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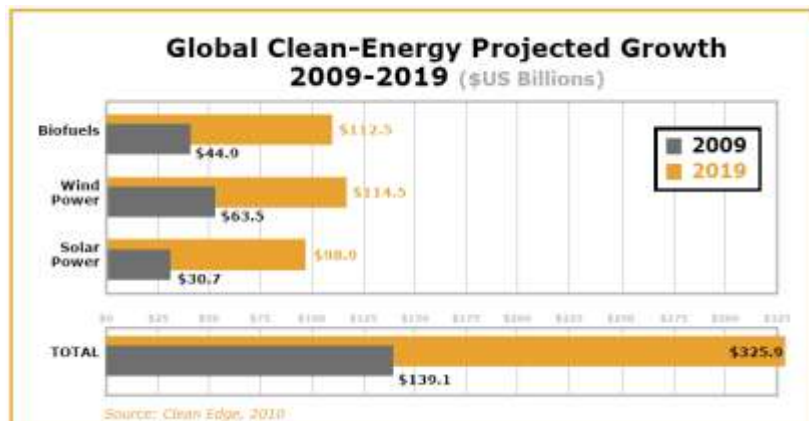
May 2010

## Riding The Alternative Energy Wave

**Alternative energy is to traditional energy what homeopathy is to the medical industry. You may pop an Echinacea to help fight off the common cold but if you've caught the H1N1, you better go to see a doctor. Whether you're going to pop alternative energy into your gas tank or turn it on in light bulbs will by and large depends on: 1. Cost parity to classical energy; 2. Subsidies; and 3. Government fiat.**

Neither alternative medicine nor alternative energy is anywhere near as big as their classical kinds but nevertheless they exist and are growing rapidly. Of total energy production, primary sources of energy are derived from classical fossil fuel sources 86% (oil 36%, coal 27%, natural gas 23%), while non-fossil sources include hydropower 6%, nuclear 6%, and alternative energy sources 2% (including solar, wind, geothermal, biomass, waste). Despite the small contribution to global energy output, alternative energy has been growing at a rate of 47% per annum since 2002 to 2009, and is forecasted to grow by 9% annually going forward until 2019. Globally, new investments in alternative energy are making headlines on US\$155 billion and US\$145 billion numbers in 2008 and 2009 respectively, outpacing those for classical fossil fuels for the past 2 years in a row.

On the back of this remarkable growth in the past decade, Clean Edge, a leading research and publishing firm in clean technologies, forecasts the revenue growth in major alternative energy businesses to double over the next decade from US\$139.1 billion in 2009 to US\$325.9 billion in 2019 – equivalent to 9% compound annual growth rate (CAGR). The most active sectors will be wind, followed by biofuels and solar power. New installations of wind power generator reached the record of 38,312 MW in 2009, mostly contributed by China who for the first time was the global leader in wind power new installations of 13,800 MW. Global wind power installed capacity reached 159,213 MW in 2009, producing 340 TWh of electricity which is about 2% of worldwide electricity usage.



## Strategic Imperatives

A key reason for developing alternative energy is for countries to become energy independent through the diversification of their own energy sources. They seek to ensure energy security by producing part of it on their own. When oil price had its meteoric run between 2004 - 2008, alternative energy became the buzz. Second, governments the world over have set road maps to reduce emission of greenhouse gases in response to global warming, evidenced by countries that signed the Kyoto Protocol. Third, governments are looking to alternative energy as a means of creating jobs.

By and large, consumers are not that conscious of the sources of energy when they turn on the lights or drive their cars but only during fleeting moments when they watch an advertisement of a Polar bear floating on thin ice when a tinge of guilt might creep in. Sure, some buyers pick hybrid cars due to environmental consciousness but do they even know that the electricity come from clean energy when they switch to the electrical system? Try this: debate with your family what the original source of energy is every time you turn on the lights. OK, don't. Because nobody does. What most people care about is how much electricity and gasoline (renewable or otherwise) cost them. And without these subsidies, the costs of much of these alternative energy are higher than their classical sources. This is what we mean by **cost (dis)parity** to their classical energy. And this is where **subsidies** come in. And this is where governments have stepped in to progress the advancement of renewable energy through **fiat**.

But here's the thing with subsidies: it doesn't make sense if in the long run the subsidized projects do not achieve their eventual economic merits. A subsidy might work if the aim is to give the projects a leg-up until they finally achieve economies of scale or higher productivity via innovation. Say, the way a wind project achieves economic merit is via subsidies then that means the project costs are higher than a comparable technology (thermal) of its classical energy kind. What that means is that Suzlon Energy burned more coal (than making steam turbines) to generate energy to make the wind propellers and turbines; or Indian engineers spent more time to make these wind propellers and therefore burned more LPG in the process of cooking their foods. Stack it anyway you like: 'cost more' equates to 'burn more'. So what's the point? You burn more traditional energy there to generate equipment for here that goes into a project that generates sub-par returns which requires subsidies that after all comes from taxes that are earned from value created from using traditional energy sources anyway.

Alternative Energy projects face challenges such as higher funding costs and policy uncertainty. Credit can at times be scarce and cost of credit can be both high and volatile. Subsidies are unsustainable. And alternative energy projects are perceived to be riskier than their classical peers. The credit market is still open to large and well established companies with proven technologies, while small developers are facing difficulties in accessing the credit market.

The second challenge to alternative energy is the requirement of government support and subsidy in various forms, for example tax credits in the USA and direct subsidies in Europe and Asia. At this stage of industry development, alternative energy businesses are rarely

commercially viable without government subsidies, which again have their costs. A key point here is that a well constructed subsidy program can produce productive results at relatively low cost, while a poorly constructed policy creates high costs for relatively limited alternative energy production.

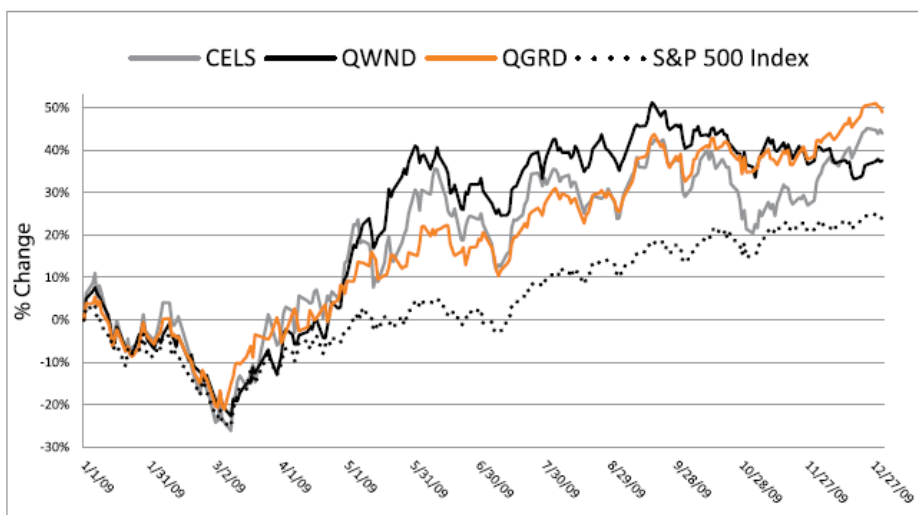
### Where to Invest in Alternative Energy?

Investors can choose mutual funds that have direct exposure to alternative energy. New Alternatives Fund (Symbol: NALFX) was the first mutual fund in the world to concentrate in alternative energy, beginning its operations in 1982. Its net asset is worth US\$283 million (end 2009), investing in a variety of companies focusing on renewable energy resources, energy conservation, and environmental protection. Another famous alternative energy fund is Guinness Atkinson Alternative Energy Fund (Symbol: GAAEX) which began its operations in 2006. This fund invests in 40 to 60 stocks of global companies that derive more than 50% of their revenue from alternative energy or alternative energy technology.

There are also Private Equity funds that have been setup to mainly invest in the alternative energy sector. Global private equity firm The Carlyle Group and energy private equity firm Riverstone raised US\$685 million for their Carlyle/Riverstone Renewable Energy Infrastructure Fund I in 2006, and raised US\$4 billion for Carlyle/Riverstone Renewable Energy Infrastructure Fund II in 2008 after the success of their first fund. Currently, Riverstone operates primarily through a joint venture with the Carlyle Group, managing a total of 6 funds with assets under management worth US\$16 billion.

In Thailand, MFC Energy Fund is the first and only Thai Private Equity Fund focusing in alternative energy and environmental friendly businesses. Registered in 2007 with capital of US\$70 million, MFC Energy Fund has already put its money in 3 businesses, namely biodiesel producer, ethanol plant, and electricity storage unit business.

### Alternative Energy Stocks Selection



Alternative energy stocks have outperformed the market in the past year. Clean Edge, along with NASDAQ, currently produces three indices acting as benchmarks for the sector: CELS – which tracks U.S. listed clean-energy companies; QWND – which tracks global wind power companies; and QGRD – which tracks smart grids and grid infrastructure companies. These indices have outperformed the S&P 500 in 2009 in the range of 15% - 26%, rising 44%, 38%, and 49% respectively in that year.

While freebies help, government subsidy is not a guarantee that alternative energy projects will be profitable. The return on investment from investing in alternative sources depends on technological efficiency of how effective each technology is able to transform each source into the form of energy we can use. It shouldn't create an energy deficit. Put simply: we shouldn't be putting more energy in to making something that produces less energy than what we put in. New technologies need to be cost competitive and scalable, so as to earn adequate returns on the initial investment in R&D and process know-how. Therefore, companies with scalable energy-efficient technologies will perform well in the long-run. Scale is a horizontal issue: it is about more of the same. Business models should, however, address the verticality of the value chain. The mix-and-match of outsourced processes (take contract farming of sugar cane) together with vertically integrated business model (sugar producer converting into ethanol) is very important to the success of such renewable energy projects.

Going forward, we believe there will be momentum in alternative energy, and investment opportunities in emerging markets like Southeast Asian countries will be abundant; albeit, most of them will still be in the developing phase. We will see lots of corporation as well as funds seeking to monetize from this coming big alternative energy wave.

Following an issuance of this article, we will issue the series alternative energy articles analyzing each domain, namely, solar, wind, hydropower, geothermal, fuel cell, and biofuels to name a few. Within each technological domain, we will analyze global trends, key economic factors, recent developments, as well as movements in the private equity space.