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In all markets, government commitment through the medium of stable policy provides the market structure and economic incentive required for renewable energy market growth. Globally approximately 2% of energy is derived from renewable sources. The potential is thought to be at least 20%. Demand for energy is soaring, commodities prices are rising and the climate change arguments appear to be getting through. But is this creating a dotcom-type bubble in the renewable energy markets or do the economic fundamentals support it?

In 2007, climate change is not the only reason for increasing support for renewable energy. Issues such as security of supply and that portfolios of diverse power generation assets provide long term power price stability, continue to gain momentum in decision makers minds. Renewable energy is indigenous and therefore reduces the need for energy imports. While current renewable energy technologies are probably not going to save the planet, or deliver a total solution to energy price stability, a 20% contribution to the portfolio goes some way to achieving this goal. It helps flatten out the rising curve of emissions and fossil fuel prices over the medium term and demand for energy continues to grow. It buys time until the development of technology to meet the goal occurs. Therefore it is expected that renewable energy is going to rapidly grow in its current form for at least a generation or two.

Standard Chartered Bank (SCB) is one of only a few financial institutions to have created a specialist team covering the sector. Given the varied regulatory frameworks across the globe, the unique characteristics of the various technologies, and the diverse markets in which renewable energy projects operate, a team of specialists is thought to be essential in order to manage the banks exposure to the sector and to advise our clients. Renewable energy means many things to many people. For SCB it means power generation for renewable sources (wind, solar, run of river hydro etc), bio-fuels and larger scale carbon dioxide equivalent abatement (Carbon) projects.

Wind

Wind is dominated by Europe and the United States with India and China contributing significantly in Asia. India is the fourth largest market in the world in terms of installed capacity. China is Asia's fastest growing market, having doubled it's installed capacity during 2006. The United States added 2500MW of new capacity in 2006 and Europe 7500MW. India and China totaled 3000MW. Of note also are two new markets; South Korea and Pakistan.

The government in South Korea is one of the most progressive in terms of regulation with the introduction of feed-in tariffs for both wind and solar at the levels required to induce investment. The largest solar photovoltaic project in the world is currently under construction there. The 20MW project was financed by SCB through a senior / subordinated structure which was successfully syndicated to a group of local institutions. Pakistan is also promoting wind power projects, but through a government backed power purchase agreement at a tariff to provide the required return for investors. Progress has been slower in this market but the structure is still one which should be able to attract project financing. This is evidence of the momentum being gained in the global market.

The United States, Germany, Japan and Southern Europe dominate the solar project market. China and Japan dominates the solar market in terms of module manufacturing. Japan represents the largest market in terms of installed capacity. Technology innovation is also being provided by the United States such as in the area of thin film photovoltaic

manufacturing. Much of the solar product is sold to Europe and the United States. Japanese and manufacturers are typically selling both in their home market and to Europe and North America. Solar is very expensive in terms of capital required to implement a project. The subsequent operating margin is very high, and given the 30-year-plus lifetime for modules, when the debt is repaid the marginal cost makes it very competitive. Given the expense, this sector is most sensitive to regulation. Hence, in the region, Japan and South Korea are seeing capacity grow, reflecting their governments support.

Bio-fuels

Bio-fuels in Asia consist mainly of bio-diesel from palm oil, for which a market has developed for the feedstock where SCB can provide hedging. Indonesia and Malaysia lead the way. Palm oil is a competitive source of bio-diesel, although there is concern over land use and the deforestation of natural forests. Bio-fuels is rapidly becoming a global business, and Asia reflects this with China, Thailand, Singapore and other countries all witnessing investment opportunities.

Bio-fuels are less straightforward than Carbon and power generation because the feedstock market for bio-fuels refining is often not correlated with the product. Where the feedstock is an edible product, such as wheat and corn, food price increases have been observed as bio-fuel production and demand increased. China has publicly noted its concern here, and in the United States the impacts of higher corn prices has been felt in some of the export markets such as Mexico.

Unless organic feed stocks such as jatropha are used, the so called "non-edibles", there is therefore a potential impact on food prices which in Asia and Africa could be particularly damaging due to the lower average income per head of population and the higher dependency on agriculture. Therefore the required regulatory support may not be forthcoming and the regulatory risk should be perceived to be higher. Again the United States and Europe dominate the global market. The product in Europe is mainly bio-diesel and in the United States it is ethanol (from corn). This is directly related to regulation that supports the regional agricultural industries.

Carbon

The Clean Development Mechanism (CDM), part of the Kyoto Protocol, is also a significant regulation creating incentives for investors to develop Carbon projects throughout the region. China and India lead the way in this market with the lion's share of projects. This market is expected to develop into a $10 billion to $20 billion market in time during the Phase 2 period of 2008 to 2012.

The market is very varied with Carbon generated from power projects such as wind and solar, and from gas storage projects and methane-capture projects including coal mines. Wind projects are attractive because approximately 10% of the value of a coal-displacing project is Carbon. Solar is less attractive due to the low capacity factors resulting in a Carbon value of approximately 2 or 3%. Methane capture and gas storage facilities are very attractive to investors because they are simple and the gases typically are significant contributors to the greenhouse effect, and therefore one ton typically equals multiple tons of Carbon. The main recipients of Carbon pursuant to the CDM is Europe and during 2007 Japan. It is estimated that approximately 10% of Carbon in Europe will be sourced from CDM. The United States did not ratify the Kyoto Protocol, but individual states are starting to be progressive in the area of Carbon targets.

The Middle East has not embraced the renewable energy markets to any material scale to date. However, certain states such as the UAE have seen the establishment of clean energy funds that are essentially channeling petro-dollars into developing future energy solutions. The focus is less on the next generation of renewable energy technology, but R&D and education to produce the energy solutions further out, the alternative to current technologies such as wind turbines. Energy conservation is also an area of focus. Abu Dhabi has created the MASDAR initiative which aims to bring about the worlds first "zero Carbon" city.

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Activity in the global market for renewable energy has increased significantly during 2006 and 2007. The main activity has been in Europe and North America – for example the IPO of the French firm EdF Energies Nouvelles; the acquisition of wind turbine manufacturer REpower, by Suzlon, and the acquisition of wind power project developer Horizon by a

Portuguese utility, EdP.

The valuations on man of these deals, by historical comparison, are high. For the first time renewable energy companies are achieving valuations reflecting "blue sky" rather than the traditional cash flow methodology. The reason for this is that regulation introduced some years ago is now considered less risky, and new markets are joining what is considered an inevitable growth in the market through further support for the sector from the all important government policy makers. High fossil fuel prices are also contributing, but the economics of a renewable energy project in many countries is not impacted by fossil fuel prices.

As mentioned, high fossil fuel prices do influence government decision-making. Currently investors appear to be valuing regulatory risk favorably, and therefore historical valuations are not good comparables for current valuations. Structured finance banks have provided unprecedented levels of liquidity and pricing and quality of structures have been eroded. Acquisitions, while relatively limited in numbers, provide value data points, and have occurred partly on the back of debt capital liquidity but, as mentioned, also on the back of significant equity liquidity. Classis dot com territory.

In terms of where the high valuations are found, wind project developers with pipelines in the United States are leading the way and step changes in prices are due to the government there finally recognizing the need for an adequate time horizon on regulation, something that federal Production Tax Credit legislation has never provided for before.

Technology manufacturers in wind and solar are also enjoying very high valuations. Both are seeing a perfect storm of supply chain constraints combining with the favorable regulatory environment resulting in their inability to meet demand. Full order books means high valuations.

Conversely, bio-fuels valuations are suffering due to increased feedstock prices causing margins to fall in large markets such as the Untied States. To gain exposure to this market, project developers are providing this. There are no niche technology suppliers so there is not a pure play there.

Carbon prices are at highs of Eu30/ton in Europe at the time writing. Valuations for carbon funds are mixed, primarily due to lack of transparency post 2012 when the current regulation governed by Kyoto expire. Again we can see that regulatory risk drives valuations.

To conclude, while the author does believe valuations are high in some areas of the global renewable energy market, it is considered that reason is a shift in view of regulatory risk. Both the debt and the equity markets are applying lower discount factors to this. It is mainly due to actions by governments in markets such as the United States, Europe, India and China, but it also considers new markets contributing to a ground swell of optimism. At this stage therefore, the author does not believe valuations are reflective of a dotcom scenario. Much future cash flow however is valued and regulatory risk more than ever is the critical variable. This is the reason that India and China, with their stated goals and their beginnings of sound regulations, are leading the Asia region. And the reason Africa is only seeing limited growth. The Middle East remains an area of untapped potential.

Policy support for renewable energy has definitely gained momentum globally. How long can it be relied upon? A couple of decades – at least in the view of the author.

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