rest of the United States has delayed implementation of aggressive programs to address climate change. However, all of the delays or inaction changed in 2008 during the presidential campaign, which brought a newly heightened sense of awareness. Following President Obama's inauguration and his immediate addresses to Congress, agreement on the need to stabilize (and ultimately reduce) CO₂ emissions has started to swing in a positive direction.

RECENT PROGRESS

Ever since the United States retreated as a major force in the international environmental community, many people perceived the world's efforts to curb greenhouse gas emissions to be at a standstill. However, after facing growing opposition both at home and abroad, the United States finally agreed to let the discussions move forward during the meeting in Bali in 2007 that was described by some observers as a U-turn in U.S. negotiations.⁵ At the meeting, the assembly acknowledged the research findings and observations and concluded that evidence for the warming of the planet was "unequivocal" and that delays in reducing emissions increased the risks of "severe climate change impacts." This led to the "Bali Action Plan," which is a two-year process for finalizing a binding agreement during the negotiations set to take place in Copenhagen in December 2009. The goal of the Copenhagen meeting is to reach an agreement that can replace the Kyoto Protocol when it expires in 2012.

One of the first positive signs of a new outlook is the proposed legislation that is working its way through Congress for adoption in 2009. As new programs are signed into law, segments of the capital markets are poised for long-term growth and development that may far exceed the technological boom of the 1990s.

Renewable energy, including wind, solar, and hydropower, and new technologies, including smart grids, electric metering, and improved usage of electric products, are just a few of the revolutionary changes that are starting to take place. *Smart grids* are modernizing the way in which energy

is generated and used. It improves both energy efficiency and the integration of renewable energy with the grid, but it also requires synergy between the utilities, the consumers, and ultimately the regulators. Smart grids shift energy generated by solar panels and wind to the utilities and incorporate demand management that can be shifted during peak and non-peak usage periods. Sensors and meters can detect fluctuations and disturbances that signal trouble spots in areas that need to be isolated.

Clean technology includes some of the following sectors for investment:

Alternative energy: solar, wind, hydro, tidal, geothermal, and low-carbon power

Energy distribution: fuel cells, flywheels, transformers, cabling, grid infrastructure, and turbines

Energy efficiency: lighting improvement such as LEDs, green-building efficiency, thermal protection using glass, energy management systems, increased use of rails, and remote metering

Waste recycling: water and wastewater filtering, infrastructure, pipes and filters, and desalinization of water

Other segments: weather, agriculture, biofuels, and fertilizer and seeds.

Billions of dollars are being spent on research for electric vehicles and for technologies to make automobiles more efficient and less expensive to operate. President Obama has announced new fuel standards for auto emissions that will significantly raise fuel economy by 2016.⁶

WHERE IS THE OPPORTUNITY?

On the education front, a “green wave” is appearing all over America. In Daniel Esty and Andrew Winston’s book, *Green to Gold*, the authors point to companies that have recognized how to incorporate environmental strategies into the daily operation of business. GE’s Jeffrey Immelt announced “ecomagination,” and Wal-Mart has committed to reducing energy usage by using renewable energy sources and improving the efficiency of its massive fleet of vehicles. Early adopters of the green wave who recognize and understand climate change and understand that financial institutions can work hand in hand with climate change efforts to reduce the stress on the Earth should benefit financially as well as environmentally.⁷

Renewable energy is in an early growth stage. Globally, cumulative installed capacity is increasing; Europe, Japan, and China have been leading

the way for several years, and North America is now starting to catch up. Global policies are becoming synchronized with the promotion of renewable and alternative energy sources. Many new power projects are being started that rely on renewable energy, including wind and solar, while reducing reliance on fossil fuels.

As investors look for new opportunities for investments, the green sector appears to be poised for a bright future with many new industries and companies being created. During the technology bubble of the 1990s, which focused on the birth of the Internet and hundreds of successful companies, the market was littered with failures that focused on “eyeballs and clicks,” new search engines, or home Internet grocery delivery companies. The world of 2009 and beyond, however, is different. It’s about energy security and the stewardship of our planet.

Role of Hedge Funds

Hedge fund managers seem to be on the cutting edge when it comes to developing strategies; they appear best equipped to capitalize on the global change and inefficient markets. Many new manufacturing companies will be born out of these initiatives, including manufacturers of solar panels or thin films that offer higher levels of efficiency and companies that make products to monitor or replace 40-year-old electric transformers. In addition, many companies will not have access to the capital markets for new financing for product development and will fail, or using a term coined during the tech bubble, companies will “run out of runway.” Opportunities exist on the long side of the market with new and innovative companies, but also with shorts of companies that have poor products and weak balance sheets.

The green wave, in reality, has created the newest emerging market for environmental and financial investing. Historically, new capital flows for clean technology and renewable energy have come from the venture capital community, and once again, we are seeing a convergence in the hedge fund industry. In the past, venture capital projects have had a long life, often approaching 10 years. With the credit implosion of 2008–2009 and banks moving to the sidelines, many projects that require shorter time frames, such as project finance for biofuel or solar installations, have attracted specialized hedge funds to deploy capital with higher risk/reward profiles than traditional investments.

For hedge funds, once again it is the perfect storm in 2009: high energy prices, increased environmental momentum, misunderstanding of strategies and products, and absence of traditional financing for many projects and new technologies. Still, despite a global slowdown, energy demand is

expected to rise as global economies recover and commodity prices are expected to rise once again.

Cutting-Edge Strategies

One of the first strategies for hedge fund opportunities is carbon emission trading. The Kyoto Protocol was implemented with the intention of creating a system that would allow the European Union (EU) to have a pricing system in place at the beginning of the Kyoto compliance period. The EU Emissions Trading Scheme (ETS) started trading emissions in 2005 under a three-year trial period, placing over 12,000 emitting facilities in the EU under an absolute cap of CO₂ emissions. Under this scheme, target emission levels are established for individual countries, and their industries are then issued tradable emission allowances called European Union Allowances (EUAs). If any market participant exceeds its targets, fines of 100 per ton can be avoided only by buying EUAs under the flexible mechanisms. This fine also serves as an implicit ceiling for the price, since at this point it would be cheaper to pay the penalty than to buy credits at a higher price.⁸

The total carbon market is generally divided into two sectors: the compliance market, which is regulated under the Kyoto Protocol, and the voluntary market. The voluntary market trades in offsets that are not mandated by regulation but often mimic the flexible mechanisms under the Kyoto. The participants in the voluntary markets are often motivated by either corporate sustainability and green marketing initiatives or precompliance efforts in preparation for upcoming legislation. While most participants in both markets are compliance buyers (e.g., utilities, manufacturers, and other industrial users), financial participants are also actively involved in the trading of emission offsets.

The main part of the voluntary markets is made up of two segments: an over-the-counter (OTC) market and the Chicago Climate Exchange (CCX). The CCX currently accounts for a significant amount of the total volume in the voluntary market. The CCX is a membership-based trading system for emissions, the members of which voluntarily agree to legally binding emission reductions that vary depending on the type of membership. According to the CCX, members with considerable GHG emissions commit to a target that reduces their emissions by 6 percent by 2010, compared to a baseline calculated either from the members' average annual emissions 1998 through 2001 or over the single year 2000, depending on when they joined the exchange.⁹

The OTC market is made up of bilateral trades that take place outside an exchange; this market is not as standardized as the CCX, and there is not much publicly available information. According to a survey taken by

Ecosystem Marketplace and *New Carbon Finance*, 79 percent of the buyers in the voluntary OTC market were private businesses, and non-governmental organizations accounted for 13 percent. The same report stated that about one-third of the offsets purchased in 2007 were for speculative or investment purposes, whereas the majority were for marketing and corporate sustainability purposes.¹⁰

A CLIMATE OF GREEN STIMULUS

As global economies slipped into recession during 2008, governments decided that they needed to seek solutions to pull their economies out of the financial malaise. With China and the United States leading the way, spending on a massive scale was determined to be an efficient method to get the economic engines jump-started.

The initial amounts of spending on renewable and clean technologies are staggering: \$223 billion in China,¹¹ \$100 billion in the United States,¹² \$16 billion in Japan,¹³ and \$325 billion in the EU. Governments are approaching the credit meltdown and economic contraction with a large dose of medicine to “stimulate” their economies, deal with climate change, and reduce energy insecurity. China is spending its capital on rails, grids, and water infrastructure, and U.S. spending will be directed to renewable energy resources, including wind and solar, building efficiencies, mass transit, and grids.

As global governments shifted gears, policymakers reacted to the sharp rise in energy prices, recognizing that a low-carbon economy could create jobs at a time when unemployment was rising. From November 2008 to January 2009, over 20 countries in Asia, Europe, and North America passed stimulus packages totaling \$2.8 trillion, with significant amounts earmarked for green projects. All of this is being accomplished in time to prepare for the year-end 2009 Copenhagen meeting to extend the Kyoto Protocol and to allow for the stimulus to stimulate.¹⁴

Climate Change Is a Game Changer

Shortly after the Obama administration came into power, the Energy and Commerce Committee of the U.S. House of Representatives under the leadership of Rep. Henry Waxman began work on comprehensive energy legislation that includes reducing greenhouse gas emissions. For the first time, the United States appears ready to adopt a cap and trade system of allocating and selling pollution permits from large industrial sources. In anticipation of the year-end 2009 Copenhagen meeting to advance the next phase of Kyoto, the House of Representatives moved forward with a new plan to

soften the blow for consumers and commercial users with a big, first step: passage of the American Clean Energy Security Act of 2009. Shortly after the July 2009 passage, the Senate began its debate.

According to Bloomberg pricing, on July 6, 2009, carbon traded at \$1.00 on the CCX, where trading is voluntary, but it currently trades at €13.05 (or \$18.27) in London, where compliance requirements are mandatory. The difference in pricing is due to several factors, including voluntary and/or mandatory requirements in different geographical regions. One of the other major reasons for pricing differences is the low level of liquidity in the U.S. markets. Not many firms are actively trading carbon, and that contributes to the inefficiency of the markets. Most of the trading participants are compliance buyers that practice buy and hold, with few financial players that are generally more active traders of securities. As a result, bid/offer spreads may be wide, and large amounts of either buying or selling will move market prices widely.

The other key driver of short-term carbon prices is politics, and politics can be challenging to predict or to model. Two things to keep in mind:

- Carbon is still relatively illiquid, indicating that it might be challenging to liquidate large positions without causing significant price disruptions.
- There is still uncertainty regarding whether the multiple exchanges will consolidate and which standard of carbon permits will prevail and what the final form of legislation will be in the United States.

For hedge fund investors, this uncertainty clearly presents a new opportunity as investors seek to capitalize on the arbitrage that exists or for investors who seek to make a directional bet about the future of carbon prices. As previously discussed, uncertainty and inefficient markets have been the cornerstones of hedge fund investing, creating opportunity for astute hedge fund managers. While there is not yet a centralized database to indicate the number of hedge funds active in emission trading, we believe, based on our research, that the number of active trading firms is probably less than two dozen, creating a unique prospect for investors.

In addition to the position trading or portfolio arbitrage of the actual carbon permits and other emissions, the global equity markets present opportunities for investors with hedge fund managers who are able to establish long or short positions in the global companies that have manufactured products that address the energy policy changes required by the United States and the world. Managers who employ this strategy seek to take equity positions in companies that constitute the entire value chain of a particular renewable energy source. For example, generating wind

energy requires manufacturing turbine parts, assembling turbines, and operating the actual wind farm. After doing fundamental analysis of companies operating within each sector of a specific value chain, managers will establish long positions in companies that provide the most attractive risk/reward profile or short positions in companies with weak or flawed products.

Technological progress dictates that many of today's technologies may well become obsolete tomorrow, or prices may drop dramatically. Ongoing scientific debate is focused on which technologies are more efficient and likely to prevail. Therefore, companies that might have significant growth prospects today may find that their technology has become outdated and costly later on. Managers that exercise extreme caution when performing financial valuations and modeling must also have a high level of expertise to analyze the individual companies, and they should benefit from these unexplored and unexploited opportunities. On the other hand, stock prices that reflect extraordinary, unrealistic growth expectations may be subject to wide and downward price swings. In short, opportunities are present for investors looking to participate and capitalize on the new green wave niche.

As in the technology bubble of the late 1990s, when new technologies were developed, there will be both winners and losers. Thus, many hedge fund managers seek to add short positions to their in portfolio in order to add alpha. Depending on their portfolio objectives, many hedge fund managers will seek to profit from companies that may fail due to inefficient or costly technology or weak management teams and weak balance sheets. As discussed previously in connection with the convergence of the public and private markets, many promising renewable energy companies are in the developmental stage and are privately held. In select situations, hedge fund managers might choose to invest in private placements in expectation of upside potential with liquidity events, including future initial public offerings. In most instances, these illiquid investments are held in a specialized class or a side pocket.

With the recent growth of the green and renewable industry during the past few years, new equity indexes have been developed to measure the performance of the underlying companies. One of the most well-known indexes is the Wilderhill Clean Energy Index (ECO), started December 30, 2002, which as of the end of the third quarter of 2009 tracked 52 global companies, including First Solar, a manufacturer of solar modules; Yingli Green Energy, a China-based manufacturer of solar modules; and American Superconductor, an energy technology company that manufactures electronic convertors. For investors seeking to trade ETFs rather than individual stocks, the Powershares Wilderhill Clean Energy Portfolio was created as an ETF to mirror the ECO index.

DON'T FORGET!

In reviewing new strategies, don't forget what we've already discussed. We are enthusiastic proponents of environmental strategies based on sustainability along with the unique opportunities available for early adopters and investors, but recognize that this sector may exhibit higher volatility. While there is a great benefit to investing in many of these new companies through a diversified portfolio of renewable and clean energy hedge fund strategies, the overall due diligence and research must be subject to the same standards that we have previously detailed. No one gets special dispensation just because of the benefit of sustainability. With new managers popping up and professing expertise in technology—or as one manager stated, “I was a biotech analyst for many years”—there are no shortcuts to investing in this space. The underlying managers may have specialized expertise in research, investment banking, or related industries that include energy, science, or trading or financing commodities.

Remember this: we do not want to invest in science projects. We are looking to invest with proven managers with proven skill sets who understand how the markets function. We are still looking to invest with good old-fashioned hedge fund mercenaries whose interests are aligned with those of the investors.

As we have researched the new green hedge fund space, including carbon trading funds, we have been able to identify over 100 hedge funds globally. Clearly, this represents a relatively small portion of hedge fund assets. The good news is that this developing and emerging market has not attracted much attention from the hedge fund community; this is a positive for hedge fund investors who may have tired of seeing the same ideas recycled by many managers. Although many of these funds provide project finance, carbon arbitrage, or trade 1,000 companies globally with both long and short positions, the new locomotive now pulling the train is climate change. In the United States, the train is starting to move—with greater efficiency and fewer emissions.

Given the smaller number of managers active in this space, the selection process has become even more critical. The deployment of the 2009 U.S. Stimulus Act will provide hundreds of billions of dollars to many companies as well as other global governments providing billions of green stimulus, but vigilance in the due diligence process is critical. In spite of the urge to get ahead of the crowd with green investing—or any new strategy, for that matter—caution is still required.

