Ethical Investing
The Green Guide
2009/2010

Investing in our planet
Investing in our future

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High returns are now available whilst making an environmentally and financially responsible investment.

This guide aims to explore ways in which investors can most effectively engage in the global effort to address climate change. The investment volumes required to avoid the catastrophic impact of climate change are substantial and success will largely depend on the successful mobilization of both the public and private sectors. This report highlights viable business opportunities in the energy and carbon sector that could potentially generate high investment returns.

Investors and policy-makers are facing an historic choice. At the very time when commentators are branding green investing as a luxury the world cannot afford, enormous investment in the world's energy infrastructure is required in order to address the twin threats of energy insecurity and climate change. Waiting for economic recovery, rather than taking decisive action now, will make the future challenge far greater. As the cost of clean energy technologies decreases and policy support is put in place, the shape of the eventual energy system is emerging with the investment demand substantial.

NASA

"Because of rapid warming trends over the last 30 years, the earth is now reaching and passing through the warmest levels seen in the last 12,000 years."

The vast majority of us are aware that our environment is reaching a crisis point. A crisis point that society is desperately trying to pull back from as humanity continues to belch out toxic carbon emissions (CO_2 gasses) in its continued efforts to provide the type of existence we feel is necessary.

Scientists have recently discovered that the Earth's temperature is rising at an alarming rate. In fact, if we see a further 3 degree rise in temperature, we will be at the point of no return. This temperature rise is commonly known as global warming and we are all aware that something needs to be done.

Individuals and organisations produce CO_2 gases through their everyday activities such as air and car travel, burning of fossil fuels for energy, the production of cement, steel, textiles and fertilizers. The concept of carbon credits came into existence as a result of increasing awareness of the need for controlling emissions coupled with the understanding that to move forward, a monetary value needs to be placed alongside the environmental value.

The great forests and rain forests are the lungs of the world, drawing in harmful CO_2 gasses as they grow while producing the air that we breathe. Unfortunately, for many years, while there has been no way to show a monetary value on the world's rainforests, they have continued to be harvested at an alarming rate with their only monetary value to man being raw materials (timber) and the land they grow on for grazing cattle or growing crops.

However, with the introduction of carbon credit trading a monetary value has been found and there is now a way for the cycle to be turned. Rainforests can finally be protected and also replanted allowing for an increase in the removal of CO_2 gases from the atmosphere whilst also rewarding enlightened businesses and investors in these projects.

The good news is that the process of reducing pollution from CO_2 emissions is well under way. Until recently for example, the US government refused to believe that CO_2 was responsible for all global warming, with California its only state taking the opposite stance by aggressively promoting emission reduction policies and the use of renewable resources, now it is fast becoming a national concern. Russia however, agrees that CO_2 is a major contributor to global warming (it signed the Kyoto Protocol in 2004) and is already in process of upgrading its antiquated infrastructure to meet its emission targets.

Emission reduction targets and ensuing discussions have to date been based around countries that have been identified as major polluters (from global CO_2 emission statistics 1990). At the Kyoto meeting in 1997, China and India were perceived as not being significant polluters. Other nations deemed responsible for significant CO_2 emissions were given reduction targets. Until recently, the US had used the non-inclusion of China and India as a reason to stay out of the Kyoto Protocol. Post George Bush, things look set to change.

One fundamental feature to emerge from the Kyoto meeting is the requirement that each country that produces CO_2 above set targets must reduce the level of its emissions by offsetting by tree-planting or other processes that can absorb CO_2, such as sequestration and/or changing farming methods. If any country continues to produce more CO_2 than it can absorb, it must purchase an 'absorption ability' from another nation.

This "absorption ability" is the Carbon Credit, with one Carbon Credit equal to one tonne of CO_2. It is referred to as a "CO_2 equivalent" (CO_2e). A nation might, for example, have a shortfall in absorbing 500,000 tonnes of CO_2 and according to the Kyoto agreement it must seek to purchase an "offset" from another nation that has been planting trees for such a consideration. Costs currently are between US $10 – $15 per credit at the moment.

With the introduction of Carbon Credit trading, there is now a way for the pollution cycle to be turned. Rainforests are finally being protected and replanted.

Reducing the carbon through reforestation

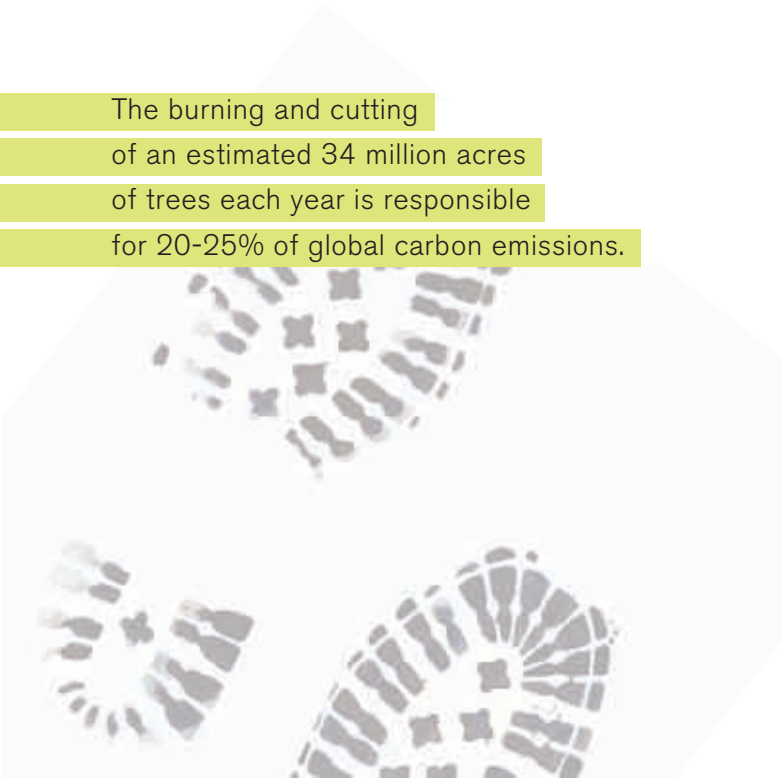
Forestation is particularly relevant to the activity of CO_2 offsetting because, as they grow, trees and plants physically remove carbon dioxide from the atmosphere with excess carbon stored as a biomass. About 50% of dry matter is carbon. In return, trees and plants release oxygen during the process of "respiration". A forest that is growing (i.e. increasing in biomass) will always absorb more carbon than it releases. What this means in practice is that "new" replanting and reforestation projects will take on greater importance as "offsetting" tools for reducing carbon.

Examples of criteria for new reforestation projects:

- The project(s) must be additional i.e. adding to the existing capacity of the forest:
  Planting trees will reduce the carbon in the atmosphere. They cannot be then cut down and burnt, as it has now been proved that crops that are planted in their place (and then harvested) actually store little or no carbon within them
- The project(s) require a good management team along with an excellent business and risk mitigation plan;
- The project(s) need to conserve natural ecosystems and improve biodiversity.

While the arguments in favour of renewable energies are important, reforestation projects are essential to the immediate removal of dangerous CO_2 gases that are already in the earth's atmosphere.

The burning and cutting of an estimated 34 million acres of trees each year is responsible for 20-25% of global carbon emissions.



Our carbon footprint

The amount of CO_2 produced by an individual, family or company is called a "Carbon footprint" and the number of carbon offset credits required to neutralise one's footprint depends on its size - the bigger the footprint, the more credits are required to offset it. Offsetting one's entire footprint is known as becoming "carbon neutral".

Carbon Offset credits are fast becoming a very popular product in today's society as we become increasingly aware of the dangers of climate change and the damage we are causing to our planet with our carbon emissions.

Companies are also publicly reducing their carbon emissions and offsetting the rest, as they are acutely aware of the business advantages of becoming carbon neutral. Indeed, consumers are already far more likely to purchase goods or services from a company that can claim a "low carbon footprint".

The Kyoto protocol: an introduction

The objective of the Kyoto climate change conference in the city of Kyoto, Japan was to establish a legally binding international agreement, whereby all the participating nations commit themselves to tackling the issue of global warming and greenhouse gas emissions.

The target agreed upon was an average reduction of 5.2% from 1990 levels by the year 2012.

The Kyoto Protocol is a protocol to the United Nations Framework Convention on Climate Change (UNFCCC or FCCC), an international environmental treaty with the goal of achieving "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system."

The Kyoto Protocol establishes a legally binding commitment (from its signatories) for the reduction of four greenhouse gases (carbon dioxide, methane, nitrous oxide, sulphur hexafluoride), and two groups of gases (hydrofluorocarbons and perfluorocarbons) produced by industrialized nations. As of January 2009, 183 parties had ratified the protocol, which entered into force on 16 February 2005.

Under Kyoto, industrialized countries agree to reduce their collective green house gas (GHG) emissions by 5.2% from the level in 1990. National limitations range from the reduction of 8% for the European Union and others, to 7% for the United States, 6% for Japan, and 0% for Russia. The treaty permitted emission increases of 8% for Australia and 10% for Iceland.

The Kyoto Protocol provides for three mechanisms that enable countries or operators in developed countries to acquire greenhouse gas reduction credits.

- Under Joint Implementation, a developed country with relatively high costs of domestic greenhouse reduction would set up a project in another developed country.
- Under the Clean Development Mechanism (CDM) a developed country can 'sponsor' a greenhouse gas reduction project in a developing country where the cost of greenhouse gas reduction project activities is usually much lower, but the atmospheric effect is globally equivalent. The developed country would be given credits for meeting its emission reduction targets, while the developing country would receive the capital investment and clean technology or beneficial change in land use.
- Under International Emissions Trading (IET) countries can trade in the international carbon credit market to cover their shortfall in allowances. Countries with surplus credits can sell them to countries with capped emission commitments under the Kyoto Protocol.

These carbon projects can be created by a national government or by an operator within the country. In reality, most of the transactions are not performed by national governments directly, but by operators who have been set quotas by their country.

Investors and Policy makers are facing an historic choice – now is the time for us to make a difference.

Ethical, or Socially Responsible Investments (SRIs), are one of the most rapidly growing areas of finance today.

The rise of ethical or socially responsible investments

When we invest our money, the majority of us are looking for a degree of security, the anticipation of good returns and peace of mind: a combination rarely achieved. However, as stated before, we are living at a critical point in human history and, by any stretch of the imagination, interesting times. By investing in Carbon Credit projects, an investor can enjoy high returns on his investment plus satisfaction in the knowledge that they are truly helping to change our planet for the good.

One question raised by critics is: Is it immoral to make profit from an investment that will be for the betterment of humankind and our planet? No, it is necessary. Charity, common sense and our conscience will only take environmental change so far. We live in a society where money is important. Achieving change requires the participation of businesses and governments around the World. Making profits is fundamental to achieving change on a scale that is necessary. According to a recent New York Times article, carbon trading is one of the "fastest-growing specialties in financial services." Companies are scrambling to get "a slice of a market now worth about $30 billion and that could grow to $1 trillion within a decade."

Another article, "In London's Financial World, Carbon Trading Is the New Big Thing," states that, "Carbon will be the world's biggest commodity market, and it could become the world's biggest market over all."

As more and more governments start to regulate their country's emissions, and as more companies start to limit their emissions, either voluntarily or by legal requirement, the demand for available carbon credits will steadily rise - and so will the price!

We need only refer to the law of supply and demand to see that this industry is on the brink of a major explosion. If increased demand dictates an increase in price, getting involved now could be one of the wisest investment moves in the first half of this century.

The battle against climate change cannot be won without the World's rainforests - this is now clear.

Carbon: the world's next biggest market

In the efforts to reduce, control and (one day) eliminate harmful emissions, each member state of the EU currently receives an annual emission allocation that is then divided between its worst emissions-producing companies.

These companies are then legally obliged to comply with their set emissions targets. If a company comes in under its set target, it can sell its excess as "carbon credits" allowance to other companies that have overshot their targets. If a company exceeds its permitted levels, it has to pay a penalty and buy credits to make up the difference.

Right now, with an abundance of carbon credits available, their price is relatively low. However, with the second phase of the program, 2008-2012, now in play and a reduced amount of credits available and ever more stringent emissions targets, prices are set to rise. When the United States signs the Kyoto agreement and sets its own guidelines and targets, the price of carbon credits could potentially explode.

The European Climate Exchange (ECX) is the leading marketplace for trading carbon dioxide (CO_2) emissions in Europe and internationally.

ECX currently trades two types of carbon credits: EU allowances (EUA's) and Certified Emission Reductions (CERs).

Trading on ECX began in April 2005, when futures contracts were launched on European carbon dioxide emissions, known as EU Allowances, with options on EUAs following in October 2006. Futures and Options on CERs were introduced in 2008, further cementing ECX's position as the industry benchmark for carbon trading globally. In 2009, two new spot-like contracts were added, the EUA and CER Daily Futures contracts.

ECX volumes are experiencing tremendous growth. The carbon market's total value for 2008 was estimated at €92bn (US$125bn), more than double the €40bn it was worth in 2007.

ECX carbon contracts are listed for trading on ICE Futures Europe (the former International Petroleum Exchange). ECX and ICE Futures Europe have a partnership whereby ECX manages the product development and marketing of its emissions contracts and ICE lists those contracts on its electronic trading platform. All contracts are cleared by ICE Clear Europe, enjoy standardised terms and are regulated by the UK's Financial Services Authority (FSA).

Over 100 leading global businesses have signed up for membership to trade ECX emissions products. In addition, several thousand traders around the world have access to the ECX emissions market on ICE Futures Europe via banks and brokers.

ECX is a member of the Climate Exchange Plc group of companies. Other member companies include the Chicago Climate Exchange (CCX) and the Chicago Climate Futures Exchange (CCFE). Climate Exchange Plc (CLE) is listed on the AIM market of the London Stock Exchange. ECX offices are located in London.

Chicago Climate Exchange (CCX) operates North America's only cap and trade system for all six greenhouse gases, with global affiliates and projects worldwide.

CCX Members are leaders in greenhouse gas (GHG) management and represent all sectors of the global economy, as well as public sector innovators. Reductions achieved through CCX are the only reductions made in North America through a legally binding compliance regime, providing independent, third party verification by the Financial Industry Regulatory Authority (FINRA, formerly NASD). The founder, Chairman and CEO of CCX is economist and financial innovator Dr. Richard L. Sandor, who was named a Hero of the Planet by Time Magazine in 2002 for founding CCX, and in 2007 as the "father of carbon trading."

CCX emitting Members make a voluntary but legally binding commitment to meet annual GHG emission reduction targets. Those who reduce below the targets have surplus allowances to sell or bank; those who emit above the targets comply by purchasing CCX Carbon Financial Instrument® (CFI®) contracts.

CFI Contracts, the CCX Tradable Commodity The commodity traded on CCX is the CFI contract, each of which represents 100 metric tons of CO_2 equivalent. CFI contracts are comprised of Exchange Allowances and Exchange Offsets. Exchange Allowances are issued to emitting Members in accordance with their emission baseline and the CCX Emission Reduction Schedule. Exchange Offsets are generated by qualifying offset projects.

Clean Energy and Carbon offset projects represent a potential for explosive profits of earth saving proportions.

It is clear that any future low carbon energy infrastructure will have to include a significant proportion of energy generated from renewable sources.

Key Renewable Energy Sectors

No-one can predict with any certainty what the energy mix will look like in 2030, let alone 2050. Fossil fuel generation will undoubtedly still be a substantial part of the equation. However, it is clear that any future low carbon energy infrastructure will have to include a significant proportion of energy generated from renewable sources – most scenarios showing the proportion of primary energy having to reach 40-50% by 2050. Some of the leading technology contenders are emerging and, in some cases have begun to build significant experience.

In this section, we highlight eight renewable energy technologies which look particularly promising in terms of two factors: abatement potential and current state of competitiveness. In the next section we will look at some of the other technologies – principally around the digital/smart grid, energy efficiency, power storage and carbon capture and sequestration – which will be required if low carbon energy is to fulfill its full potential within the future energy mix.

1 Onshore Wind

The most mature of the renewable energy sectors, the onshore wind industry saw 21GW built in 2007, bringing installed capacity to over 100GW. In Germany, Spain and Denmark wind power now supplies 3%, 11% and 19% respectively of total electricity production during the course of the year, and in Denmark up to 43% of the country's electricity demand at times of peak wind supply. Electricity from onshore wind can be generated at prices of 9-13 c/kWh, making it only 32% more expensive than natural gas CCGT, even in the absence of a carbon price.

2 Offshore Wind

When the best sites for onshore wind have been snapped up, the next place to look for large quantities of renewable energy is offshore. Offshore wind offers enormous potential, with stronger more predictable winds and almost unlimited space for turbines. Planning permission can be easier to obtain than onshore, farms can be built at scales impossible on land, and the availability of space is almost unlimited if deep waters are mastered. At present, the cost of electricity from offshore wind is high – around 16-21 c/kWh – but this will come down rapidly as more project experience is gained.

3 Solar Photovoltaic Power

Photovoltaic (PV) technology has made very rapid strides in the past four years, in terms of reducing the cost of crystalline silicon (its main component) and commercializing thin film technology, with investment volume growing to US$ 50 billion in 2007-2008. Although there has been a bottleneck in the production of solar-grade silicon, new capacity is coming on line and costs are set to drop rapidly from US$ 4/W to US$ 2.60/W by the end of 2009, making unsubsidized solar PV generation costs comparable with daytime peak retail electricity prices in many sunny parts of the world.

4 Solar Thermal Electricity Generation

While PV is ideal for smaller projects and integrated into buildings, the technology of choice for big solar plants in the world's deserts looks set to be Solar Thermal Electricity Generation (STEG): concentrating the heat of the sun to generate steam, which can be used in conventional and highly efficient turbines. There are relatively few projects up and running yet, but with costs already in the 24-30 c/kWh range, this technology is shaping up to be a part of the solution in the sunniest parts of the world.

5 Municipal Solid Waste-to-Energy (MSW)

The use of municipal solid waste to generate energy is increasing, led by the EU countries. Waste has traditionally been deposited in landfill sites, a practice which is becoming increasingly expensive and constrained by shortage of sites. Landfill also creates methane, a powerful greenhouse gas. Waste that cannot be recycled, however, can be used to generate electricity by a variety of technologies at costs starting at 3 to 10 c/kWh. Government support for the development of MSW plants is increasing, for example through the Private Finance Initiative (PFI) in the United Kingdom. The US MSW sector is also seeing a resurgence, with specialist operators planning to build several new plants.

6 Sugar-based Ethanol

The period 2004-2006 saw US investment in biofuels soar, with investors pouring US$ 9.2 billion into the sector. But most of this flowed into corn-based ethanol, which is more expensive to produce than sugar-based ethanol, subject to volatile prices and controversial because its feedstock is a food staple around the world. By contrast, Brazilian sugar cane-based ethanol is competitive with oil at US$ 40 per barrel; it grows well in many southern hemisphere countries (and far from the Amazon); and there is no shortage of land to increase production substantially without jeopardizing food production.

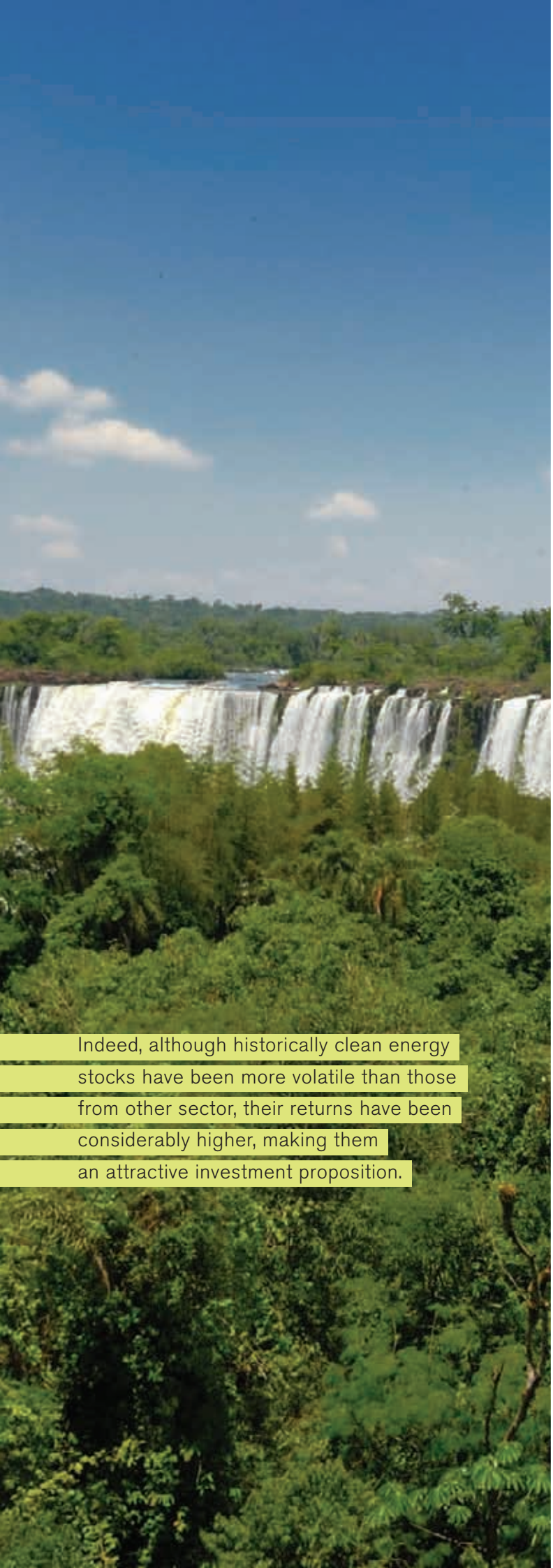
7 Cellulosic and Next Generation Biofuels

The argument over food vs fuel is an emotive one. In most regions, there is sufficient land to increase biofuels production from the current 1% of transport fuel to 3% or even 5% without impacting on food availability (as long as we can quickly return to increasing annual agricultural productivity). But after that the only way to increase production of biofuels will be to source feedstock that does not compete with food. Luckily, the cost of producing biofuels from agricultural waste through cellulosic conversion and algae is coming down rapidly, and the future fuel system is likely to include a proportion of fuels from these sources. Future technologies could include artificial photosynthesis and synthetic genomics.

8 Geothermal

Geothermal power is particularly attractive as a renewable energy source because it can be used as predictable base-load power in a way that wind and solar power cannot be. Until now, geothermal power has been used only in limited regions, but a raft of new approaches has helped make it economically viable across a wider area. In addition, all countries can exploit geothermal resources for ground source heat pumps or district heating, if not for large-scale electricity generation.

It is important to emphasize that these are by no means the only clean energy sectors of promise. There are many other emerging technologies – a wide range of biomass based power generation approaches, wave and tidal power, ground source heat pumps, ocean thermal and osmotic power – each of which has substantial potential and its fervent admirers. Nuclear power is also set for a renaissance in many countries around the world. Nuclear energy's share of total electricity production has remained steady at around 16% since the 1980s, when 218 reactors were built around the world. However, nuclear power will clearly be part of any future energy system, although its contribution will be limited by issues of cost, storage, safety and public resistance. We do not consider it in detail in this paper.



Indeed, although historically clean energy stocks have been more volatile than those from other sector, their returns have been considerably higher, making them an attractive investment proposition.

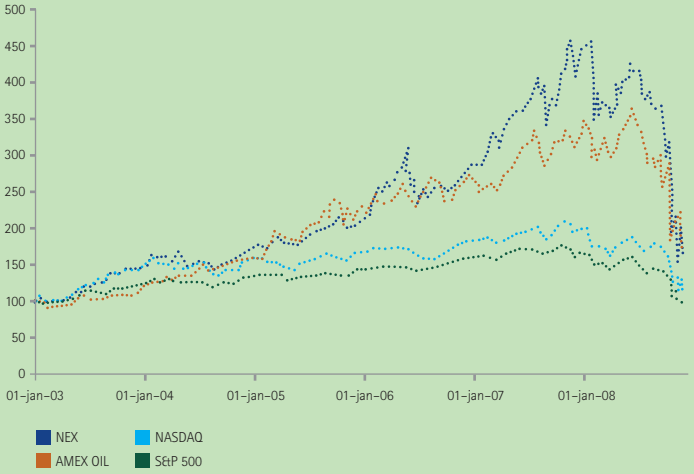
Investment Performance

Over the past few years, prior to the recent turmoil in the global financial markets, investors made good returns from clean energy investments at all stages of the value chain. While the exceptional gains of the past few years may have declined during 2008, the sector as a whole has fared better than any major benchmark over the past five years.

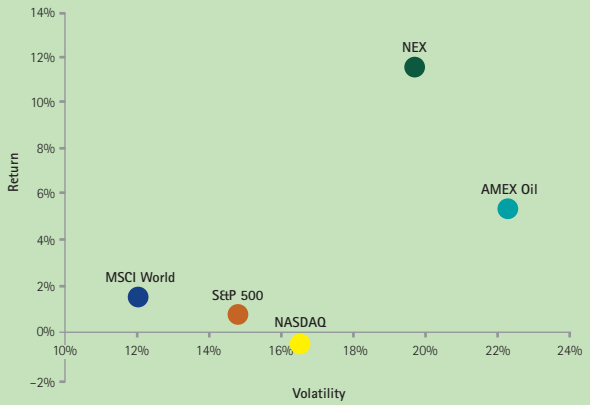
Public Markets

The WilderHill New Energy Global Innovation Index (ticker symbol NEX) tracks the performance of around 90 leading clean energy companies, spanning different sectors, geographies and business models. Over the period from the beginning of 2003 to the end of 2007, the NEX rose from its index value of 100 to a peak of 549.08, a compound annual growth rate of over 40%.

2007 was a particularly high-octane year, logging an increase of 57.9%, and the index defied gravity for the first three quarters of 2008, before succumbing to the credit crisis and ending the year at 178 (see Figure 1).



Indeed, although historically clean energy stocks have been more volatile than those from other sectors, their returns have been consistently higher, making them an attractive investment proposition on a risk-adjusted basis despite their recent history (see Figure 2). Even after its tumultuous 2008, the NEX remained up 75% on six years ago – an annual return of 9.8%, unmatched by any of the major stock market indices.



Venture Capital & Private Equity

On the venture capital and private equity side, some spectacular returns were achieved during the period 2004 to 2007.

For private equity players, one of the most successful strategies during this period was to identify clean energy companies which had been struggling to commercialize their products or services during the period of low energy prices, but which were now experiencing soaring demand. Allianz Private Equity and Apax Partners shared the private equity deal of the year in 2006. They bought Hansen Transmissions, a leading provider of gearboxes for wind turbines for € 132m, and 22 months later they were able to sell it for € 465m to India's Suzlon Energy, then the world's most valuable turbine manufacturer, recording an IRR of 101% on their investment. Other very successful deals of this nature included an investment made by Goldman Sachs in Zilkha Renewables (later renamed Horizon Wind Energy), which they were subsequently able to sell to Energias de Portugal at a substantially increased value.

Meanwhile in venture capital, investors in clean technologies in Europe and the US were on track to achieve excellent returns on their investments up to mid- 2008, according to the third annual European Clean Energy Venture Returns Analysis (ECEVRA), completed by New Energy Finance in collaboration with the European Energy Venture Fair.

The study, which is based on confidential returns by investors at the end of H1 2008, covered 302 clean technology portfolio companies, representing € 1.77 billion of venture capital invested in clean technology since 1997. Of these, 26 have so far resulted in public listing and 32 have been exited or partially exited via trade sale. The success rate to date has been reasonably high with a pooled gross IRR (at the portfolio company level, not the fund level) of over 60%, based on the limited number of exits and with only 23 companies being liquidated or written off at the time of the study,. These exceptional returns, were driven by the outstanding success of a small number of early investments in the solar sector – Q-Cells and REC in particular. Without these, the pooled return was closer to 14%. As of mid- 2008 there had been relatively few down-rounds (subsequent venture rounds at reduced valuations), but it is a very young sample with relatively few exits to date.

The Impact of the Financial Crisis

The global financial crisis of 2008, and the recession that is following in its wake, represents a serious threat to the clean energy sector. Short-term energy and carbon prices have fallen, making clean energy less competitive in immediate financial terms. At the same time risk has been re-priced, and finance is much harder to come by.

The crisis may, however, also represent something of opportunity: as policy-makers take decisive action to refuel their economies, they are at least talking about ensuring the resulting fiscal and monetary stimuli benefit the clean energy sector. Beyond that, it remains to be seen whether the crisis will shake policy-makers' determination to shift to low-carbon energy and force embattled voters to take painful action to limit greenhouse gas emissions.

Clean energy investment held up well during the early phase of the credit crunch, as did the valuations of publicly-quoted clean energy companies, only to be very hard hit during the closing months of 2008.

The NEX index defied gravity for the first three quarters of 2008, trading mainly in the 350 to 450 range. The final quarter of 2008, however, saw the index collapse, touching a low of 135.15 in late November, a level not seen since September 2003 – before the ratification of the Kyoto Protocol, before Hurricane Katrina and President Bush's statement that the US was "addicted" to oil, before the publication of the Stern Review, before the premiere of the film, "An Inconvenient Truth".

Since that low, however, the NEX index has bounced back, ending the year at a slightly more respectable 178 – perhaps in recognition that the sector's sell-off had been overdone, perhaps as opportunistic investors began to pick up bargains, and perhaps on hope that the election of President Obama would create a floor through which the sector would not fall.

There are three reasons why the sector was hit so hard. First, with energy prices collapsing by 70%, the sector was bound to suffer – these are, after all energy stocks. Second, investors were getting rid of stocks with any sort of technology or execution risk, in favour of longer established businesses. Third, in an era of sharply constrained credit, investors penalized companies with high capital requirements – even the more established, asset-based clean energy companies, which bear no technology risk, being high-growth are capital-hungry.

The collapse in valuations of clean energy companies effectively shut the door to further fund-raising in the public markets. New financings – IPOs, secondary offerings and convertible issues – dropped by 60% between 2007 and 2008 to US$ 9.4 billion, mainly because of turbulent market conditions and lower valuations. 2007's total was boosted by Iberenova's US$ 6.6 billion IPO, the fourth largest in the world in any sector.

Venture capital and private equity to a certain extent stepped in where the public markets stepped out during 2008. New investment – i.e. excluding buyouts – is estimated to have reached US$ 14.2 billion in 2008, 45% higher than a year earlier. Venture capitalists, those that have already raised funds and now need to put them to work, have continued to invest, particularly in the solar and digital power sectors. In the wake of decreased leverage, there is evidence that some private equity players have preferred to invest expansion capital with modest leverage rather than return money to their limited partners. Meanwhile, anecdote suggests that valuations have come down, though not quite to the extent of public market valuations, making this a good time to invest for those that have funds available.

Even during the darkest weeks of October and November 2008, investment deals continued to close, including a rights issue by Brazilian bioethanol leader Cosan, which raised US$ 412m, and Chinese wind turbine manufacturer Dongfang Electric Corporation, which raised US$ 195m in a secondary offering. In addition, over 80 VC and PE deals were completed in Q4 2008.

A repeat of the collapse in investment in clean energy which followed in the wake of previous spikes in energy prices in the 1970s and 1980s, therefore, does not look likely. For one thing, there is a web of policy in place around the world which supports a mandated level of activity far in excess of previous levels. Secondly, no serious commentator expects oil prices to revert to the US$ 25 per barrel median price (in 2008 money) which prevailed throughout the 1990s. Growing demand for oil – much of it fuelled by the rising middle classes in China and India – is demanding the exploitation of ever more expensive sources of supply – deeper offshore fields, shale oils and tar sands – driving up the cost of marginal production.

There is no question that the short-term priority for the world's policy-makers is to do whatever is necessary to prevent the effects of the financial crisis turning from a recession to a depression. The good news for clean energy investors is that supporting the sector is seen by the leaders of many of the world's major economies as consistent with achieving this goal. As they address the urgent problems and then the longer-term structural weaknesses of their economies, the clean energy sector stands to benefit as follows:

1 Monetary stimulus

An enormous monetary stimulus has already been applied in every major economy of the world – central bank rates have dropped to levels not seen for half a century. At the time of writing, this wall of cheap debt has not yet worked its way through the system, as banks steward their capital in fear of the levels of defaults which will emerge as the recession bites. However, at some point a flood of cheap money will begin to flow, and when it does, clean energy infrastructure – safe projects with reliable yields – will be among the first to benefit. Renewable energy projects generally have higher up-front costs but lower or no fuel costs, making them more than averagely sensitive to periods of higher interest rates or credit risk aversion – and more than averagely responsive as interest rates fall.

Carbon trading may dwarf that
of crude oil with five years
- worth $2 trillion -
Bart Chiltern,
CFTC commissioner (Sept 09)

"There is no better potential driver that pervades all aspects of our economy than a new energy economy... that's going to be my number one priority when I get into office."

President Barack Obama

2 Fiscal stimulus

Around the world debate is raging, not about whether fiscal stimulus is needed, but how much and what sort. Policy-makers are trying to ensure that any fiscal stimulus multitasks by supporting short term consumption and jobs and building the long-term productive capacity of the economy, as well as moving us along in achieving our long-term goal of a sustainable energy system. The development of clean energy technologies, rolling out a fully digital grid, properly insulating homes and offices, and educating a new generation of engineers, technicians and scientists meet all of these criteria and could be part of many fiscal stimulus programmes.

3 Deficit reduction

Policy-makers are likely to look for sources of tax which are not only substantial, but at the same time encourage the move towards a low-carbon economy. And that means the likely dismantling of any fiscal support for fossil fuels – fuel subsidies, research grants, exploration concession waivers, investment tax holidays, accelerated depreciation, export guarantees and soft loans. Then we could see increasing energy taxes, a dramatic reduction of fuel subsidies in the developing world, and either a carbon taxes or cap and trade schemes with auctioning of permits.

The position of US president Barack Obama is of particular interest in this context. During his campaign, he stated that "there is no better potential driver that pervades all aspects of our economy than a new energy economy... that's going to be my No. 1 priority when I get into office." As well as supporting the extension to the Production Tax Credits and Investment Tax Credits, so instrumental in the development of the US wind and solar sectors, he has indicated his support for a federal Renewable Portfolio Standard (the minimum proportion of renewable power in the electricity mix) of 25% by 2020.

He has also committed to spending US$ 150 billion on clean energy over the next 10 years. Since his election, President Obama has galvanized the world's carbon negotiators by restating his commitment to provide leadership on the issue of greenhouse gas emissions.

In short, while the global financial crisis has certainly brought the clean energy sector down to earth with a bump, the fundamental drivers – climate change, energy security, fossil fuel prices and scarcity – remain strong. With continued government support through the current financial crisis, the sector will likely see a return to its long term growth trend in the near future.

Carbon Markets: an immediate necessity

In summary, the long-term outlook for carbon remains bullish as momentum towards a network of national and regional schemes remains strong. In a short space of time, carbon credits are beginning to provide an economic rationale for the large-scale roll-out of renewable energy, commercial carbon capture and sequestration projects.

Perhaps the biggest problem the carbon market presents to investors – other than its sheer complexity – is its apparently uncertain future. The Kyoto Protocol in its current form lasts only until 2012. Two processes are under way, working to develop a successor regime: one involving those nations that have ratified Kyoto, and a second, the so-called Bali roadmap, which includes the US.

The December 2008 Poznan negotiating session, which took place after the US election but before the Inauguration of President Obama, produced little of substance, although this was not surprising. Issues debated included the adoption of emissions targets for large developing countries (India and China) – although this was firmly rejected, the structure of the CDM, the inclusion of credits from avoided deforestation and carbon capture and sequestration and, of course, the potential commitment by the US. President Obama has signified that such a commitment will be forthcoming under his leadership, and the world is holding its breath to see what comes out of negotiations in Copenhagen in December 2009. This is seen as the last chance if there is to be a solution in place before the current Kyoto arrangements expire in 2012, although missing that deadline does not mean the process is dead, so an extension is possible, if not probable.

Whatever happens in Copenhagen, the future of the EU ETS and CDM is secure. The EU has shown a strong commitment to climate goals in general – most recently passing the climate package which sets out its target of reducing emissions by 20% by 2020, and by 30% if other nations join in – and to the EU ETS in particular. It will also continue allow CDM credits to be used in lieu of local carbon reductions. New Carbon Finance's central forecast for the price of credits in Phase II of the EU ETS is for an increase from the current US$ 21 per tonne to US$ 40 per tonne in 2012. Beyond 2012 prices will continue to rise as carbon caps bite more deeply in the run-up to 2020 and beyond, and easy sources of credits are exhausted.

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