Number 70
January 2009

How Green a Recession? – Sustainability Prospects in the US Real Estate Industry

Report Contents

Executive Summary

With all the recent distressing financial news – the declining economy, continuing credit market turmoil, and especially the rapid deterioration in property markets – real estate investors might assume that the green building craze is over, or at least on hold. Plummeting energy prices would seem to further counter the industry's drive to greater sustainability. But reports of green's demise are greatly exaggerated, and certainly premature. A significant backlog of green buildings is already completed, only awaiting certification, and many other projects are nearing completion. In fact, the construction and certification of greener buildings continues to accelerate, increasing the green share of the building stock, and speeding real estate markets to the tipping point where green buildings become the standard for quality real estate product.

In the short term, virtually all property owners are hurting, as vacancies soar and rents plummet. However, owners of green buildings should generally outperform – or at least minimize their losses – in this recession relative to less sustainable properties, while achieving other social or company goals. Firms increasingly demand greener facilities, yielding operating premiums for greener buildings even as overall tenant space needs decline with the economy, and the recession is not changing these preferences.

Looking out a bit further, many major markets will reach the critical mass when green buildings account for enough of the building stock that tenants have a choice. At this point, the performance premiums for green buildings will flip to a discount for older, less efficient, conventional buildings. We are already at or near this point in the mature economies of Europe and developed Asia, and getting closer in the major money centers of the United States. Ignoring this impending market transformation would be risky and imprudent, and the current recession will provide little cover to owners failing to adapt.

Key Conclusions:

- The dramatic reversal in economic conditions and energy markets over the past year has undercut the viability of real estate construction, which will reduce construction starts in the short term, and thereby limit the medium-term supply of new sustainable buildings.
- Nonetheless, a significant number of green projects still under construction, and an even greater backlog of completed green buildings awaiting certification, ensures that the near-term supply of green buildings will continue to increase through the recession.
- Moreover, various market forces, in concert with regulatory incentives and mandates, will continue to pressure real estate owners and managers to enhance the sustainability of their portfolios, though the focus will shift more to affordable repositioning and more efficient property operations instead of more costly building renovations.
- Green buildings will continue to outperform conventional buildings due to their relative scarcity relative to demand, particularly in the nation's major commercial centers.
- Specific near-term prospects for investors include purchasing net-leased corporate facilities through sale-leasebacks, and selective acquiring and upgrading of well-located Class B buildings, as much for defensive positioning as for market opportunities.
- While building owners understandably will wish to hoard cash during these perilous economic conditions, owners of less efficient conventional buildings may well find that the conservative approach may not be the most prudent course.
- In summary, the current recession will only slow, but not fundamentally alter, the market shift to sustainable real estate. Savvy, cash-rich investors will find numerous opportunities to capitalize on these trends, even during the recession, while owners that fail to adapt quickly to the new standards may find their viability jeopardized.

Prepared By:

Andrew J. Nelson
Vice President
RREEF Research
San Francisco
USA
(415) 262-7735
andrewj.nelson@rreef.com

Introduction: The Economy in Transition

RREEF Research has documented the significant shift toward greener property investment and management during the past few years, both in the United States and globally.[1] Though institutional investors generally have been late to the scene, sustainability now ranks high in the actions and motivations of all stripes of real estate investors and property managers.

As we have argued, several distinct but related factors are forcing the real estate industry to adopt more sustainable development and operating practices. These include greener tenant space requirements, government regulations, and rising demands for socially-responsible investments. Moreover, soaring energy prices of the past few years have made for increasingly attractive financial returns on green investments, particularly with the introduction of more affordable greening technologies. The globalization of property markets and the environmental movement have only intensified these trends.

Much has changed in the last year, however, and particularly during the past few months. The US economy, which began its decline with the credit crisis in mid 2007, and officially entered a recession that December, began to nosedive in September 2008 with the collapse of several marquee financial institutions, and has yet to stabilize. Values for all types of assets plummeted with speeds and magnitudes not experienced since the Great Depression of the 1930s. What began with a housing downturn eventually undermined the value of financial instruments based directly or indirectly on housing values, and then upending credit markets. With the virtual absence of liquidity in credit markets, the carnage spread to other types of assets, many far removed from the housing sector, ultimately compromising the viability of the financial institutions holding these assets.

In addition, and as a direct consequence, world energy prices have declined precipitously. After reaching an astonishing $140 per barrel in July – unprecedented in terms of both real price levels and velocity of ascent – prices have fallen even faster on the way down, eventually reaching below $35 per barrel in early December before rebounding to just under $45 per barrel at year end.[2]

Together, these forces would seem to set the foundation for slowing or even reversing recent sustainability gains. Declining economic conditions, and especially the deteriorated real estate property markets, limit the potential for new construction and renovations alike, while declining energy prices further reduce the feasibility of these projects. Moreover, the virtual shutdown of credit markets, and investor aversion to all but the safest investments, are dramatically reducing the capital available for financing real estate construction and renovations.

Nonetheless, the cumulative impact on sustainability may be much less than might be supposed. For one thing, property fundamentals for commercial real estate remained strong, and values relatively stable, long after the housing market began to deteriorate. Commercial markets did not suffer the same degree of overbuilding, and project underwriting tended to be more prudent. While home sales peaked in mid 2005 and home prices topped out in mid 2006,[3] office occupancy rates continued to rise through 2007, not beginning to fall in earnest until late summer 2007, and the values of office buildings were still climbing through the end of 2007.[4] For a while, commercial real estate even seemed immune, or at least less vulnerable, to the problems inflicting other sectors of the economy. And so, non-residential construction continued, and even accelerated, through 2006 and 2007 and into 2008, as shown in Figure 1 (next page, left graph), measured by the value of construction investment.

---

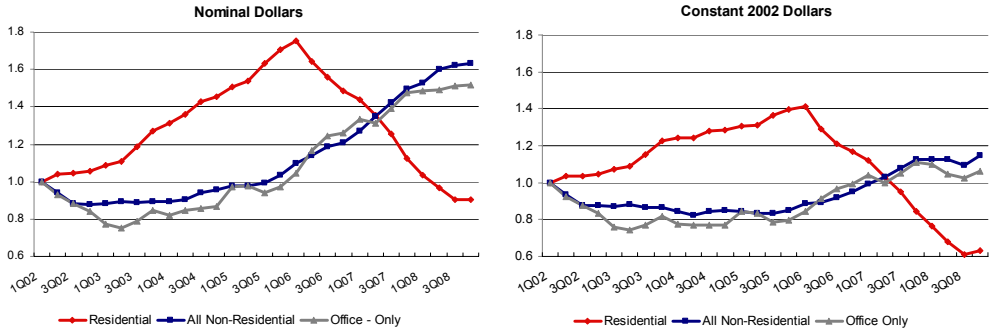
[1] See RREEF Research, "The Greening of US Investment Real Estate – Market Fundamentals, Prospects and Opportunities," Strategic Outlook #57, November 2007, and "Globalization and Global Trends in Green Real Estate Investment," Strategic Outlook #64, September 2008.

[2] WTRG Economics, prices quoted for NYMEX West Texas Intermediate Crude Oil Futures – Front One Month.

[3] Sales volumes based on US Census Bureau series on new home sales, which peaked during 2Q08; prices based on Case-Shiller 20-City Composite Home Price Index, which peaked in July 2006.

[4] Office vacancy rates based on REIS quarterly tabulations, while office values are based on monthly capitalization rates as calculated by Real Capital Analytics.

Figure 1
Private US Construction Investment ($)
(Quarterly, 1Q02 Levels = 100)



Sources: economy.com, US Bureau of Labor Statistics, and RREEF Research
Note: "Constant" construction figures calculated using the Producer Price Index for New Buildings

Some of the indicated construction gains merely reflect rising commodity input prices, which were escalating rapidly from 2004 until mid 2008. Adjusting for this inflation reduces much of the putative growth in construction investment levels (Figure 1, right graph). Regardless, non-residential construction continued at elevated rates well past the housing downturn, the credit crisis, and onset of recession. Though construction *starts* are now seeing a dramatic decline, and *pipeline* construction levels are moderating, the overall level still exceeds the volumes from a year ago. For the three months through November (most recent data available), private non-residential construction is up almost 12% over the same period in 2007.

Similarly, construction lending continues to rise. Preliminary figures show that outstanding construction debt for commercial real estate projects as of year-end 2008, net of reported delinquencies, is up 14% over a year ago and stands at 2.5 times the level from mid 2006, when property markets were beginning to peak.[5] Even if some of this debt represents unreported delinquencies, clearly there is still considerable construction activity today.

Significantly, this growth spurt for commercial and other non-residential construction coincided with the real estate industry's discovery of sustainability. As a result, green buildings are accounting for a growing share of this robust construction, accelerating sustainability trends, even as the housing markets and then the broader economy stuttered and ultimately declined.

But now the spigot on even commercial real estate construction is finally being turned off, and new deliveries to market will decline once the buildings now under construction are completed. For now, cancellations of projects already under construction are believed to be relatively few. However, the economic forecasting firm HIS Global Insight expects real non-residential construction volumes to decline 4% from 2008-09, and office construction to fall 15%. Neither is anticipated to recover until 2011. For investment real estate – that is, excluding government- and corporate-owned projects – RREEF Research expects even more significant declines and a later recovery, due to investor aversion and the lack of debt financing for new projects.

Recent Green Building Trends

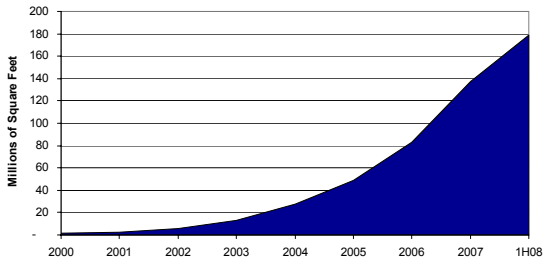
In our paper published in November 2007, RREEF Research tracked and analyzed patterns in the construction of green investment real estate through early 2007.[6] Among other trends, we documented an exponential growth in buildings certified under the LEED program of the US Green Building Council (USGBC), and projected that this rate of growth would continue to increase for at least the near future. We also forecasted that green buildings would account for an ever-greater share of total construction. In this section we revisit these and other developments with project data revised through the end of June 2008.

[5] Unpublished data compiled by Foresight Analytics, January 2009.
[6] RREEF Research, November 2007, *op. cit.*, pp. 8-11 and Appendix B.

Overall Green Building Activity[7]

Green building has started to hit its stride since the first LEED program, now known as LEED-NC (new construction), was adopted in 2000. As of the end of June, almost 180 million square feet of space had been LEED certified in some 1,500 projects (Figure 2) – for perspective, more than all the office space in the Boston metropolitan area. Moreover, green building continues to grow exponentially. In fact, the amount of green building area has been growing at about a 50% compounded growth rate since 2000 – about 25 times the growth rate for commercial real estate overall in this country, which averages a bit under 2% annually.

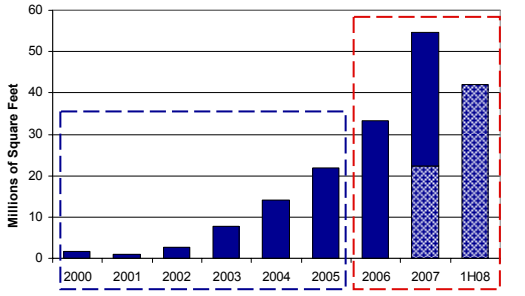
Figure 2
Cumulative Area of LEED-Certified Buildings



Sources: USGBC and RREEF Research

And despite the recent moderation in overall construction trends generally, certifications of green buildings continue to accelerate. About 22 million square feet of building area was LEED certified in the first half of 2007, rising to 32 million in the second half and to 42 million square feet in the first half of 2008 (Figure 3). In total, the amount of space certified in the past 2.5 years alone is more than twice the amount certified in the prior six years combined.

Figure 3
Annual New LEED-Certified Buildings

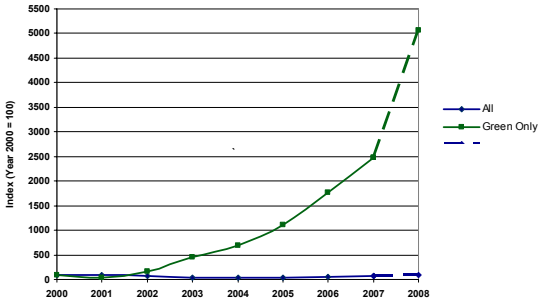


Sources: USGBC and RREEF Research

Focusing on office construction, the amount of green office space constructed last year was about 25 times the amount in 2000, and is now growing at 50 times that rate – and the volume has increased significantly every year (Figure 4, next page). At the same time, overall office construction in the nation has been flat, so there has been a decisive swing from conventional to greener construction.

[7] Figures in this section are primarily on a USGBC database of LEED projects, with activity current through the end of June 2008. RREEF Research extensively scrubbed and reclassified the data for this paper. Accordingly, our analysis of LEED activity differs substantially from USGBC's own reports and other published accounts that apparently did not undertake this database refinement.

Figure 4
Office Construction: Green vs. All Offices



Sources: Torto Wheaton, USGBC, and RREEF Research

Green Building Growth Potential

Despite this tremendous growth, and notwithstanding the economic downturn, RREEF Research expects even greater potential for green buildings in the near- and long-term, for four broad reasons:

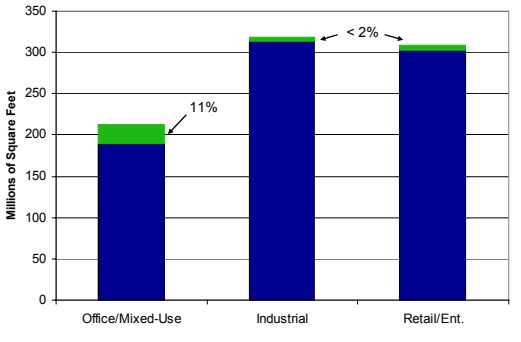
- the low market penetration rate to date;
- the number of firms and professionals moving up the learning/experience curve involved in understanding green building techniques and certification systems;
- a significant backlog of projects already completed that are awaiting certification; and,
- the strong business case for green buildings based on tenant demand, government policies, and investor expectations, among other factors.

The first three issues are analyzed here, while the final issue is presented in the following section.

Market Penetration

Although the amount of green building construction is growing rapidly, the overall volume is still rather small in the context of all real estate construction. Non-residential construction in the US averages about 1.5 billion square feet of building area annually, based on project contract data.[8] By contrast, just under 50 million square feet of non-residential property was certified by the USGBC in 2007 – an impressive 50% gain over 2006, but still equal to only 3% of total construction.[9] This share varies for different product types, but even offices, which account for the greatest share of LEED-certified buildings to date (47%), comprised only 11% of the total

Figure 5
Conventional vs. Green Construction - U.S. 2007



Sources: McGraw-Hill , USGBC, and RREEF Research

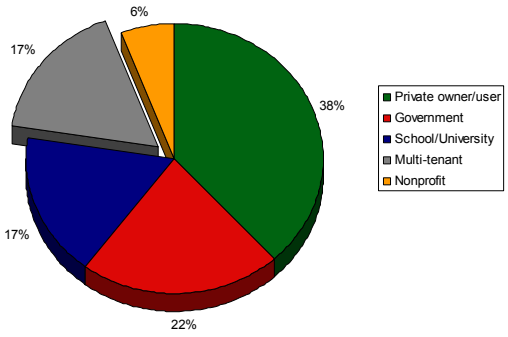
[8] McGraw-Hill Construction, *Dodge Construction Potential Bulletin*, "Contracts for New, Addition and Major Alteration Projects."

[9] It is noted that the tallies of LEED-certified and of conventional buildings are not strictly comparable, as some of the buildings certified as LEED in 2007 were actually completed in a prior year, while some of the contracts for conventional buildings will not be completed until future years.

building area of total construction in 2007 (Figure 5). Green-certified retail projects accounted for only 1.7% of all retail projects, and green warehouses and factories only 1.5% of industrial construction.

A related sign of the greater potential for investor-owed green buildings is revealed by examining ownership patterns for green buildings. As discussed in our earlier papers, speculative developers and institutional property owners have been slow to participate in the greening revolution. To date, less than a fifth of the non-residential building area certified by the USGBC has been constructed for the speculative rental market (Figure 6). Rather, corporate owner-users and government agencies account for the lion's share of green building, with schools and universities contributing the next largest shares.

Figure 6
Tenants in Non-Residential LEED Buildings

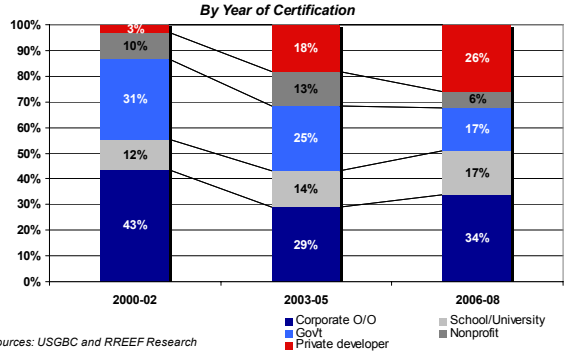


Source: USGBC and RREEF Research

Investors and speculative developers were restrained initially by a variety of factors including some that are specific to LEED. For example, in the original LEED-NC program (for new construction) third-party investors found it difficult to score enough points for certification because they do not have sufficient control over tenant space, which accounts for a significant share of the total points required. Most of the factors holding back developers, however, had nothing to do with the certification process, such as the mismatch between who pays and who benefits from building improvements; this issue is now being addressed with so-called "green leases." Even more important was a paucity of financial information critical to investment decisions, a deficiency perpetuated by a "Catch 22" cycle: investors were reluctant to build greener buildings until there was sufficient building performance and financial return data, but that data would not be produced until there was a large enough base of rental green buildings.

In any case, these ownership patterns are changing as the real estate industry warms to the green building concept. The developer share has increased more than eight-fold recently compared to the early years of LEED, and now accounts for more than a quarter of recent green space (Figure 7). At the same time, the corporate and government shares have fallen sharply, despite their overall increase in activity. The reason: developer activity is growing 22% faster than corporate and more than twice the rate of government building. Nonetheless,

Figure 7
Ownership of LEED-Certified Buildings
By Year of Certification



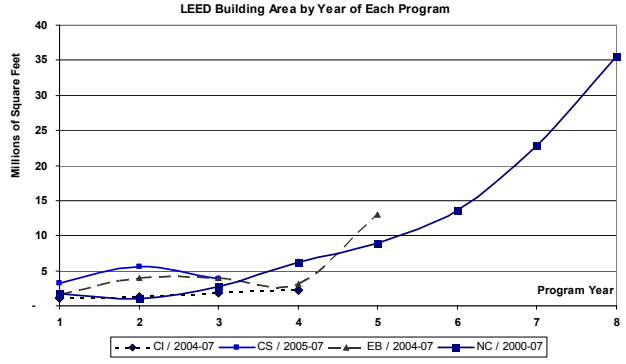
Sources: USGBC and RREEF Research

private developers and third-party owners are still well underrepresented relative to their share of real estate development overall, suggesting significant additional potential for these players.

The Learning/Experience Curve

New building technologies and green building certification programs take time and experience to master. Our analysis of LEED activity demonstrates that as practitioners become proficient, however, development activity begins to grow exponentially. As shown in Figure 8, which tracks LEED program activity by the number of years each program has been in existence, each of the various certification programs shows limited activity for the first several years, until developers learn the intricacies of the technologies and the program, setting the stage for much more substantial growth thereafter.

Figure 8
LEED Building Area by Year of Each Program

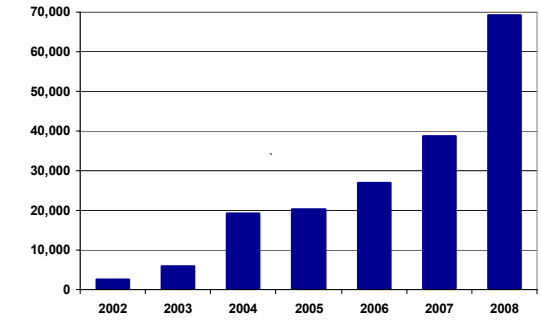


Sources: USGBC and RREEF Research

In particular, the LEED-EB program for existing buildings, now in its sixth year, seems to be following very much in the footsteps of the more seasoned LEED-NC program for new construction, and thus seems poised for the same exponential growth. As the USGBC adds more programs for more specialized land uses and situations – such as for retail, healthcare, and neighborhood development – the cumulative growth in certifications should be explosive.

A related issue is the limited supply of trained professionals. Until fairly recently, there were few professionals experienced in either designing sustainable buildings or navigating projects through the intricacies of the certification programs. One gauge is the growth in the number of professionals accredited by the USGBC. Like the LEED certifications programs, accreditations are rising at exponential rates. Almost 70,000 professionals have been accredited to date, four times the number of only three years ago (Figure 9). The result is a much greater capacity for the industry to create and process green buildings.

Figure 9
LEED Accredited Professionals



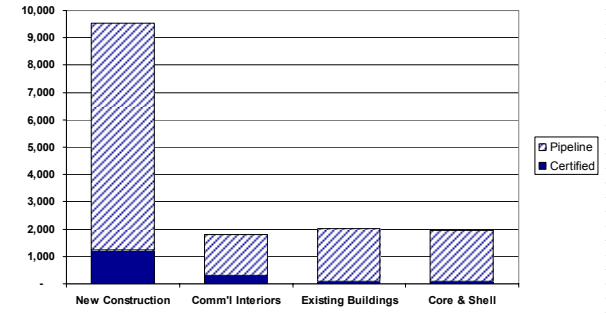
Sources: USGBC and RREEF Research

Project Backlog

Finally, even if construction were to cease entirely, the green share of the nation's building stock would still continue to rise sharply. This is due to the huge backlog of projects waiting to be certified – and the vast majority of these projects are actually already completed. The

number of registered projects – that is, those in the pipeline – is about eight times the number of projects already certified (Figure 10). And for the LEED-EB program, the ratio is almost 20 times. Thus, no matter what happens in the economy and real estate markets over the next few years, the surge in LEED-certified buildings will continue.

Figure 10
LEED-Certified Buildings vs. Pipeline



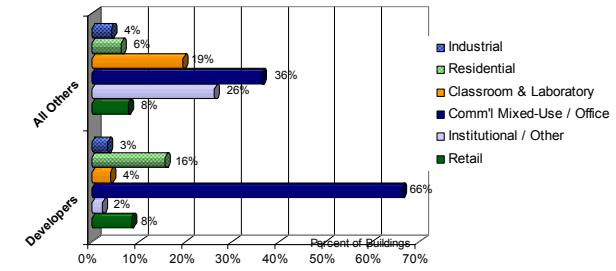
Sources: USGBC and RREEF Research

As of early fall 2008 about 1,750 projects had been certified, but another 13,500 were registered in the pipeline awaiting certification. Again, virtually all are completed and operational. Were even a quarter of these projects not to complete their certification, that would still add 10,000 green buildings to the roster of LEED certified projects over the next few years, representing a seven-fold increase over the current universe – clearly a game-changer in terms of establishing a critical mass of certified green buildings.

Market Impacts

With investors and third-party developers responsible for an increasing share of green building, the nature of the green building stock is changing as well. When private developers sponsor the project, a much higher proportion of the buildings are offices and apartments, while many fewer are government facilities and classrooms (Figure 11). Thus, we can anticipate a growing share of green buildings to fit within traditional institutional investment product types.

Figure 11
LEED Building Type by Ownership Class



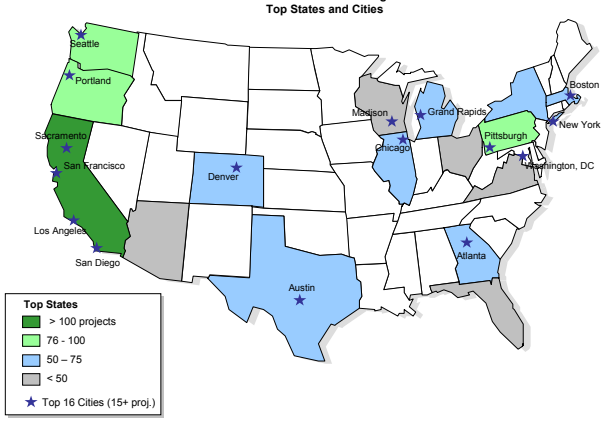
Sources: USGBC and RREEF Research

In addition, green buildings will not be equally distributed across the country. Although LEED-certified buildings now can be found in every state and over 400 cities across the country, they are still highly concentrated in larger, urban, and more progressive states and metros. RREEF Research estimates that the greenest 15 states have two thirds (67%) of the LEED building area, compared to only 40% of the nation's population (Figure 12, next page). With greater sponsorship of green buildings by private developers and institutional investors, we anticipate even greater concentration of green buildings in the larger metros and major commercial markets, at the expense of government centers and smaller university towns.

This means that the major real estate markets – the markets where institutional investors focus their attention – will be pushed even faster to the tipping point where green building becomes the market standard. This is the inflection point at which performance premiums for green buildings flip to a discount for older, less efficient, conventional buildings. At the rate at which

buildings are being constructed and renovated to these green standards, that day is rapidly approaching in the major money centers of the US – and certainly will materialize within a five- to ten-year investment horizon of buildings that are being bought right now.

Figure 12
LEED-Certified Buildings
Top States and Cities



The (Continuing) Case for Green Buildings

In addition to these industry and programmatic reasons supporting continued green building construction and investment, several other exogenous forces are continuing to drive the real estate industry toward more sustainable practices, even through the economic downturn.

Government Policies

The public sector's push to greater sustainability is not likely to slacken in the face of the recession. If anything, governmental resolve to address global warming through stricter coercive action is strengthening. In the same week of early December that the World Bank declared that the financial crisis is causing the first global recession in 25 years,[10] the European Union reaffirmed its climate deal committing its member states to reduce greenhouse gases to 20% below their 1990 levels, and the State of California finalized adoption of stricter energy efficiency standards for buildings. Meanwhile, President Obama, who seeks climate goals for the United States comparable to those enacted in Europe, announced a climate-change team that will mark a decided break with the environmental policies of the Bush Administration.

Based on its campaign platform, the Obama Administration could influence the sustainability of property markets in at least five ways:

- through a "cap-and-trade" or carbon-tax program imposed on energy producers that would raise the effective cost of energy to consumers (building owners/managers);
- raising the already high energy-efficiency standards for its own buildings and occupancy, thereby resetting market standards through its market dominance, as the federal government is largest property owner and tenant in the nation (by far!);
- spurring the introduction, adoption, and/or affordability of greener building technologies through the "green collar" jobs initiative;
- instituting national energy efficiency standards for all buildings; and,
- providing subsidies to local governments to encourage energy efficiency, which then can be passed on to building owners, managers, and developers.

One illustrative, if cynical, metric: the number of "green" companies with lobbyists registered with the US Senate rose from 36 in the session ending 2006 to 291 in 2008 – an eightfold rise

[10] World Bank, *Global Economic Prospects 2009: Commodity Markets at the Crossroads*, December 2008.

that is certain to heighten pressure on legislators and bureaucrats to adopt greener laws and regulations.[11]

At the same time, ever more state and local governments are adopting green building regulations. Many governments initially provided subsidies to encourage more green building, but now the pendulum is increasingly swinging toward mandates. San Francisco is a good example. In 2006 the City offered expedited permitting for developers willing to commit to building at the LEED-Gold certification level. Within two years the City passed new legislation requiring LEED standards for virtually all new construction, with the standard starting at the basic "certified" level and rising each year until it reaches gold. Many cities across the country are moving in this direction with similar or comparable programs.

Thus, governments are not giving developers and investors much of a choice about what to build, and also threaten to penalize owners of conventional buildings that consume above-standard amounts of energy. Moreover, whereas state and local governments had been far outpacing the federal government on these issues, the new federal push for sustainability brings the three levels of government into greater alignment, amplifying the cumulative impact of the many different types of initiatives

Tenant Demand

With the escalating economic downturn, many analysts have been expecting businesses to turn away from sustainability in order to focus on more pressing issues – like short-term survival. So it was predictable that we would begin to read stories like the Knight Frank survey of corporate London real estate directors in September finding that green factors had fallen to last place among ten leasing priorities, ranking after more basic property fundamentals such as rent level (#1) and lease flexibility (#3), and even more business-oriented factors like staff retention (#2) and proximity to clients (#8).[12]

Certainly, in the immediate aftermath of an accident, a car-crash victim will be more concerned with stanching his bleeding than, say, good nutrition, though once the short-term exigencies are addressed, a resumption of longer-term lifestyle perspectives can be expected. And so with numerous firms across a wide swath of industries in financial distress, it is inevitable that we will see somewhat less near-term focus on green issues in the business community until more stable market conditions return.

But there is little evidence that tenants are backing off their longer-term sustainability commitments. Several surveys conducted well after the onset of the financial crisis and recession show a continuing or growing corporate commitment to greener buildings. The annual sustainability survey conducted by CoreNet Global and Jones Lang LaSalle found that more than two thirds of corporate real estate (CRE) executives surveyed worldwide now believe that sustainability already is a "critical business issue" for their real estate departments, almost a 50% increase in over last year. Further, 40% of CRE executives rated sustainability a "major factor" in their company's location decisions, with an additional third calling it a "tie-breaker" between otherwise comparable options.[13]

Similarly, a recent survey of corporate sustainability executives in North America found that 80% plan to maintain or increase their sustainability-related spending in 2009, despite the economic downturn.[14] The same survey found that 82% of respondents rate energy efficiency as the "most important area of focus and investment." Indeed, the vast majority of major corporations have adopted specific energy efficiency initiatives, motivated as much by pure financial considerations as by less tangible social and image goals.

---

[11] "Green Is the New Color of Lobbying," *Wall Street Journal*, December 13, 2008.

[12] Knight Frank LLP, "Central London Occupier Survey," September 2008.

[13] Jones Lang LaSalle and CoreNet Global, "Perspectives on Sustainability: Results of the 2008 Global Survey on Corporate Real Estate and Sustainability," October 2008. Survey conducted September and October 2008.

[14] Panel Intelligence, *Quarterly Sustainability Tracking Study*, November 2008. Survey conducted during first week of November 2008.

To be sure, many of these and similar industry surveys tend to suffer from selection bias: the people most committed greener business practices are more likely to respond to the surveys. Such bias explains at least some of the disparity between desires expressed in survey results (showing near universal acceptance of sustainability) and actual behavior observed in property markets (where adoption levels are more modest). Nonetheless, other evidence hints at a more enduring demand for greener facilities. Even during this economic downturn, firms large and small continue to proclaim their goal of carbon neutrality, and they will need sustainability buildings to get there. Indeed, "carbon-neutral growth strategy" is becoming a new business catch phrase. Firms are responding proactively to the threat of carbon caps, as well as rising shareholder, customer, and employee pressures for greener business practices. The prestige of green buildings also confers a halo effect on the reputation of their tenants (and owners).

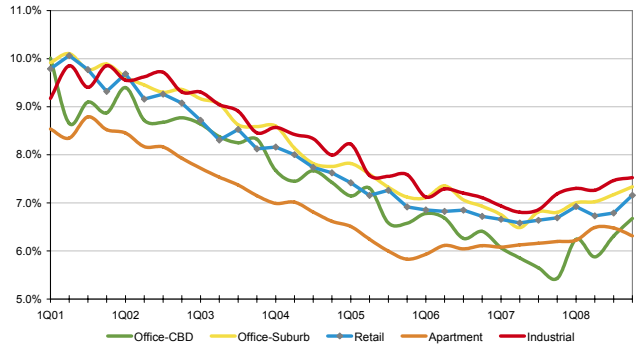
Uncertainty as to future energy prices is another important reason. Consensus forecasts now call for only moderate energy price increases for the near term due to falling demand in light of the global economic slowdown. Strong economic growth, particularly among emerging nations, and most especially in China and India, was a key factor in recent energy price inflation and for (previous) projections for continued elevated price levels. However, few analysts were expecting the dramatic price spikes of 2007 and early 2008, and not many businesses will want to risk being unprepared for the likelihood of such increases in the future by scuttling their efficiency efforts. Meanwhile, OPEC and other industry groups are seeking to restore energy prices to higher levels.

In summary, stretched budgets and market uncertainties will undoubtedly force some firms to postpone or curb sustainability initiatives in the near term, but corporations are most unlikely to abandon the sustainability goals they only recently adopted. Indeed, sustainability is becoming so ingrained in the ethos of firms, that it is becoming more of an "assumption" than a "priority" – and more of a basic building feature (like heat) demanded by tenants than an amenity (like lobby art installations) reserved for special facilities and firms.

Investor Demand and the Business Case

Perhaps even more so than tenants, property investors have been diverted from sustainability concerns recently by the depth of the financial crisis. Although the value losses in real estate to date have been concentrated in the housing sector, values in all major commercial property types peaked over a year ago and have been sliding ever since. Capitalization rates bottomed out generally between the second and fourth quarters of 2007, and have been trending upward since then (Figure 13).

Figure 13
Capitalization Rate Trends



Source: Real Capital Analytics and RREEF Research

And continuing commercial property losses are most likely for 2009 and maybe even beyond. The consensus view among the 700+ participants in the annual Urban Land Institute survey of real estate leaders is that capitalization rates will rise an additional 55 basis points on average between July 2008 and December 2009, on top of the 50 to 75 bps increase to date.[15] Total peak-to-trough value declines in real estate during this recession are likely to range from 20% to 30% – and even more for inferior properties.

[15] Urban Land Institute and PricewaterhouseCoopers, *Emerging Trends in Real Estate 2009*.

With institutional and individual investors alike now much more focused on wealth preservation than on achieving social goals, few investors in the near term are likely to be motivated solely by social principles to ramp up their sustainability efforts or pressure real estate managers to improve their sustainability records. Nonetheless, there has been no pronounced indication of major institutions pulling back from their greening commitments. In fact, major financial institutions continue to aggressively pursue investment strategies related to climate change, including clean tech, renewable energy, and carbon trading, in addition to real estate.

In any case, some of the same economic and risk-aversion justifications tenants cite to pursue sustainability goals apply equally or more for investors, even with currently depressed energy prices. These include the risks associated with energy-price volatility and greater governmental regulation and market involvement, as well as the opportunities afforded by new and more affordable energy sources and energy-saving technologies.

The business case for green buildings by now is widely accepted by academics and researchers, if not the broader investment community. The available data suggests that sustainable buildings command higher rents and lower vacancies, lease quicker than conventional buildings, and have lower energy and other operating expenses, together yielding greater net incomes.[16] Given the relatively small universe of investor-owned certified green buildings, none of these early studies can be considered truly definitive, particularly as to the precise magnitude of the premiums. Nonetheless, it is significant that no major study to date has failed to find at least some positive performance impact, even if the figures vary from study to study. Moreover, cost premiums for green construction are now generally thought to be minimal, at least for the less extreme levels of sustainability, and any putative cost premiums can be more than offset by a variety of incentives for which green buildings are eligible. These factors add up to premium returns on for new green construction.

For existing buildings, the costs and net benefits of renovating to green standards are less certain or quantifiable because the extreme diversity of the standing stock (*e.g.,* age, condition, quality) makes blanket conclusions impossible. Nonetheless, a growing body of successful projects demonstrates feasibility in a wide variety of circumstances, particularly with respect to energy-efficiency initiatives. Such initiatives often can be justified as a defensive strategy alone: inefficient properties risk market decay (lower rents, higher vacancies) as tenants increasingly migrate to more modern, greener buildings.

In summary, green buildings generally do not cost much more to build than conventional buildings but can yield substantial operating-cost savings and attract greater demand, with attendant rent and occupancy premiums. These premiums are likely to endure during the recession, as there is no reason to suspect green buildings will underperform in a downturn. In fact, they should have a competitive advantage.

Prospects for the Real Estate Industry

The real estate industry was slow to capitalize on the potential of sustainable development, leaving corporate owner-users, government agencies, schools and universities, and non-profit organizations to pioneer the green building revolution. Traditional real estate players contributed little to the initial inventory of green buildings.

It is perhaps ironic, then, that institutional investors really did not wake up to green building until the property markets were peaking. More than half (53%) of all LEED-certified building area developed by investors and private developers were certified after mid-2007, compared to just over a third (38%) for all other owners, who came earlier to the party.

Regardless, developers and managers finally have been moved to adopt greener business practices, driven by market, governmental, and social forces, and the recession will do little to alter this direction. In one recent industry survey of 250 real estate owners and managers,

[16] Two of the most prominent studies among many others have been: CoStar, "Does Green Pay Off?," Norm Miller, Jay Spivey and Andy Florance, July 2008 and Institute of Business and Economic Research Berkeley Program on Housing and Urban Policy, University of California, Berkeley, "Doing Well by Doing Good? Green Office Buildings," Piet Eichholtz, Nils Kok, and John M. Quigley, April 2008.

seven out of eight respondents (87%) indicated that greening their portfolio is a priority, while almost half (45%) expect to increase their allocation to sustainability in 2009.[17] Another survey conducted last fall found that fully three quarters of commercial real estate executives would be no less likely to construct green buildings than they were before the credit crisis hit.[18]

But if this greening trend is to continue, what form will it take during the most severe recession in a half century? It is hard to overstate the extent of the credit crisis and its impact on the real estate industry. Credit is much (much!) more limited and much (much!) more expensive than just a year ago. Even the highest-quality, most-stable "core" assets now have difficulty attracting buyers and financing for purchases, and the challenges for lower-quality assets and construction projects are that much greater.

Construction continues for now, though at reduced volumes, and the investor-owned share of new construction is falling. Looking forward, construction starts will drop even further, particularly for speculative projects. Developers without a spade in the ground already will be hard-pressed to initiate new projects, perhaps for several years. Similarly, in the current depressed real estate environment, conventional value-add situations – projects needing significant near-term capital investment – also will be a tough sell, particularly for high-vacancy buildings that must attract tenants within the next two years. In both situations, project viability is undermined by a combination of declining and uncertain rent levels, challenging tenant lease-up, and the financing vacuum.

On the other hand, investors will find several types of attractive investment opportunities during the recession. The value declines in most markets provide excellent buying opportunities, as many buildings now are worth less than their replacement costs. Especially compelling will be situations in which distressed owners are forced to sell high-quality assets in order to meet financial obligations. In addition, institutional investors may also fruitfully investigate more opportunistic, longer-term projects for which immediate absorption is not required, including major rehabilitation and new construction. Green buildings will present many opportunities for both core and opportunistic investing, as well as some selective opportunities for modest repositioning of assets into more sustainable buildings.

Acquisitions

With the universe of investor-owned green buildings being so small, investors have had few opportunities to purchase such assets outright. The CoStar COMPS database counts only 12 transactions in the entire US during all of 2007 involving LEED-certified buildings, with a total value of under $1.5 billion. By comparison, the US office market alone saw over $210 billion in assets change hands that year in over 4,000 transactions.[19] The greater volume of green buildings now coming on line no doubt will increase the number offered to the market for purchase. And with the credit crisis forcing some weaker owners into distressed sales, some of the newer prestige buildings that opened their doors in recent years are likely to become available at quite favorable prices relative to their construction costs. Many will be net leased to high-credit tenants, and thus excellent core acquisitions. Moreover, if the premium for green buildings is not yet clear, risk-tolerant investors buying into today's market could well realize outsized returns once the market reward for green buildings is better established.

Another investment opportunity likely to emerge in this recession: sale-leaseback transactions by corporations seeking cash and slimmer balance sheets will provide investors with more options to green their portfolios. Net-leased corporate facilities including office/headquarters buildings, retail stores, and warehouse/industrial buildings, are all good candidates for sale-leasebacks. Even cash-strapped governments are starting to sell off facilities. As shown previously, public agencies and corporations control the largest shares of LEED–certified buildings of any sector (Figure 6), and real estate investors have participated in relatively few of these projects. The vast majority of such buildings were developed and financed by the

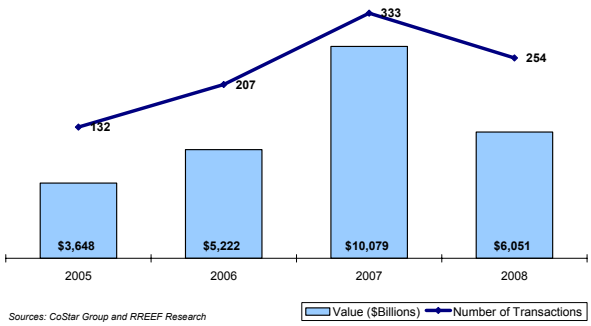
[17] Building Owners and Managers Association International, the US Green Building Council, *Real Estate Forum*, and Globe St.com, "The 2008 Green Survey: Existing Buildings," November 2008.
[18] Turner Construction Company, "2008 Green Building Market Barometer," November 2008.
[19] Real Capital Analytics, "Capital Trends Monthly – Office," January 2008.

agencies or corporations that occupy them, though a small share have been net-leased to the tenants by the private developers that constructed them.

Already a host of major firms has announced plans to shed non-core assets through sale-leasebacks. In the newspaper industry, the New York Times Company (*New York Times*), Tribune Company (*Los Angeles Times* and *Chicago Tribune*), Philadelphia Media Holdings (*Philadelphia Inquirer* and *Daily News*), and The McClatchy Company (*Ft. Worth Star-Telegram*) are all in the process of selling flagship offices. Many financial institutions are also known to be pursuing sale-leaseback strategies including Citigroup, Wachovia, and SunTrust, as well as many smaller regional banks, who are selling everything from headquarters buildings (*e.g.,* Citigroup's iconic tower in midtown Manhattan) to bank branches.[20] Some of the recent spate of corporate-owned green buildings inevitably will be among these assets.

The number and dollar volume of large (more than $5 million) sale-leaseback deals nationwide almost tripled between 2005 and 2007, and was on pace for another strong year in 2008 until the bottom of the market fell out during the fourth quarter (Figure 14).[21] Sale-leasebacks averaged almost $2.5 billion per quarter in the seven quarters through September 2008, before dropping to only $560 million in the final quarter, demonstrating the maturing market for these transactions. With asset values falling and credit so squeezed, the dollar volume of these transactions likely will decline further in 2009. Nonetheless, sale-leasebacks of green buildings represent a relatively new and potentially significant opportunity for investors seeking to expand their sustainable investing.

Figure 14
US Sale-Leaseback Transactions > $5M



Sources: CoStar Group and RREEF Research

Renovations and Repositioning

Prevailing and forecasted market conditions are far from ideal for pursuing conventional value-add strategies, in which marginal assets are repositioned through a combination of capital improvements and/or re-tenanting. Green buildings may represent an important exception. One strategy is to invest in well-located, good-quality buildings that have fallen out of favor. The market shake-up has caused a "flight to quality," in which investors are much more risk averse and greatly prefer the highest-quality buildings. Thus, while virtually all real estate property has been losing value recently, the drop in non-trophy assets has been deeper.

This situation potentially provides investors with the opportunity to acquire solid Class B assets at especially attractive pricing relative to both recent prices and replacement costs. Sustainable investors will want to seek out older buildings with relatively recent renovations, whose energy efficiency and other green features can be enhanced with moderate renovation and little dislocation to existing tenants. Central locations near employee concentrations and public transit are also critical.

A common misconception about green building retrofits is that they always require major capital investment. However, building operations are as important to sustainability as the physical structure, and converting a conventional property into a more sustainable building is

[20] Randyl Drummer, CoStar News, "Unlocking Value: More Banks Discovering Gold in Sale-Leaseback Deals," June 25, 2008, and "Credit, Liquidity Crunch Fuels Surge in Sale-Leasebacks," April 9, 2008.
[21] Unpublished transaction data provided by CoStar Group Inc.

often as much a matter of attitude and approach as it is about the physical design. Indeed, the USGBC's revised certification program for existing buildings (LEED for Existing Buildings: Operations & Maintenance, or "EBOM") emphasizes ongoing building performance over building structure, and is expressly intended to encourage and reward innovative approaches to efficient property operations. Relatively modest investments in regular commissioning – testing and tweaking building systems to ensure they operate as efficiently as possible – often yield immediate cost savings well in excess of their outlays, in addition to benefits such as greater tenant comfort that ultimately enhance asset value. Thus, in many circumstances, conventional buildings can be repositioned as LEED-certified green buildings without significant renovation to the physical plant and attendant capital investment.

For current owners of conventional buildings seeking to preserve their cash, the recent dynamic and darkening market conditions will bring added challenges. Lower energy costs have extended the payback period for energy-efficiency improvements, at the same time that income and reversion values are falling. However, many industry players continue to overstate effort and costs required to achieve efficiency gains, so the financial returns are actually more favorable than many investors realize. Moreover, the potential availability of subsidies or other financial incentives under President Obama's "green jobs" initiatives could sweeten the payoff. In any case, investors in many markets will find that sustainability is a necessary and appropriate defensive strategy for preserving occupancy, particularly for owners of older office buildings and shopping centers most at risk of losing tenants to newer, greener buildings coming into the market.

Real Estate Securities

Real estate securities in the US remain an untapped market for green buildings. Investments from public equity markets have been minor, held back by the extremely limited availability of certified green building product for purchase and the lack of common green product definitions throughout the industry. Opportunities for investments from public equity markets should surge as more green building product comes to market for purchase and green product definitions become more standardized. The growing market acceptance of LEED as an industry standard in the US and other countries should help in this regard. In the meantime, investors will have little opportunity to tap into green buildings through REITs and mutual funds.

Implications for Investors

Navigating real estate markets can be like sailing ships during a storm – difficult to keep on an even keel while remaining stationary, particularly when serious headwinds challenge their stability. For portfolio owners, these headwinds include the punishing recession's impact on occupancy and rents, as well as the unrelenting greening of the building stock and shifting investor preferences to more sustainable investing. While the recessionary winds buffeting the industry might induce owners to reflexively hunker down and avoid "unnecessary" spending, it is not clear that doing nothing is the appropriate response to these circumstances.

Failure to heed the economy's pressures is obvious, particularly in the near term, but the impacts from the greening of the real estate industry may be no less severe in the longer term. At least three major types of risk are material to investors: *market* (rising green standards will make inefficient buildings increasingly obsolete over time); *regulatory* (governments are altering the playing field and cost/benefit calculations); and *environmental* (physical damages attributable to climate change). Each will present challenges to owners that fail to adapt to the new standards, and ultimately threaten property values.

At the same time, change inevitably brings opportunity as well. Savvy, cash-rich investors will find numerous opportunities to capitalize on the greening trends to survive the recession and thrive once the inevitable market recovery begins. Those waiting for the economic storm clouds to clear might find it too late to begin addressing sustainability when the inevitable recovery returns.

Gia Calvillo, an intern with RREEF Research, provided significant research assistance on the Recent Green Building Trends section of this paper.

Important disclosure

RREEF is the brand name of the real estate, infrastructure and private equity division for the asset management activities of Deutsche Bank AG. In the US this relates to the asset management activities of RREEF America L.L.C.; in Germany: RREEF Investment GmbH, RREEF Management GmbH, and RREEF Spezial Invest GmbH; in Australia: Deutsche Asset Management (Australia) Limited (ABN 63 116 232 154) Australian financial services license holder; in Hong Kong: Deutsche Asset Management (Hong Kong) Limited ("DeAMHK"); in Japan: Deutsche Securities Inc. (*); in Singapore, Deutsche Asset Management (Asia) Limited (Company Reg. No. 198701485N) and in the United Kingdom, RREEF Limited, RREEF Global Advisers Limited, and Deutsche Asset Management (UK) Limited; in addition to other regional entities in the Deutsche Bank Group.

(*) For DSI, financial advisory (not investment advisory) and distribution services only.

Key RREEF research personnel, including Asieh Mansour, Chief Economist and Strategist and Peter Hobbs, Head of Real Estate Research are voting members of the investment committee of certain of the RREEF Alternative Investment Funds. Members of the investment committees vote with respect to underlying investments and/or transactions and certain other matters subjected to a vote of such investment committee. Additionally, research personnel receive, and may in the future receive incentive compensation based on the performance of a certain investment accounts and investment vehicles managed by RREEF and its affiliates.

This material is intended for informational purposes only and it is not intended that it be relied on to make any investment decision. It does not constitute investment advice or a recommendation or an offer or solicitation and is not the basis for any contract to purchase or sell any security or other instrument, or for Deutsche Bank AG and its affiliates to enter into or arrange any type of transaction as a consequence of any information contained herein. Neither Deutsche Bank AG nor any of its affiliates, gives any warranty as to the accuracy, reliability or completeness of information which is contained in this document. Except insofar as liability under any statute cannot be excluded, no member of the Deutsche Bank Group, the Issuer or any officer, employee or associate of them accepts any liability (whether arising in contract, in tort or negligence or otherwise) for any error or omission in this document or for any resulting loss or damage whether direct, indirect, consequential or otherwise suffered by the recipient of this document or any other person.

The views expressed in this document constitute Deutsche Bank AG or its affiliates' judgment at the time of issue and are subject to change. This document is only for professional investors. This document was prepared without regard to the specific objectives, financial situation or needs of any particular person who may receive it. No further distribution is allowed without prior written consent of the Issuer.

An investment in real estate involves a high degree of risk and is suitable only for sophisticated investors who can bear substantial investment losses. The value of shares/units and their derived income may fall as well as rise. Past performance or any prediction or forecast is not indicative of future results.

The forecasts provided are based upon our opinion of the market as at this date and are subject to change, dependent on future changes in the market. Any prediction, projection or forecast on the economy, stock market, bond market or the economic trends of the markets is not necessarily indicative of the future or likely performance.

For Investors in the United Kingdom:
Issued in the United Kingdom by RREEF Limited or RREEF Global Advisers Limited of One Appold Street, London, EC2A 2UU. Authorised and regulated by the Financial Services Authority. This document is a "non-retail communication" within the meaning of the FSA's Rules and is directed only at persons satisfying the FSA's client categorisation criteria for an eligible counterparty or a professional client. This document is not intended for and should not be relied upon by a retail client.

When making an investment decision, potential investors should rely solely on the final documentation relating to the investment or service and not the information contained herein. The investments or services mentioned herein may not be appropriate for all investors and before entering into any transaction you should take steps to ensure that you fully understand the transaction and have made an independent assessment of the appropriateness of the transaction in the light of your own objectives and circumstances, including the possible risks and benefits of entering into such transaction. You should also consider seeking advice from your own advisers in making this assessment. If you decide to enter into a transaction with us you do so in reliance on your own judgment.

For Investors in Australia:
In Australia, Issued by Deutsche Asset Management (Australia) Limited (ABN 63 116 232 154), holder of an Australian Financial Services License. An investment with Deutsche Asset Management is not a deposit with or any other type of liability of Deutsche Bank AG ARBN 064 165 162, Deutsche Asset Management (Australia) Limited or any other member of the Deutsche Bank AG Group. The capital value of and performance of an investment with Deutsche Asset Management is not guaranteed by Deutsche Bank AG, Deutsche Asset Management (Australia) Limited or any other member of the Deutsche Bank Group. Investments are subject to investment risk, including possible delays in repayment and loss of income and principal invested.

For Investors in Hong Kong:
Interests in the funds may not be offered or sold in Hong Kong or other jurisdictions, by means of an advertisement, invitation or any other document, other than to Professional Investors or in circumstances that do not constitute an offering to the public. This document is therefore for the use of Professional Investors only and as such, is not approved under the Securities and Futures Ordinance (SFO) or the Companies Ordinance and shall not be distributed to non-Professional Investors in Hong Kong or to anyone in any other jurisdiction in which such distribution is not authorised. For the purposes of this statement, a Professional investor is defined under the SFO.

For investors in MENA region:
This information has been provided to you by Deutsche Bank AG Dubai branch, an Authorised Firm regulated by the Dubai Financial Services Authority. It is solely directed at wholesale clients of Deutsche Bank AG Dubai branch, who Deutsche Bank AG Dubai branch is satisfied meet the regulatory criteria as established by the Dubai Financial Services Authority.

Main Offices

Frankfurt

Mergenthalerallee 73-75
65760 Eschborn
Germany
Tel: +49 69 71704 906

Hong Kong

48/F Cheung Kong Centre
2 Queen's Road Central
Hong Kong
Tel: +852 2203 8888

London

1 Appold Street
Broadgate
London
EC2A 2UU
United Kingdom
Tel: +44 20 7545 8000

New York

280 Park Avenue
23W Floor
New York
NY10017-1270
United States
Tel:+1 212 454 3900

San Francisco

101 California Street
26th Floor
San Francisco
CA 94111
United States
Tel:+1 415 781 3300

Tokyo

Floor 17
Sanno Park Tower
2-11-1 Nagata-cho
Chiyoda-Ku
Japan
Tel:+81 3 5156 6000

RREEF Research

Peter Hobbs
Head, Global Real Estate Research
+44 20 7547 4855

Asieh Mansour
Chief Economist and Strategist
+1 415 262 2044

Europe

Brenna O'Roarty
Director
+44 20 7545 6099

Lonneke Löwik
Vice President
+44 20 7545 6328

Maren Väth
Vice President
+49 69 717 04 204

Ermina Topintzi
Assistant Vice President
+30 210 7256 153

Asia Pacific

Tan Yen Keng
Vice President
+852 2203 8062

Koichiro Obu
Vice President
+81 3 5156 6512

Henry (Wei) Chin
Vice President
+852 2203 7908

North America

Alan Billingsley
Director
+1 415 262 2017

Brooks Wells
Director
+1 212 454 6437

Hope Nadji
Director
+1 415 262 2022

Andrew J. Nelson
Vice President
+1 415 262 7735

Bill Hersler
Vice President
+1 415 262 2075

Ross Adams
Vice President
+1 415 262 2097

Jaimala Patel
Vice President
+1 212 454 1752

Stella Yun Xu
Assistant Vice President
+1 415 262 7715

Publication Address:
RREEF
101 California Street
26th Floor
San Francisco, CA 94111
USA

Website:
www.rreef.com

Additional information is available upon request

I-009624-1.1