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ABA SECTION OF ENVIRONMENT ENERGY AND RESOURCES

Energy and Environmental Markets and Finance Committee Newsletter

Vol. 2, No. 2 **August 2011**

MESSAGE FROM THE CO-CHAIRS

The Committee has completed a successful and busy year as we shifted our narrow focus from Carbon Trading and Energy Finance to the more integrated and comprehensive content of Energy and Environmental Markets and Finance. We updated our webpage for the Committee and are working on feeding fresh and more current website content. We offered two quick teleconferences this year, and co-sponsored or chaired another half dozen webinar programs through the ABA and ACORE. We also collaborated with the American University Washington College of Law in its Hot Air Show with almost 5 interview episodes now available on YouTube. We have increased our publications activity; this is our third Committee newsletter this year and we are studying new and expanding offerings. Our Year in Review was incisive covering some new breaking areas, including the Dodd-Frank Act and energy service companies. Our Committee meets monthly now and conducts a joint call with all members every other month on new, fast breaking topics with a hard hitting topical review of 15 issues in an hour to update our members.

Our year has centered on service, and expanded collaboration. That service is to our members and the stakeholders we serve. That collaboration has been with the ABA SEER Section, other SEER committees, companies, government agencies and legislative committees, state bars, and law firms. We are committed to expand and meet their needs in evolving and changing markets.

Looking ahead to the upcoming year, you should look for more work from the Committee on third party financing, energy efficiency, Dodd-Frank Act implementation, national clean energy standards, solar contracting and standardization, project financing post ARRA of 2009, renewable energy certificates, and international markets.

Thank you for your trust and cooperation as we serve as your stewards in this area. We are grateful for the fine work of our Committee members and the Vice Chairs who make the Committee one of the most active and engaged in the ABA SEER Section.

Best wishes for a happy summer,

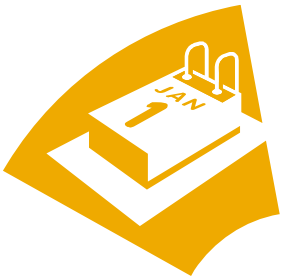
Michael J. Zimmer, Co-Chair
C. Baird Brown, Co-Chair

If you are interested in writing an article for future editions of this newsletter, please contact **Kim Diamond**, Vice Chair at kdiamond@lowenstein.com

Energy and Environmental Markets and Finance Committee Newsletter
Vol. 2, No. 2, August 2011
Kim Diamond, Editor

In this issue:

AMERICAN BAR ASSOCIATION
Section of Environment, Energy, and Resources



Upcoming Section Programs—

For full details, please visit the "Events & CLE" link on our Section Web site:

www.americanbar.org/environ/

August 24, 2011
Siting Wind Power Facilities: Cape Wind and Beyond
Live Webinar and Teleconference

September 20, 2011
Key Environmental Issues in U.S. EPA Region 1
Boston, MA

October 12-15, 2011
19th Section Fall Meeting
Indianapolis

October 18-19, 2011
Western Conference of the Bench & Bar
Primary Sponsor: The United States Court of Federal Claims
Berkeley, CA

February 22-24, 2012
30th Annual Water Law Conference
San Diego

March 22-24, 2012
41st Annual Conference on *Environmental Law*
Salt Lake City

THE APPLICATIONS OF STRUCTURED FINANCE TECHNIQUES TO THE CLEANTECH INDUSTRY

JP Sweny, Mark Nicolaides, and Felipe Alviar-Baquero

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 monthlyby 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 (CO_2) (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 CO^2) 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 CO_2 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 focussed 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 CancunAgreements 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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NEW ASTM STANDARD COULD CHANGE THE FACE OF TRANSACTIONAL DUE DILIGENCE

Mark J. Bennett, David J. Freeman, and Anthony J. Buonicore

In February 2011, ASTM (formerly known as the American Society for Testing and Materials) published its Standard Practice for Building Energy Performance Assessment, E2797-11 ("BEPA Standard" or "Standard"), whose goal is to provide consistency in the way building energy use data are collected, analyzed, and reported.

The Standard may soon become a staple of transactional due diligence in light of the dramatically increasing attention being focused on building energy use. If so, it will be playing the same prominent role in due diligence that the ASTM standard for Phase I Environmental Site Assessments does for identifying a site's hazardous substance concerns. The Standard may become especially important in jurisdictions—such as the State of California, New York City, San Francisco, and Washington, D.C.—which require public reporting or transactional disclosure of buildin g energy use data.

The Problem

Buildings in the United States represent more than 40 percent of total US energy consumption, with almost half of that attributable to commercial real estate. Moreover, approximately 36 percent of electrical consumption is attributable to commercial real estate. Study after study has demonstrated that improvements in building energy efficiency are the "low-hanging fruit" in reducing greenhouse gas emissions and our dependence on fossil fuels, providing a far greater return on investment than funds expended to increase solar power, wind energy, or automotive gas mileage.

Accordingly, policy makers have begun to focus on promoting building energy efficiency as a policy area that can yield short-term results, is highly capital-efficient, and can act as a fiscal stimulus by creating green jobs. These policy approaches are increasingly being implemented by building energy performance labeling requirements, mandatory benchmarking, and laws that require an owner to disclose the building energy use and/or benchmark it against a relevant peer group, either on an annual basis or at the time of a building's sale, lease, or financing.

However, to date there has been no standard way of measuring buildings' energy efficiency. For example, there is no standard period of time over which energy use information should be collected; how partial month data should be calendarized; or how to account for renovations, weather conditions, building operating hours, or vacancy rates. The result is that building energy efficiency measurements are not useful indicators of how a building actually performs, or how its efficiency compares to that of similar buildings.

The most widely used measure of energy efficiency currently is the Energy Star Portfolio Manager Benchmarking Tool (Energy Star). This tool, developed by the US Environmental Protection Agency, purports to benchmark buildings by giving them a numerical rating based on a database of buildings of the same type. However, Energy Star has relatively limited inputs and does not adjust for any of the above-mentioned factors. Furthermore, it uses a relatively small national database that was last updated in 2003 and contains only approximately 5,200 buildings. The database attempts to adjust for performance differences between buildings due to local conditions (for instance, a building in Minneapolis will have different energy performance characteristics than a building in Houston), but does so in a non-transparent way. The ranking process itself is a "black box": after the data are entered, a numerical ranking from 1 to 100 emerges, without any explanation of what factors caused the ranking to be high or low Accordingly, there exists a strong market-driven need to have an objective and standardized way to measure buildings' energy performance—one that considers all relevant inputs, is fully transparent in its operation, and whose output will be meaningful to building owners, operators, lessees, and others interested in a buildings' or portfolio's performance from an energy efficiency standpoint.

The ASTM Standard

In response to this market demand, ASTM convened a Task Group in April 2009 to develop a consensus-based standard for measuring building energy efficiency. Among the Task Group's more than 220

members were architects, engineers, building owners and managers, investors, energy equipment and software providers, bankers, and attorneys. Over the course of more than two years of meetings and ballots, the Group developed an industry best practice methodology, the goal of which was to allow for data to be collected and analyzed on a technically sound, consistent, transparent, and practical basis. The final Standard was approved in January 2011 and published in February 2011.

The Standard is organized around three basic elements: data inputs, analysis, and outputs. The data inputs are very straightforward. They include a building's

- name, address, and building type;
- description (including construction, number of floors, and percentage of floor area heated and air-conditioned);
- gross floor area;
- year of construction;
- year of last major renovation;
- energy use data for the prior three years;
- energy cost data for the prior three years;
- occupancy rate;
- operating hours; and
- climate information (heating and cooling degree days over ten year period in the building's immediate geographic area).

After collection of the required data, the following calculations must be performed:

- determining the building's electric consumption in kilowatt hours and kilowatt hours per square foot per year and, using a conversion factor, the same data expressed as BTUs per year and per square foot per year;
- determining the on-site (e.g., natural gas, heating oil) fuel usage in BTU units per year and per square foot per year;
- adding to these calculations the energy used by the building from "district" (e.g., steam) and alternate energy systems;
- multiplying the building's total energy use by an "energy cost multiplier" (determined by the twelve-month trailing costs of each type of energy, normalized to dollars per BTU);
- determining the operating variables which can affect building energy use and costs, including weather conditions, operating hours, occupancy rate, and number of occupants;
- doing a statistical analysis of these independent variables at the 25th, average, and 75th percentile values;
- calculating building energy usage and cost using the monthly average for each of these independent variables, as well as at the 25th (lower limit) and 75th percentile (upper limit) values; and
- calculating the average, upper limit, and lower limit building energy cost range by multiplying the resulting energy use figures by the energy cost multiplier.

At the end of this analysis, the owner, prospective owner, or other person who commissioned the BEPA study (in ASTM parlance, "the User") will have the following outputs:

- a pro forma (representative) energy use figure for the building;
- a pro forma (representative) annual energy cost for the building;
- a range of possible energy usage (lower and upper limit) figures;
- a range of energy cost (lower and upper limit) figures; and
- energy use intensity for average, upper, and lower limit conditions.

The Standard includes a series of appendices that provide additional supporting information for users of the BEPA methodology. One of the appendices identifies building characteristics with a significant impact on energy use for major property types. Another provides a sample commercial building survey checklist. There is also an appendix which provides an illustrative example using the myriad calculations that have to be made using the BEPA methodology.

If this sounds a bit complicated, that's because it is. Accordingly, we expect most of this work to be done by engineers and/or consultants who not only know something about energy usage but also are trained in statistical analysis.

Use of the BEPA Standard

The Standard is finding use in the marketplace today in a number of areas. In asset management, properties in portfolios are being evaluated using the Standard's methodology, generally in combination with an energy audit. Those that consume more energy than their relevant peer buildings, and those properties which can be most cost-effectively retrofitted, are given priority for further evaluation and/or capital expenditures.

Lenders are beginning to use the Standard to facilitate energy efficiency lending to their commercial building owner customers. The Standard is also being used for quality assurance and quality control purposes in building energy use data collection, compilation, and analysis.

Finally, the Standard is being used increasingly in connection with laws in a number of jurisdictions—prominently, the State of California, New York City, San Francisco, and Washington, D.C.—that require disclosure of energy information either on an annual basis or in connection with sales or lease transactions. While these laws typically require benchmarking according to the Energy Star rating system, BEPA is being used to standardize calculation of inputs to Energy Star. Users are supplementing Energy Star benchmarking by also performing a BEPA analysis to give what many consider a fuller and more accurate picture of the energy performance of the building(s) in question.

Legal Implications of BEPA

It is clear that the Standard is an important new tool for building owners, operators, lessees, lenders, and others interested in building energy performance. What is of most interest to lawyers, however, is how its emergence will affect transactions, relationships among parties, and legal liabilities.

One of the key legal issues relates to the completeness of the data set being input into the BEPA analysis. As the above description makes clear, the Standard requires a significant amount of data and data gathering. Not all this information will be readily available, or will be available at all. Some data (for example, occupancy rates, number of employees, or hours of operation) could be commercially sensitive. Some is simply not available to Users—e.g., energy use information for separately metered tenant spaces. Without access to the underlying data, a BEPA cannot be performed.

Does a tenant or other non-User have a legal obligation to supply this data to someone who would like to undertake a BEPA analysis? In many cases, the answer is no. Lease terms typically do not require tenants to provide this information to a landlord. In jurisdictions that require benchmarking, there may be a legal requirement for the tenant to make this information available; however, there is typically no effective sanction for a tenant's failure to do so. Obtaining such information thus involves a combination of exhortation, negotiation, and invocation of lease terms (e.g., "compliance with law" provisions) that arguably create a legal obligation on the tenant's part to provide the information necessary for these calculations.

A second legal issue involves insuring the accuracy of the results. That accuracy depends, in large part, upon the competence of the individual or firm performing the BEPA. As noted above, that effort will require a number of different types of expertise. However, unlike the Phase I Environmental Site Assessment Standard, the BEPA Standard is not very prescriptive regarding the qualifications required of the consultant to perform this work. Accordingly, great care must be taken in assuring that the person or firm chosen has the requisite training and experience. Choosing the right consultant will go a long way toward minimizing liability issues surrounding use of the Standard.

A third important legal issue concerns the confidentiality of the inputs to and outputs from the BEPA process. As noted above, the data collected for a BEPA may be proprietary. Moreover, the results of the calculations may be even more sensitive, especially if they are unfavorable. How can these materials be protected from disclosure?

The first step is, obviously, to make sure that the person in charge of the BEPA is working under the direct supervision of an attorney, with the express goal

of helping him or her provide legal advice. With appropriate documentation of those arrangements, the results of a BEPA would, at least arguably, be protected under the attorney-client privilege. Contractual provisions in leases and sale agreements should require not only that the necessary data be made available, but also that its confidentiality (as well as, if appropriate, the confidentiality of any outputs) be protected to the extent legally possible to do so. Another approach would be to provide that only the consultant (rather than the User) have access to sensitive information. While the outputs would be made available to the buyer, lender, or landlord, the inputs would be kept confidential.

Yet another issue is the legal exposure, if any, to User for a "misleading" disclosure based upon use of the Standard. If properly used, we judge these risks to be minimal, for at least the following reasons:

- The Standard does not purport to "rate" a building or compare it to any other; it merely provides a consistent methodology for measuring data, and the data "is what it is."
- The Standard was developed openly, by a broad-based group of experts.
- The Standard protects Users and consultants by making clear that they are entitled to rely on any data provided by others.
- There are numerous disclaimers within the Standard itself, including that it must be used in conjunction with professional judgment, that it is not a standard of care, and that in utilizing BEPA a building's "many unique aspects" must be considered.

BEPA uses a quality-controlled set of inputs, which are then analyzed in a transparent way to provide objective information about the past and expected future energy performance of the building(s) in question. Accordingly, use of BEPA may prove to be a "safe harbor" against potential claims of inaccurate reporting of energy performance information to a regulatory agency purchaser, lender, or other transaction stakeholder

Nonetheless, it is still possible for the BEPA outputs to be disclosed in ways that make them misleading. It is therefore important for Users to be aware of the limitations of the data and the caveats contained within the Standard itself in making any such disclosures.

Conclusion

ASTM's BEPA Standard is an important new tool for building owners, lessees, lenders, and potential purchasers to determine building energy performance. As such, it is likely to become a standard part of due diligence in any transaction involving buildings. Moreover, it will likely see significant use in the increasing number of jurisdictions that require periodic reporting of building energy use or disclosures of such use in the sales or lease transactions.

The preponderance of the work in implementing BEPA will be performed by engineers or consultants. However, its use will require careful thought by attorneys regarding issues such as assuring availability of the data inputs, protecting the confidentiality of inputs and outputs, and making sure the results are disclosed in ways that are not misleading. Knowledge of the Standard and advance planning as to these issues will be essential if the BEPA process is to proceed smoothly and provide maximum benefit and protection to all parties.

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STEPS INTO THE FUTURE OF CDM: OUTCOMES OF THE CDM EXECUTIVE BOARD'S 60TH MEETING

Monica Samec

I. Introduction

The Clean Development Mechanism (CDM) has come a long way from when the US delegation to the United Nations Framework Convention on Climate Change (UNFCCC) in Kyoto, Japan, first introduced it in 1997. The concept was deceptively simple: a method in which developed countries participating in the Kyoto Protocol could reduce global carbon emissions by investing in more cost-effective emissions reductions in developing nations, while assisting those developing nations in achieving sustainable development. Fourteen years later, the CDM serves as an accreditation body for nearly 700 million tons of CO_2e (carbon dioxide (CO_2) equivalent, including non-CO_2 greenhouse gas (GHG)) emissions each year, over 1,000 registered projects, and over 6,000 projects in the registration process (see http://cdmpipeline.org). However, critics, supporters, and even United Nations (UN) Climate Chief Christiana Figueres consider the CDM a "work in progress."

II. Overview of Groundwork the CDM Executive Board (CDM EB) Achieved at Its 60th Annual Meeting

The challenge remains to reduce bureaucracy and increase the relatively narrow scope of projects that currently can be registered with the CDM EB while ensuring the integrity of actual emissions reduction. As a result, the CDM EB is laying the groundwork to increase accreditation of a larger number of emissions reduction projects and other types of projects, including projects that address the establishment of new forests (afforestation) and the re-establishment of previously existing forests (reforestation), more decentralized or replicable projects, and Small Scale CDM projects.

At the heart of this groundwork-laying process is the CDM EB, which oversees a number of working groups dedicated to specific issues - such as afforestation, Programme of Activities (PoAs), and Small Scale CDM projects - and gives final authorization for what becomes official CDM policy. In particular, one of the CDM EB's duties is approving and revising a growing number of methodologies that lay out the rules by which projects can gain accreditation.

The CDM EB usually meets three or more times a year. The 60th official meeting (60th CDM EB Meeting) took place in Bangkok, Thailand, on April 11 - 15, 2011. The steps forward made at this meeting in the areas of afforestation, reforestation, PoAs, and Small Scale CDM projects provide a snapshot of the progress being made in these areas.

A. Afforestation and Reforestation

Currently, land use change (mainly deforestation, the removal of a forest whereafter the subject land is converted to a non-forest use) accounts for approximately 17 percent of man-made GHG emissions. Rules for measuring and reducing these emissions through afforestation and reforestation have become a priority in recent years. Accounting for carbon stocks and carbon flows from forests (i.e., the amount of carbon matter that is stored and flows in and out of forests) is a non-trivial matter, and has been treated with caution in UNFCCC proceedings.

The first-ever methodology for reforestation was revisited at the 60th CDM EB Meeting. Several processes were amended to improve estimations of carbon stocks or flows relating to the burning of bushes, organic soil, and shrubs. The CDM EB also approved a methodology for a more general type of land category: namely, lands that are not wetlands. Finally, this Meeting launched a plan to consider whether continuous forest inventory techniques could be applicable for the purpose of project activities verification (the Plan).

B. Small Scale CDM Project Activities

Project-based CDM is divided into two main categories: Large Scale CDM projects (of which afforestation and reforestation are a subset) and Small Scale CDM projects. The reason for this distinction is so that procedures realistic for the project's scope can

be developed. Development of new methodologies by the CDM EB's Small Scale Working Group, rather than project developers, is one of the four main elements in the CDM EB's Plan.

C. Five New Methodologies Developed

The 60th CDM EB Meeting's main highlight was the approval of the following five methodologies the Small Scale Working Group developed. Revisions to these methodologies were also made to clarify or simplify already-approved methodologies for improved cookstoves, waste energy recovery projects, and energy efficiency measures through centralization of utility provisions of industrial facilities. FThe following is the list of such methodologies, and a brief explanation of each:

(i) Efficient Driving Patterns in Commercial Freight Transport Fleets

Use of a digital tachograph, a device that records a vehicle's speed over a fixed period of time (generally a 24-hour period), is an established way of tracking vehicles - particularly transport trucks - and encouraging fuel efficiency. This device is mandatory for certain buses and transport trucks in some jurisdictions such as the European Union, mainly for enforcing required working hours and rest times for drivers. The digital tachograph functions by tracking Engine RPM, vehicle speed, and GPS-linked time and location. It also provides instant feedback for drivers, as well as periodic reports available to users for performance evaluation.

(ii) Emissions from Rice Cultivation

Methane from rice cultivation accounts for 8 percent of all global GHG emissions, mainly due to the methane emitted from flooded rice fields during the growing season. The methodology for tracking methane emissions from rice cultivation not only has large potential for actualizing GHG emissions reductions, but is also the first agriculture methodology of any kind to be approved for CDM qualification. Methane emissions from rice cultivation can be reduced by such measures as changing water regimes during the growing seasons, changing other cultivation methods, and switching from directly seeding the rice to transplanting rice seedlings that were raised in a nursery bed for 20 - 30 days. Emissions reductions are estimated through logbooks that rice farmers are required to keep, wherein details such as crop yield, water regime, sowing date, and date and amount of fertilizer application are provided. Scientific methane emission measurement stations are used for quantifying methane emissions for these rice fields.

(iii) Solar Water Heating Systems (SHWS)

This methodology is intended for commercial and residential SHWS <1000 m² in places where water heating using fossil fuels is normally used. Annual SHWS inspection is required, except for residential systems which may have biennial inspection with higher precision.

(iv) Demand-Side Activities for Outdoor and Street Efficient Lighting Technologies

Outdoor lighting accounts for 8 percent of all global lighting annually. Demand-side methodology is a process to reduce energy use. This methodology focuses on public utility-owned systems (new or upgraded) of more efficient and/or renewable powered outdoor lamps. The reductions in energy saved are calculated by taking the difference between the amount of energy used between new lamps, and the amount of energy used by the baseline lamps.

(v) Low GHG-Emitting Water Purification Wystems

Approximately 884 million (mainly rural) people do not use improved sources of

drinking water, according to the 2010 Joint Monitoring Programme report of theWorld Health Organization and United Nations Children's Fund**.** Proceeds from the sale of carbon credits could be used to finance water filters, solar energy-powered ultraviolet disinfection devices, photocatalytic disinfection equipment, and pasteurization appliances for such people. The CDM EB called for public inputs on two of the most controversial aspects of the methodology: (1) the appropriateness of a cap of 5.5 L of purified water per day per person (the minimum requirement for survival) and (2) the appropriateness of instituting a minimum threshold requirement for determining the amount of people in a rural population who may use/have access to an improved drinking source.

D. Revised Guidelines for Additionality

There was a further revision of the guidelines for additionality (i.e., providing credible evidence that the programme or projects would not happen without the financial incentive of the CDM) for microscale (<20,000 tCO_2e) projects. Proving project additionality is normally required for all CDM projects and can be quite complex.Additionality is now assumed for micro-projects in LDCs (Least Developed Countries), underdeveloped zones, or off-grid areas in developing countries. It can also apply to projects for distributed renewable technologies, where end users are households, communities, or SMEs (Small Medium Enterprises) if the independent subsystems or measures result in emission reductions of less than 600 tons/year The CDM EB decided that additionality would also be applicable to multi-component programme activities (CPAs) and appropriate traditional CDM projects, but would not apply to the additionality requirements of the overall Programme of Activities (PoAs), as described below

III. Programme of Activities (PoAs)

As an alternative to project-based CDM registration, the PoAs method for registration is a newer method that allows for accreditation of a system of projects, in which each project can be added through a simpler process under CPAs. The main objective of a PoAis to unlock the reduction potential that was previously made uneconomic by higher transaction fees. The idea for PoAs was first introduced in 2005, and the first PoA project registrations with the CDM EB were approved in 2010. Eight PoAs had been registered at the time of the 60th CDM EB Meeting.

In early 2011, the Executive Board launched a general a call for public input on PoAs. This endeavor focused on possible alternative concepts, the barriers in the current rules, and additional rules needed. The resulting comments from such public input were somewhat critical, suggesting improving and scaling-up the existing PoA concept to developing an alternative.A detailed analysis of the comments was presented at the 60th CDM EB Meeting, as were a defined number of places for improvement in the PoAs system.

The highest number of comments received on PoAs focused on the additionality requirement. Predominant concerns focused on the need for clarifying whether additionality should be established at the top PoA level or for each CPA; whether individual projects should be allowed to commence before the validation of all related PoAs; and whether microscale additionality should be allowed for a PoA.

IV. The Role of Designated National Authorities (DNAs) and Designated Operational Entities (DOEs)

DNAs are appointed by each developing nations' government to serve as a check that CDM projects in such country meet sustainable development criteria in a locally defined context. In the call for public inputs, a number of DNAs requested clarification on three main issues:

(1) whether PoA host parties can be added after CDM project registration;
(2) the impacts of the withdrawal of a country's Letter of Approval (which confirms that the project meets the host country's sustainable development criteria); and

(3) guidance on the expectations and criteria for evaluating sustainable development for individual projects in a PoA.

DOEs, the independent companies that audit projects to ensure that they have been carried out as agreed in their initial documentation, have always carried the bulk of PoA liability. Open-endedness in terms of PoA liability is a particular concern for DOEs. This issue was addressed by requests for shared liability between specific DOEs and the managing entity for a PoA. The CDM EB clarified that the only additional liability that a DOE may take on when evaluating a PoA is for errors made regarding the inclusion of new CPAs.

Once approved, a PoAshould, in theory, be able to add appropriate CPAs with relative ease. However, an outcome of the 60th CDM EB Meeting was that clarification is still needed regarding eligibility criteria, scope of CPA inclusion, and sampling as a tool for project monitoring. Going forward, pre-set standards for some of these issues, and better articulation of the entire project cycle, can be expected from future committee work.

V. Conclusion

In the 14 years of development of the CDM, significant firsts are still occurring, as evidenced in the 60th meeting of the CDM EB. Opening up the potential for agricultural emissions reductions, such as rice cultivation, could be a critical point of access for LDCs, as agriculture makes up a large portion of many LDCs' current emissions. Similarly, the contribution towards afforestation and reforestation of lands other than wetlands can provide incentives that were previously unavailable to developing nations to rebuild their forest cover. Finally, assumed additionality for microscale projects in LDCs reduces transaction costs, which are a significant barrier in Large Scale CDM projects. Follow-up meetings by both the Small Scale Working Group and the CDM EB should enable additional methodologies for emissions reductions projects to be approved and revised.

Yet, as the CDM continues to evolve, the question remains as to what degree it will be needed. While it is an integral tool to the Kyoto Protocol, the first commitment lasts only to the end of 2012After that time, only the European Union's Emission Trading System (EU ETS), a cap-and-trade system, has stated it will accept CDM post-2012, and then only from projects in LDCs. Thus, while concrete steps for the future of CDM may be taken, CDM's ultimate destiny has yet to be charted.

Note: The CDM Executive Board has begun publishing summaries of all proceeding meetings. The summaries can be accessed at http://cdm.unfccc.int/Reference/EB_Summary/index.html

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