THE APPLICATIONS OF STRUCTURED FINANCE TECHNIQUES TO THE CLEANTECH INDUSTRY

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Introduction

Although there are numerous equity investment opportunities in the cleantech sector both for start-ups and more established companies, the availability of cleantech debt financing has been constrained by a lack of certainty regarding future regulation, a general lack of liquidity in the capital and loan markets, and a shortage of suitable debt financing structures. However, these constraints are gradually diminishing. There is clear growing scientific consensus behind the need to reduce greenhouse gas (GHG) emissions and a number of large-scale national and international governmental financial initiatives have been announced, particularly in the US, the European Union (EU), and China. These initiatives demonstrate that there is a desire to support businesses that are considered to benefit, or be less harmful to, the environment. At the same time, many countries have introduced legislation to reduce carbon emissions and encourage the use of cleaner technology. For example, the United Kingdom (UK) has set statutory requirements for UK GHG emissions to be reduced by 80 percent of 1990 levels by 2050 under s.1(1) of the Climate Change Act 2008.

Despite the lack of progress in negotiations by developed and developing countries to agree to a series of post-2012 global emission targets to follow those in the Kyoto Protocol (which is a protocol to the United Nations Framework Convention on Climate Change (UNFCCC) that sets out emissions targets agreed upon by a number of developed countries and includes various mechanisms intended to reduce GHG emissions in both developed and developing countries, as described below), the growing political consensus in many countries and states to curb GHG emissions has seen the demand and impetus for cleantech grow rapidly in recent years.

The sheer scale of growth in anticipated cleantech investment over the coming years will require the widest range of finance techniques and the broadest base of investors. As noted by Senator Bingaman in his address on the energy priorities of the 112th Congress on 31 January 2011, according to Bloomberg New Energy Finance, new investment in clean energy globally reached nearly a quarter of a trillion dollars in 2010, 30 percent up from 2009, and 100 percent up from 2006. The protections inherent in securitization structures, as well as the proven adaptability of securitization as a financing technique, offer great potential for cleantech businesses. The potential benefits that securitization can provide to the cleantech industry have been explicitly recognised within the EU and also in the US, where the US Department of Energy administers several programs that provide funding (grants, loans, and/or guarantees) for renewal energy and cleantech projects. In many cases, these programs have been created as part of a general stimulus package in response to the recent global economic recession, for example under the American Recovery and Reinvestment Act 2009.

There are clear synergies between the need for economically sustainable green solutions and the expected appetite for long-term investments that will take advantage of a new regulatory and environmental climate. Whether cleantech securitizations raise financing against traditional asset classes, such as trade receivables, or push boundaries by raising financing against new asset classes, such as offset credits, investors can benefit by acquiring exposures matching their risk appetites in diversified portfolios of low-correlated assets.

This article summarises several ways in which structured finance can be used to create and participate in cleantech investment opportunities, focussing on financing techniques that have already been successfully applied to cleantech ventures or analogous businesses, as well as on several more innovative applications which could play a role in the future.

Securitization Overview

Securitization is a form of asset-backed financing that typically involves the sale to a special purpose vehicle (SPV) of assets that convert into cash (or have associated income streams) over time. The transfer to an SPV de-links the credit risk of the assets from other business risks of the selling company. The SPV can then issue tranches of senior, mezzanine, and junior
debt securities to capital markets investors whose securities are repaid out of the cash-flows from the assets. In more or less this form, structured finance has been used by companies for decades to raise debt secured against a remarkably wide range of assets.

**Trade Receivables and Future-Flow Financings**

Trade receivables and future-flow securitizations are two of the most well-established structured finance sectors. Despite significant recent market turmoil, companies continue to raise funding via trade receivables and future-flow transactions, and investors continue to invest in those transactions at reasonable interest rates. Investor confidence in trade receivables and future-flow transactions exists in large part due to the legal and commercial structures of such transactions.

A trade receivables financing typically involves the sale of receivables by a company or a group of companies, to a bankruptcy-remote SPV. The SPV will raise financing in the capital markets, often in the short-term asset-backed commercial paper (ABCP) markets, to pay for the receivables it purchases. Typically, sellers retain their customer relationships by collecting the sold receivables on behalf of the SPV purchaser. By separating the credit risk of the receivables from the many other commercial risks of the selling company's business in this manner, a company can often raise financing at interest rates that are lower than the rates on the company's secured or unsecured bank facilities and bonds. Raising financing on the basis of cash-flows is particularly appealing to companies that may not have many other valuable assets (such as inventories or real estate) against which to raise debt financing. Although up-front transaction costs are generally higher for trade receivables financings than for more basic secured lending, the net savings achievable from these transactions due to lower relative interest costs have seen the market grow to a peak of around $1.48 trillion over the past 20 years. The current size of the ABCP market is estimated to be more than $700 billion.

The full benefits of trade receivables transactions can only be achieved if certain commercial conditions are met. First, the selling company must generate receivables of a determinable and consistent quality. As a result, transactions generally establish eligibility standards for the receivables to be financed, including that each eligible receivable be (a) originated in the ordinary course of business in accordance with the selling company’s credit and collection policies; (b) in compliance with all applicable contractual requirements; (c) billed to the relevant debtor; (d) due and payable in full within a specified period (often 90 to 120 days); (e) governed by the law of an agreed jurisdiction; (f) the legal, valid, and binding obligation of the debtor without dispute, offset, counterclaim, or other defence; (g) denominated in a freely exchangeable currency; (h) assignable without further consent or notice; and (i) capable of assignment free of legal or contractual restrictions.

Second, the selling group must generate a stable stream of receivables over the life of the financing. Normally, trade receivables securitizations are not commercially viable in amounts much less than $100 million because the costs associated with the set-up of such facilities generally outweigh the benefits of lower margins on the financing. International companies (or groups of companies) often structure their trade receivables transactions to sell receivables from several countries, denominated in various currencies, as part of a single transaction. It is not uncommon for these transactions to involve obligors located all over the world, including emerging markets countries. However, the size of the overall asset pool in any particular country must be sufficient to justify the costs of including that country in the transaction. Currency exchange and other limitations may restrict the ability of companies to pay local currency to overseas accounts or otherwise prevent a country from being included in a transaction, although these risks can sometimes be mitigated through country- and obligor-specific concentration limits.

In trade receivables securitizations, the principal amount of the financing will always be less than the aggregate amount of sold receivables in the pool outstanding at any time, with typical advance rates equal to 60 to 80 percent of the aggregate notional amount of the receivables pool. In this respect, trade receivables securitizations are very similar to more
traditional asset-based lending transactions which also rely on a borrowing base to achieve over-collateralization. Trade receivables securitizations customarily recalculate the amount of available financing on a periodic basis, typically monthly by deducting dynamically calculated reserves (which fluctuate on the basis of the trailing performance of the pool) from the constantly changing aggregate notional value of the pool of eligible receivables.

Future-flow securitizations share many characteristics of trade receivables transactions. Companies using this latter technique must also, for example, generate assets of a determinable and consistent quality. However, future-flow securitizations raise finance against assets that have not yet come into existence, thereby enabling the selling company to raise financing equal to some multiple of annual cash-flows (four or five times annual income is typical, depending on the asset type). The cash-flows on the assets are then typically applied over a period of five to seven years or more until the financing is repaid.

In order to qualify for a future-flow financing, the selling company must demonstrate that it will continue to create reliable cash-flows in a consistent manner over the entire amortization period. In other words, investors must be satisfied that the selling company will be able to sell the goods and services needed to generate the necessary volume of receivables over the term of the transaction. In addition, the laws of the country in which the selling company is located must permit it at the outset of the transaction to sell or commit to sell, in a legally binding manner receivables that will only come into existence in the future.

Project companies in the renewables sector have used trade receivables transaction structures as part of a wider security package to raise structured finance. For example, receivables generated from the sale of power generated by wind farms were used in 2006 to raise capital market debt. In the Breeze II transaction, €470 million of long-term capital markets notes were issued by CRC Breeze Finance, a Luxembourg SPV which relied on future cash-flows generated by a portfolio of wind farms in France and Germany to repay the debt. In that transaction, the notes amortise and are scheduled to mature in either 2016 or 2026, with the proceeds being used to refinance existing wind farms and provide financing for further wind farms to be added to the portfolio. The underlying cash-flows used to fund the amortising principal and service the semi-annual interest on the notes come from off-take contracts entered into by grid operators and utilities. By using a securitization structure, the sponsors were able to raise rated debt backed by future cash-flows from a diverse portfolio of 39 European onshore wind farms, with 185 independent turbines built by eight different manufacturers using 14 different turbine models. The wind farms in the portfolio were also spread across several different wind regions (geographic regions with varying wind characteristics) and provide for between 1.5 megawatts to 28 megawatts of capacity each.

Projects involving other types of renewable energy, such as bio-diesel production facilities, hydroelectric generation facilities, and biomass projects (such as methane recovery projects and coal-mine methane recapture projects) offer the potential for trade receivable or future-flow financing structures, which, like wind, may also utilise their ability to reduce GHG emissions to raise increased debt financing (as described below).

Certain renewables sectors such as wind and hydroelectricity have historically been able to secure longer term off-take contracts, and therefore been more suited to this type of financing (being able to demonstrate longer term reliable cash-flows upon which to raise the debt), whilst companies more reliant on short-term contracts have to date not been able to raise as much financing in this way. The development of commodity derivative trading in the renewables sector and the increased number of insurance products in this area offer potential solutions to the volatility of energy prices in the spot market as well as other industry-specific risks. The cost-benefit analysis to determine whether such (and other) hedges should be acquired will be highly fact-specific and can only be undertaken at the time a specific financing is contemplated.

Government support for renewable energy generation across Europe and the US could attract additional
capital markets investors to such financings in a variety of ways. For example, in the US there is bipartisan support for a Clean Energy Deployment Administration (CEDA) to be established as an office within the US Department of Energy (DOE) to provide additional funding to cleantech projects to help bring new technologies to market. Both the Senate and the House of Representatives have drafted Bills to achieve this aim, with the Senate version providing for US$10 billion of capital and the House providing for US$7.5 billion. While one focus of the initiative is to provide credit support for start-up businesses, a stated function of the CEDA is to provide “credit enhancements as well as secondary market support to develop products such as clean energy-backed bonds that would allow less expensive lending in the private sector” (as described in a summary provided by the US Senate Committee on Energy & Natural Resources). The Senate version of the CEDA Bill (the 21st Century Energy Deployment Act) specifically contemplates US government funding for “first-loss” credit enhancement tranches in renewables securitization transactions.

As well as direct credit support for renewable energy and other cleantech projects, fixed or subsidized feed-in tariffs for electricity generated by renewable sources in support of the price of energy generated by renewables projects could make more projects viable and are recognized by many as the most stable mechanism for providing support for renewable energy projects. Such tariffs have been introduced by many countries across Europe, as well as Asia and Africa. In Spain, for example, the government subsidizes feed-in tariffs for certain projects that generate electricity using wind farms, and payments are guaranteed for the lifetime of the technology under the Royal Decree 661/2007. A recent example of how a renewable energy securitization could make use of feed-in tariffs is the Andromeda Finance transaction launched in December 2010 by BNP Paribas and Societe Generale. This transaction is the first solar power project securitization involving the purchase by an issuer SPV (incorporated under Italy’s securitization laws) of two secured term loans made to a borrower SPV which in turn granted security over its project assets. The underlying asset is SunPower’s 51MW Montalto di Castro solar PV plant project in Italy, and the financing is structured with approximately 73 percent of the project revenues being generated by a feed-in tariff that is fixed throughout the duration of the project and paid for by a government-related entity, and the remainder provided by revenue based on hourly zonal electricity prices. The project is fully amortising over an 18-year period and a seasonally adjusted repayment schedule (75% of the plant’s annual power generation occurring between April and October), with the €100m A1 Notes rated Aa2 and the €100m A2 Notes rated Baa3. The superior rating of the A1 Notes reflects the guarantee provided by an Italian credit insurance provider in respect of the A1 loan (which backs the A1 Notes). As well as credit insurance from third parties or sponsors, government support in the form of feed-in tariffs and guarantees may also increase liquidity in the secondary trading market for renewables securitization bonds, with tariffs and guarantees providing greater certainty of cash-flows for a project. As an alternative to tariff regimes, the UK Government (for example) has introduced the Renewable Obligation Certificate (ROC) whereby certificates are issued to renewable energy projects which themselves can be traded to generate additional cash-flows. Finally, renewables-based tax incentives could provide a further stimulus to these types of structured financings by offering investors more attractive returns.

**Intellectual Property Securitizations**

A less utilised, but potentially highly effective structured financing technique involves securitizing future payment streams generated by intellectual property (IP) rights such as trademarks, copyrights, and patents. A cleantech business with valuable IP rights can raise structured finance against such rights even if it does not license out those rights to third parties. Consolidating intra-group licensing agreements is a productive way of unlocking value in group IP rights if structured in a tax-efficient manner. The right to receive payments in respect of the IP rights, whether under intercompany or third-party licence agreements, can be sold to a SPV which in turn issues capital markets debt secured over the underlying contractual rights. In this manner the future value of the licence agreements can be realised by a business to provide an immediate source of funding.
As with trade receivables securitizations, and in common with some other structured finance arrangements which utilise a “true sale” mechanism, the de-linking of the relevant cash-flows from the general corporate risks of the IP users through the transfer of rights to an SPV can offer advantages over alternate financing methods. An IP securitization can provide an owner of IP rights access to capital markets at lower interest rates, while simultaneously permitting it to retain and receive the residual value of such rights through, for example, subordinated debt or equity investments or, where appropriate, servicing fees. Various forms of credit enhancement (such as subordinated loans or guarantees) can be introduced to obtain credit ratings on the bonds being issued. Although particular legal challenges are posed by this asset class in various jurisdictions, and a proper understanding of the value of the IP rights is critical, the potential benefits that can be generated by a correctly structured transaction of this kind are significant.

Greenhouse Gas Emissions

For many businesses throughout the world, the emission of GHGs now has a direct economic as well as an environmental cost. With the establishment of cap-and-trade schemes in many areas of the developed world pursuant to the Kyoto Protocol, as well as various national and local schemes across the US (e.g., the Regional Greenhouse Gas Initiative and the Western Climate Initiative (WCI) and signs of progress in the establishment of emissions markets in China, markets have developed and are continuing to develop for the buying and selling of GHG emissions credits, most notably carbon dioxide (CO₂) (principally the EU Emission Trading Scheme (ETS)). Although the methods for distributing emissions credits within and between trading schemes vary, there is a general trend towards auction processes, typically involving multiple rounds with a gradual reduction in the aggregate number of permits that can be bought at auction and then traded in the market.

Although there is no international legal framework, new GHG emissions markets are being established nationally (such as the CRC Energy Efficiency Scheme, formerly known as the Carbon Reduction Commitment, in the UK) and intentionally and therefore it seems likely that the market for trading emissions credits will grow significantly over the next 10 years. It is possible that this will be driven by established platforms like the EU ETS which may have the capability of building an OECD-wide carbon market by linking the EU ETS with other comparable cap-and-trade systems, with efforts being made to expand the European market to include major emerging economies by 2020 with a view toward building a global carbon market.

As markets for GHG emissions mature and merge, and particularly if post-2012 commitments are agreed, it is likely that the price volatility affecting GHG (in particular CO₂) emissions will reduce in the long term. Moreover, as emissions caps decrease, the price of emission credits should increase. While it is beyond the scope of this article to address the economics of climate change, several studies of the volatility of the cost of CO₂ emissions (such as the discussion paper by The Brattle Group in January 2009 entitled “CO2 Price Volatility: Consequences and Cures”) have already calculated the price levels necessary to support alternate sources of energy on a competitive basis compared to fossil fuels.

The development of a market for GHG emissions not only affects the way that companies which are subject to emissions caps run their businesses, but it also gives rise to a new set of financing opportunities for those businesses that can generate excess emissions credits under allocation schemes or that can generate credits through emissions reductions which can themselves be traded pursuant to mandatory compliance-based systems or pursuant to a voluntary trading scheme.

Since the late 1980s when the first voluntary offset project scheme was launched, established markets have developed for the secondary trading of GHG emission reduction credits, or offsets. It is important to recognise the differences between (a) mandatory compliance-based systems (whereby these types of credits can be used by participants to offset their emissions and reach prescribed targets); (b) the voluntary but regulated markets (e.g., the Chicago Climate Exchange (CCX) was a voluntary but legally
binding cap-and-trade scheme but closed in 2010 due to prices falling to unsustainable levels); and (c) the non-binding over-the-counter offset market (through which participants can purchase offset credits to demonstrate an ethical commitment to climate change and meet Corporate Social Responsibility objectives, for example). Each of these three approaches creates a valuable asset class for businesses that demonstrate reduced GHG emissions.

As mentioned previously, a wide range of projects may qualify for offsets that can be traded under one or more established markets, whether in the US (through initiatives such as the Regional Greenhouse Gas Initiative (RGGI) or the EU (through the ETS) or for those projects which may not qualify for such formal schemes, through the growing voluntary market. Although each of these different sources of offset credits provides an asset class against which debt may be raised, the EU ETS seems the most likely source of a credit-backed securitization in the immediate future, given its size, liquidity and more developed regulatory framework.

Emission reduction purchase agreements (ERPAs), by which emissions reduction credits can be sold under the framework established under the Kyoto Protocol, are often structured to provide for a prepayment of the emissions reductions credits (whether (i) in the form of certified emissions reductions (CERs) issued by the UN Clean Development Mechanism (CDM) Executive Board for emissions reductions from GHG-offsetting projects in the developing world or (ii) credits issued through “joint implementation” (JI) projects in nations subject to emissions caps (e.g., the former Soviet Union countries) or (iii) credits issued under the EU ETS) against project milestones. Various structuring elements can be used to mitigate against uncertainty in project delivery or fluctuating carbon prices, including covenants and representations which trigger repayments or liquidated damages, and shortfall cash payment obligations into designated controlled accounts. The on-sale proceeds of the emissions reduction credits can themselves be securitized, together with a sale of related contractual rights and security interests in the underlying project.

As with the wind-farm portfolio transaction described above, the use of a diverse portfolio of credit-generating projects provides a more realistic prospect for a rated capital markets securitization transaction. By pooling together allowances into a single SPV that can issue tranched debt, investors may benefit from exposure to a range of projects and project types and therefore reduce potential correlation risk (i.e., the risk that defaults across a portfolio of assets will be correlated due to shared characteristics and exposure to common risks) between industry sectors, as well as mitigating country-specific risk (such as the risk that a regulatory regime in a country may change due to the political environment or otherwise). Sustainable Carbon Finance, an SPV launched in 2007 in partnership by Credit Suisse and Sustainable Forestry Management (SFM), uses a range of carbon credits produced from a portfolio of sustainable forestry companies as an asset class on which to issue debt securities. As well as emissions reduction credits, the transaction also utilizes “avoided deforestation credits” (an alternate system of offset credits intended to provide an incentive to retain existing forests, rather than the more traditional carbon sequestration credits). Other structured transactions using carbon credits to raise debt have sought to utilise portfolios that are both geographically and technologically diverse (i.e., rely on a range of different renewable technologies), such as the structured sale of over five million CERs by EcoSecurities and Credit Suisse on 21 December 2007 (which was significant due to the number of CERs made available to buyers and the opportunity for them to participate in the CDM while getting exposure to a range of projects), and the Standard Bank/Camco transaction in 2008 (which involved a sale of CERs on a similar scale, this time generated by nine CDM projects in China, and was also reported to involve an innovative commodity finance structure to provide a limited recourse up-front payment to Camco of €15 million).

Although offset credits may be used as the sole asset class backing the issuance of debt, it is perhaps more likely that these credits will be used by the borrower in a structured transaction as an ancillary source of revenue to supplement income generated from trade receivables or future project cash-flows, and/or to provide additional collateral to support a rating on one or more classes of notes being issued. A developed market in carbon-linked derivatives may also provide hedging and liquidity support to a structured transaction that would otherwise be exposed to fluctuations in carbon prices. As with the alternate
structures described previously, government support for these types of structures through the provision of credit enhancement by government guarantees, or even the provision of investment by way of subordinated debt or equity in the financing capital structure, as contemplated in the US, would provide further impetus to use these products.

Conclusion

The need for investment in the cleantech sector is growing rapidly. As cleantech develops over the coming years and investors increasingly look for more diverse investment opportunities with less correlation risk, the ability of cleantech businesses to harness the full range of established finance techniques to access the capital markets will be crucial. Although fluctuating carbon prices and complex procedural requirements in the application processes for emissions reduction credits have restricted the growth of parts of this market to date, these challenges are being addressed in increasingly innovative ways and look set to be met with focused government support around the world. Mandated minimum cleantech production levels are already in place across the developed world, and while progress towards a greater global consensus has been slower in recent years during a period of economic recession, progress was made in this regard by the UNFCCC in the Cancun Agreements signed in December 2010, providing further impetus to the development of this sector. This is only the beginning of a new era of growth in the volume and variety of cleantech financing.

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