Using carbon credits to create greener real estate investments

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Background on Emissions Trading

Emissions trading regimes are a relatively new policy instrument used by governments within the US, EU and other states to lower the private sector costs of compliance with various environmental pollution or emission reduction mandates.[1] Environmental trading regimes are unique in that they create and leverage the power of markets and the pricing mechanism to find the most cost effective means of reducing emissions, in contrast to best available technology models which specify that all businesses within an impacted sector utilize the best available technology.

Within the US, emissions trading regimes were developed for sulphur and nitrogen oxides, utility emissions that are precursors of acid rain. Under emissions trading programs, companies that are direct emitters of NOX and SOX are required to reduce their emissions by a proscribed amount each year. If they find it uneconomical to do so, they are required to purchase a credit to offset their regulatory requirement from another organization that has reduced its NOX or SOX emissions by more than their requirement.

In the US, use of an emissions trading system has resulted in significant (over 30%) reductions of SOX and NOX emissions from their baseline when the 1990 Clean Air Act

[1] For further information on multinational emissions trading policies: see Crals and Vereeck (2005).

amendments were adopted.[2] The system is limited to companies such as utilities that are major direct emitters of NOX and SOX, and excludes indirect users of energy such as buildings whose demands cause the emissions.

As part of its commitment to address climate change under the Kyoto Protocol, many EU countries have created an EU Emissions Trading System modeled in part on the US SOX and NOX markets. The EU ETS is limited to carbon dioxide emissions and excludes the other greenhouse gases at present.

Within the EU system, which has been live since 2005, the price of carbon offsets is now approximately €16; its range has been from €5 to €30 from its inception in January 2005 through July of 2006.[3]

The EU Emission Trading System, like the US NOX and SOX system, focuses mandatory regulation on the "tall smokestacks" in the industrial and energy sectors, and therefore does not provide any direct incentive for building owners and operators to reduce their GHG emissions. Within the US, GHG emissions associated with provision of electricity, heating and cooling of buildings, not including any of the energy required to construct the buildings, accounts for a comparable share to total industrial sector GHG emissions.[4]

Industrial GHG reductions and carbon credits

So-called "carbon" credits (which in certain schemes such as the international Clean Development Mechanism) include other greenhouse gases such as methane, N2O, CFCs, HFCs) have transformed an industrial waste product from electric power plants, carbon dioxide, into a viable, new synthetic commodity market in the European Union (EU) through the EU emission allowances market and worldwide through the Clean Development Mechanism. (CDM).[5] Project developers and industrial facilities are beginning to finance energy saving equipment installations that reduce GHG emissions in China, for example, by pre-selling anticipated GHG reductions to EU-based buyers of emission reductions, based upon a recognized (openly traded) price per ton of carbon dioxide emissions avoided.

Similarly, in the US, developers of projects that result in GHG reductions have been financed by Climate Trust, a not-for-profit organization which purchases regulatory

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[2] For further information on how the emissions trading model can be adapted to address climate change in the United States: see Naimon and Knopman (1999).

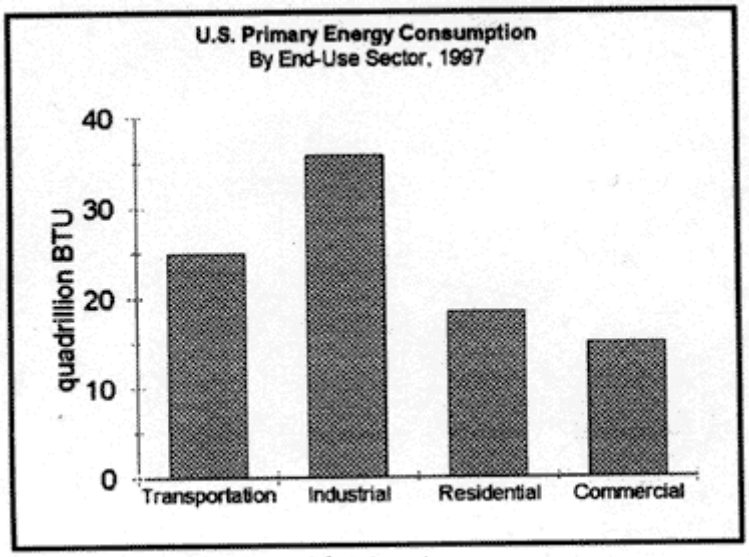
[3] Source: European Climate Exchange: http://www.europeanclimateexchange.com

[4] See the analysis of primary energy consumption provided by the US Energy Information Administration.

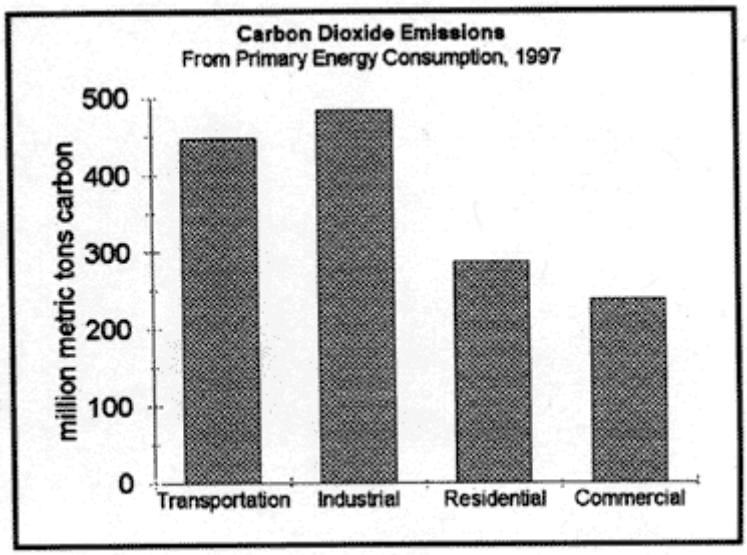
[5] For further information on how emissions trading can impact GHG emissions: see Matschoss and Welsch (2006).

offsets for developers and operators of fossil fuel electric utility facilities operating in the state of Oregon.[6]

Residential and Commercial Building Energy Consumption and GHG Emissions Exceed Transportation and Industrial Consumption and GHG Emissions in the US.



Source: Energy Information Administration



Source: Energy Information Administration

As the Energy Information Administration figure above graphically illustrates, GHG emissions from non-industrial sources such as transport and residential and commercial buildings exceed so-called "tall smokestack" industrial emissions in the US.[7]

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[6] For further information on the mandatory greenhouse gas emission offset program in the state of Oregon, see Climate Trust's website http://www.climatetrust.org/

[7] Energy Information Administration, (1998) U.S. Department of Energy, State Energy Information, see http://www.eia.doe.gov/emeu/sep/us

Carbon credits from reducing emissions from residential and commercial building operation could be an important addition to the toolkit by which society reduces its carbon footprint, just as they are for companies in the "tall smokestacks" regulated community.[8]

Green Building Challenges

Developers, architects, and property owners have long viewed superior environmental features as a "freebie" or "loss leader" - something they built into projects without being paid extra. At best, environmental amenities such as buffer zones, landscaping, and local materials procurement were viewed as tickets for admission - part of the price to build in a particular area.

A structural challenge for organizations interested in green building is that "buildings are built to be sold," and that operating costs, including escalating energy costs, are essentially a problem for the subsequent owners, often public companies that own multiple properties and that are organized as Real Estate Investment Trusts (REITS). In the USA, the advent of individual metering has pushed the energy cost issue two steps from the developer to the ultimate lessees rather than for the architect, property developer, REIT or primary ownership and property management group.

The advent of carbon credits is beginning to serve a vehicle for pricing of environmental externalities associated with greenhouse gas emissions in many industries. While the current European Union greenhouse gas emission trading scheme (ETS) does not cover building energy use at the building level, the tremendous energy usage by the residential and commercial building sector and the competitiveness and cost issues associated with requiring emission reductions only from "tall smokestack" industries are working together to force thoughtful analysts and regulators to turn their hand towards buildings.

Including buildings within climate change regulation umbrella

Including the building management sector within the ambit of GHG regulation and carbon trading can fundamentally change the equation by providing building owners and operators with the opportunity to create a financial benefit that is matched with reductions in energy-related GHG emissions from their buildings. The idea is that financing energy improvements that reduce GHG emissions requires investment on the part of building owners and operators.

One key to this transformation is the availability of suitable regulatory schemes that include the commercial and residential buildings within the ambit of GHG regulation. The second key to this transformation is the presence of open "carbon offset" markets

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[8] For further information on potential for buildings to be included within U.S. regulatory frameworks for climate change: see Nordhaus and Danish (2005).

into which developers (or building operators) can sell emissions reductions resulting from superior design and/or installation of equipment and procedures that measurably reduce GHG emissions resulting from building operation.

Recognizing the pivotal role that design and investment decisions play in residential and commercial building energy utilization and efficiency, future GHG regulatory schemes should include such buildings, and allow credits to be generated by activities (such as building retrofits) that reduce GHG emissions significantly. In many cases we expect that these reductions will be significantly cheaper than in industrial plants, where energy costs constitute a larger proportion of direct costs and many companies have already implemented cost-savings measures.

First movers among real estate owners

Within the corporate sector, there are many well-documented examples of companies that have decided to address the climate change issue before there were legal requirements: in many cases the objective is to obtain the competitive advantage known as the "first mover" advantage. [9] Within the real estate world, California's giant pension plan sponsors (CalPERS and CalSTRS) have committed to a 20% reduction in energy usage for the $1.0 B USD of buildings they own 100% equity interest. These funds expect the program to earn an economic return over the term of the pension fund's ownership of the properties from energy savings at current prices. [10] As the US and other markets develop appropriate regulatory structures to support the creation of credits for GHG reductions throughout the economy, an additional financial incentive will emerge for building developers, owners, and operators interested in a competitive edge.

This type of incentive would enable these real estate investors to meet their hurdle rates faster due to the potential to sell the excess greenhouse gas (GHG) reductions to other companies, e.g., coal-burning utilities, that require less expensive means of reducing their GHG emissions.

On the west coast (of North America), several residential and mixed use property developers have reported quicker time to market and quicker permitting processes in municipalities that encourage green building to LEED standards such as Seattle, WA Vancouver, BC and Portland, OR. [11] While reducing time to market is a tangible and meaningful for development investors, these benefits are not always readily monetizable by subsequent building owner/operators.

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[9] For a review of climate change first-mover strategy: see Hoffman (2005).

[10] For further information on the real estate component of the $1.5 billion, see the California Green Wave Initiative, www.treasurer.ca.gov/greenwave/green_facts.htm

[11] For further information on the west coast market acceptance of green building innovation: see Globe Foundation (2006).

Reframing the Green Developer Quandary

In sharp distinction to maximization of rentable square footage, maximization of energy efficiency and other environmental attributes of buildings has been viewed as a loss leader since it is not clear how to monetize the improvement. Voluntary environmental building assessment schemes such as LEED have developed a new set of standards for the cutting edge of custom buildings; however, the authors estimate that penetration of LEED buildings stands at less than 1% of the US building stock.

The advent of carbon pricing and its extension to the building sector allows REITS and other building operator groups, and theoretically green building developers and architects, to create offsets of value, from those green building features that reduce energy usage and concomitant GHG emissions.

The capacity to sell a green benefit for any price above simply "feeling better" can change the economics of inclusion of energy saving features if it changes the economics of owning and operating a building. Due to the speculative timing of mandatory greenhouse gas regulation in most US states, and regulatory quirks that exclude building energy usage from inclusion in the EU Emissions Trading Scheme (ETS), capturing this source of value requires a significant level of top management commitment, regulatory expertise and a significant amount of paperwork. In summary, the current regulatory system does not adequately encourage energy efficient innovation within the vitally important real estate sector.

Emerging markets

It is no secret that China and India constitute the fastest growing market for energy and buildings in the world. Over 40% of the world's cranes are reputed to be in China today. While the built environment may be less developed than the US, the policy environment for gaining credit for GHG emissions reductions is actually as favorable as that of the USA today. While mandatory reductions in GHG emissions are not required of emerging market participants under the existing Kyoto Protocol, many emerging market states have signed the treaty and are utilizing it to secure funding for various modernization efforts.[12] Several Chinese organizations such as steel plants are engaged in modernization efforts that are funded in part by trading of GHG emission reduction credits generated through the activities.

Since voluntary standards such as LEED are more relevant for new construction than for the retrofit market, its applicability is limited in developed markets such as the US and western Europe where new construction constitutes a smaller percentage of the housing market than in developing markets such as China.

[12] For further information on emerging market potential under the Kyoto Protocol: see Springer (2003).

The authors believe that one of the most important environmental opportunities is to improve the energy efficiency of new construction in emerging markets such as China and India. The result will be reduced GHG emissions relative to those that result from a 'business as usual' trajectory. Monetization of GHG reductions through sale of GHG credits in a global market is thus an important tool for making green and energy efficient building affordable and cost effective in the areas of the world with the greatest economic growth and environmental growth of environmental threats going forward.

Future Challenges and Opportunities

Carbon credits (and financial mechanisms such as forward contracts) can play a significant role by providing additional investment and resources to pay capital and operating costs associated with green building features today. Unlike traditional green building standards oriented towards new construction, emission reduction or "carbon" markets can provide an economic incentive to retrofit the existing building stock which represents over 95% of the building emissions in OECD countries such as the US and most of the EU.

New sources of revenue will change the economics for many features that are considered optional today. Additional resources will undoubtedly be required to monitor performance at the building level, so that we can assess just what precisely the environmental benefits of superior green building are now, and what they will be in the future.

Although policy and pricing visibility is still murky in North America, it is clear from this short review that the property sector has a tremendous opportunity to use carbon trading as part of a new green building development/ ownership / operation model. Its major attraction is a clear link to building performance and it rewards the developer, owner and occupant by creating a market for greener buildings.

If your organization is involved in developing, owning, or operating buildings through REITs or other ownership structures, we would encourage you to take a look at the way carbon credits, even with a volatile market, are impacting the European energy and electricity markets. Just as energy prices affect the value of REITs throughout North America today, we believe carbon prices are an emerging feature of the landscape and part of the proverbial equation developers and owner/operator groups must solve going forward.

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