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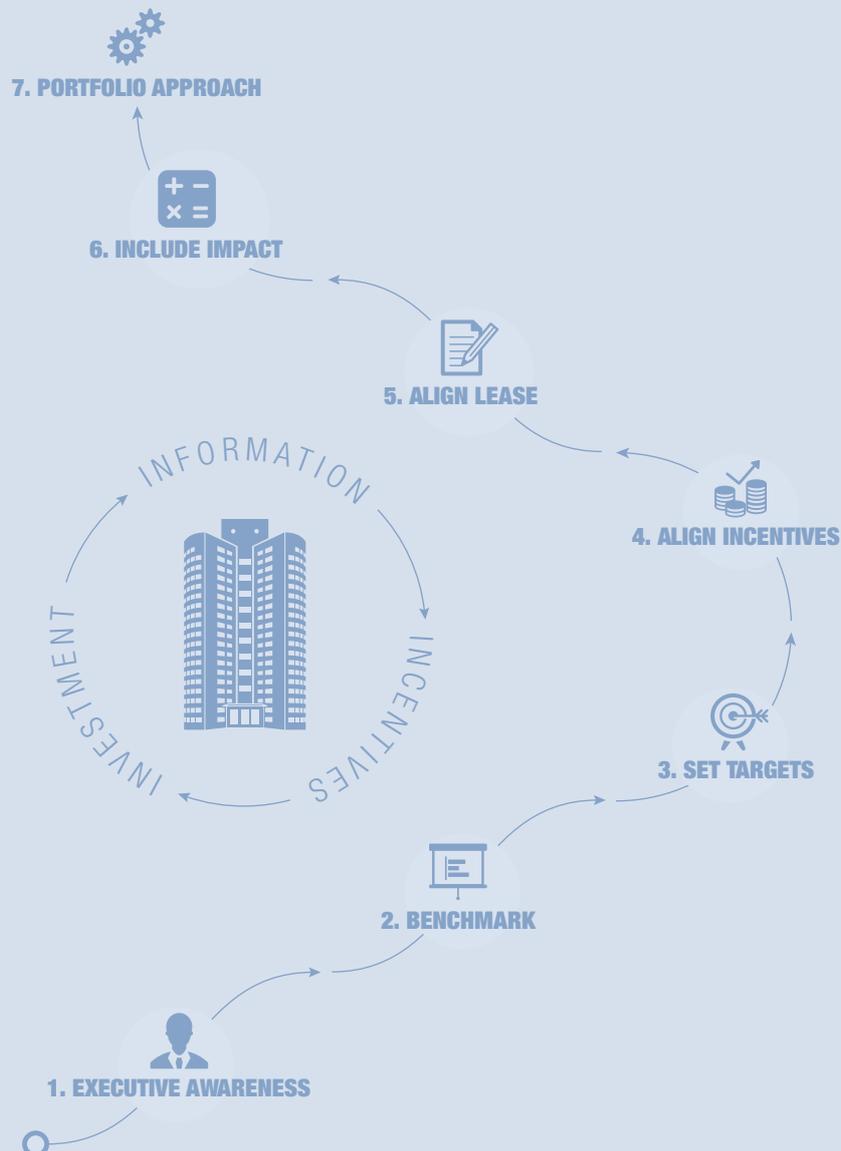
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Commercial Real Estate



Unlocking the energy efficiency retrofit investment opportunity

February 2014



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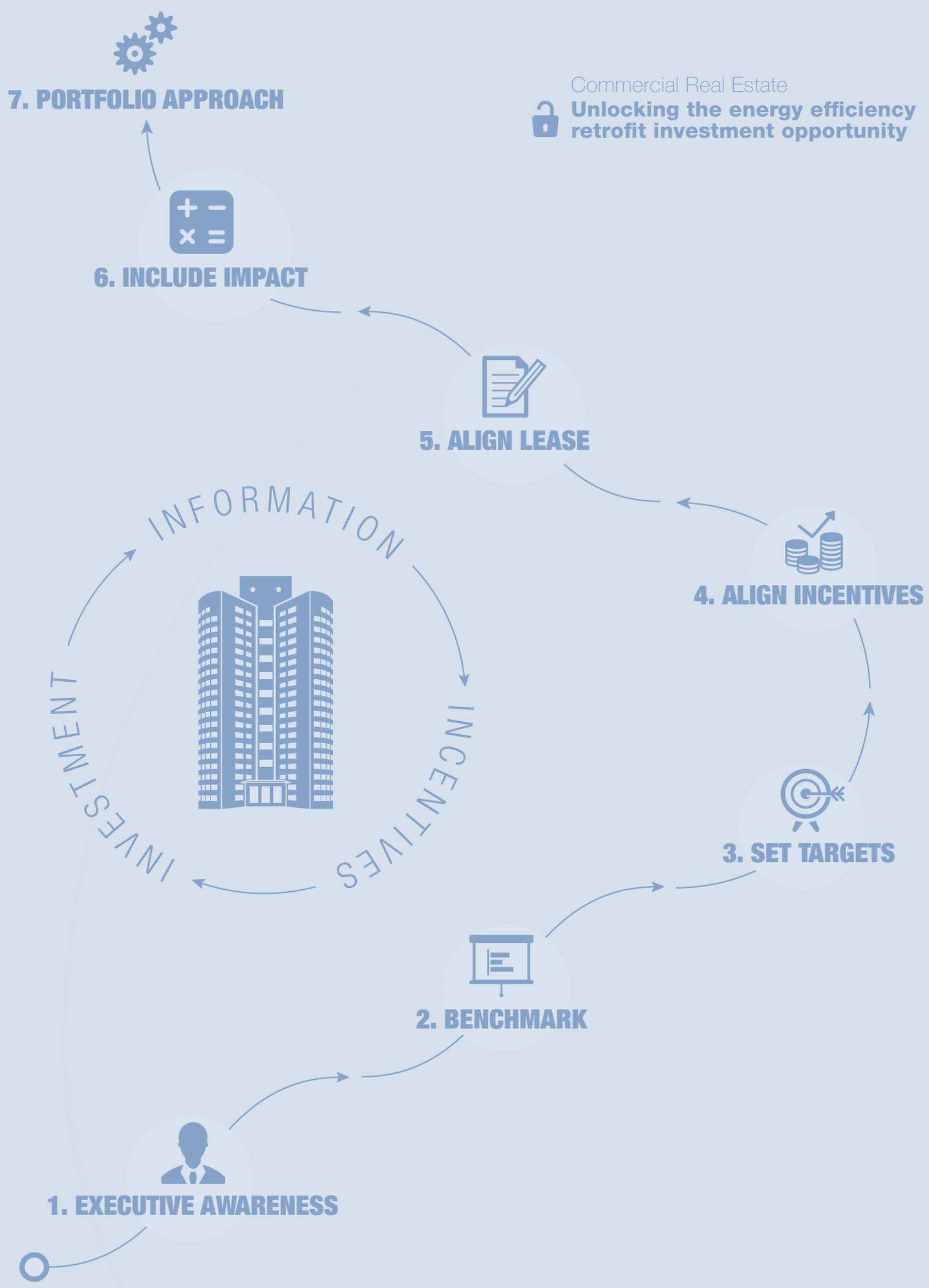
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FOREWORD

Buildings account for approximately a third of the world's energy consumption and global greenhouse gas (GHG) emissions. They are considered a high-impact sector for urgent mitigation action on climate change. As building owners and operators, real estate professionals have an opportunity to reduce energy consumption and GHG emissions while increasing the value of their real estate assets. One of the most effective means for the industry to do this is by implementing energy efficiency retrofits (EERs).

The possibilities for improving the sustainability of a building are substantial, but implementing an effective energy efficiency retrofit strategy can be challenging. Issues range from unique building characteristics and complex energy efficiency retrofit markets to different regulatory requirements, market perceptions and underdeveloped industry standards. The United Nations Environment Programme Finance Initiative (UNEP FI) Property Working Group seeks to address these challenges and encourages property investors to focus on the many benefits energy efficiency retrofits can bring.

On behalf of the Property Working Group, we are pleased to present our latest report on energy efficiency in the commercial real estate market, "Commercial Real Estate: Unlocking the energy efficiency retrofit investment opportunity." With a wide-ranging collection of case studies and a synthesis of the wisdom and practices of some of the market's leading investors, the Property Working Group seeks to make a strong business case for energy efficiency opportunities, as well as recognize and address the challenges. The paper strives to show investors that there are options available for all property mixes, and that possessing and managing the right information are crucial to unlocking the energy efficiency retrofit potential.

A second report will follow this briefing and will focus on making sure investors do have access to accurate sustainability metrics and that they manage this information in a meaningful way so as to ensure retrofitting happens at the right time and at the right place.

In publishing this Investor Briefing, the Property Working Group aims to aid real estate owners and investors in seriously considering and acting on energy efficiency retrofit investment opportunities. Our goals are to encourage sustainability in property finance and to encourage property investment and management practices that achieve the best possible financial, environmental, social results.

Laurie Weir
Senior Portfolio Manager
CalPERS
Co-Chair, UNEP FI
Property Working Group

Frank Hovorka
Responsible Property Director
Caisse des Dépôts et Consignations
Co-Chair, UNEP FI
Property Working Group

EXECUTIVE SUMMARY

This report provides a synthesis of wisdom and practices from real estate leaders presented in the form of a seven-step process for how investors can increase the value of their real estate assets through energy efficiency retrofits. Each step is supported by a practical example of how it has been addressed and implemented by an investor.¹

The central arguments of this report are:

- The scale of the investment opportunity in energy efficiency building retrofits is significant, between USD 231 billion² and up to USD 300 billion³ per annum globally by 2020. It is expected to continuously rise in the future.
- There is a robust business case for these types of investments and cost-effectiveness fares better than in most other sectors of the economy.
- A traditional response to these market failures has been the introduction of new policies, tax breaks, grants and loan programs; however, even with these incentives in place, the vast majority of profitable retrofit opportunities remain untapped.
- A complementary market-driven approach is to translate these challenges into three investment-related root causes and develop a practical framework for how to address them. The framework is composed of a seven-step process to overcome these causes, within the realm of control of asset owners and investment managers.
- Whatever their property mix, there are steps owners and managers can take now to set themselves up for success.

The framework's initial five steps will ensure asset owners and managers have the right information and incentives to significantly increase the number of energy efficiency retrofits:

1. **Ensure executive awareness of the business case.** This will lead to an investment in consultants or of internal staff time to carry out the next step.
2. **Measure and benchmark building energy performance.** This requires competent staff or trusted consultants to manage a portfolio-level program and an allocation of funds to carry out the audits and put in place energy benchmarking software.
3. **Set portfolio energy efficiency targets.** Whether or not they are publicly disclosed, executives and key decision makers need to know what they are aiming for.
4. **Link asset manager compensation to energy performance.** Like any major corporate initiative, the surest path to progress is to pay people based on performance, in this case on energy performance and some qualitative targets such as certification.
5. **Align lease clauses to enable retrofits (green leases).** Systematically introducing these clauses at lease creation and renewal enables energy efficiency retrofit projects to become viable.

The last two steps will increase an investment manager's chances of getting energy efficiency retrofits approved and financed:

6. **Include impact on asset value in investment analysis.** Enlarge the business case beyond the energy efficiency project assessment level by accounting for impact on the financial performance of the investment.
7. **Take a portfolio approach to determine next steps.** Map out your buildings according to four key variables (type of lease, lease duration, availability of capital and relationship to property [owner, manager or tenant]) and determine next steps for either a retrofit or creating the lease and financing conditions to enable one.

A. THE BUSINESS CASE FOR ENERGY EFFICIENCY

The scale of the investment opportunity in energy efficiency building retrofits to be realized globally by 2020 is significant, varying between USD 231 billion⁴ and up to USD 300 billion per annum, and is supported by a robust business case.

While the significance of the potential is undisputed, the range of values assigned differs in various studies. According to a 2013 Ceres report based on International Energy Agency (IEA) estimates, the additional investment required beyond business-as-usual investment in buildings' energy systems to reach a 2 degree scenario world would be up to USD 300 billion per annum globally between 2010 and 2020. Compare that with an overall investment in buildings of USD 620 billion per annum for that period.⁵

The seminal 2009 McKinsey & Company report "Pathways to a Low-Carbon Economy" estimated the additional capital expenditure beyond business as usual required to implement the cost-effective carbon abatement potential in buildings at around USD 231 billion⁶ per annum globally by 2020 and about USD 270 billion⁷ by 2030.⁸

Evidence of the cost-effectiveness and the robustness of the business case for these investments is based on the facts below, supported by academic and market research and public statements and reports by experts based on their knowledge and understanding of current market changes.

Energy efficiency measures can pay back quickly, depreciate slowly and deliver returns for decades, as shown in the real-life investment examples below taken from a series of studies and publications across geographies:⁹

- Investing in a 30 per cent improvement in building efficiency would have an internal rate of return (IRR) of 28.6 per cent over a 10-year period.
- 30 per cent or more in energy savings was identified across a portfolio of commercial buildings in France, ranging from those built in the 1930s to the 1990s.¹⁰
- A study of buildings in Singapore reveals that the resulting energy savings of a sample of buildings is 17 per cent post-retrofit. Transwestern, a private real estate firm in the United States, reports typical savings of 3 to 15 per cent on the utility bills of those of its managed properties that have undergone energy performance upgrades.¹¹
- Research indicates that recommissioning existing buildings can result in a 16 per cent median whole-building energy savings with a 1.1-year payback and a 91 per cent cash-on-cash return.¹²
- The World Green Building Council published a detailed business case for green buildings reinforcing these arguments.¹³

A correlation exists among more energy-efficient buildings, higher rents and higher sale prices as well as among low-performing buildings, value decline and longer vacancy rates, as presented in the following research and studies¹⁴ from around the globe¹⁵:

- Buildings with the Energy Star label had significantly stronger financial performance than similar unlabeled buildings: 13.5 per cent higher market values, 10 per cent lower utility costs, 5.9 per cent higher net income per square foot, 4.8 per cent higher rents and 1 per cent higher occupancy rates.¹⁶
- A study using the CoStar database in the US concluded that LEED (Leadership in Energy & Environmental Design) certified and Energy Star-rated buildings versus non-rated buildings had 8 per cent higher effective rents (a function of both rent amount and occupancy rate) and a 13 per cent sales price premium.¹⁷
- A study conducted in the UK on Building Research Establishment Environmental Assessment Method (BREEAM)-rated office buildings found an 8 per cent positive impact on sales prices and a 16 to 20 per cent increase in rental transaction prices.¹⁸

- A study performed in Australia on National Australian Built Environment Rating System (NABERS)-rated buildings reported a 9 per cent sales premium for the highest levels of performance (NABERS levels 5 and 6) and a 13 per cent discount for the lower levels of performance (NABERS 2-2.5) reported in some central business districts.¹⁹
- Data analysis from residential houses throughout France shows value increases of 40 per cent for the houses with the top building energy performance certificates and a 40 per cent discount for the worst performers as compared with the mean score.²⁰
- According to the Institute for Building Efficiency's 2013 Energy Efficiency Indicator Survey, one third of tenants will pay a premium to rent a green building.²¹

Deepening regulatory requirements are becoming a necessary part of risk management in order to protect the overall value of assets. Regulatory requirements concerning energy efficiency of buildings are being tightened in a number of countries around the globe,²² and the International Energy Agency (IEA) advocates mandatory renovation rates and the targeting of zero-energy buildings.²³ These regulatory requirements are pushing the mean performance of buildings upward. Buildings with low performance are losing value as the benchmark moves up and may be difficult to sell since they will require upgrades to just meet legal requirements. There are now regulations in place for the mandatory disclosure of energy performance of commercial buildings in Singapore, Australia, the UK and France and in over 10 US cities. A growing number of jurisdictions are requiring energy audits at the time of transactions, and some are going as far as requiring minimum performance standards.

Including energy performance in investment decisions forms an important part of risk management and an investor's fiduciary duty, as argued by the Institutional Investors Group on Climate Change (IIGCC).²⁴ For institutional investors and investment managers, the core principle of real estate investment is to create and sustain long-term value. Fiduciary duty dictates that institutional investors should understand and actively manage market shifts including occupier preferences and changing behaviour, as well as changes in the regulatory framework and legal requirements. It is equally important to adapt and respond to these emerging trends within real estate market cycles. Leading asset owners are already embedding sustainability in standard risk assessment methods and, through selection and monitoring processes, ensuring that investment managers and consultants are fully integrating sustainability and climate change considerations into investment and asset management practices.

As energy prices become increasingly volatile, investments in energy efficiency provide a good hedging strategy.²⁵ Furthermore, buildings that are energy retrofitted have been documented to improve productivity of tenants when the retrofit also considers related aspects such as tenant comfort, indoor air quality and natural daylight.²⁶ The business case for different types of interventions depends on timing within the building life cycle (refurbishment cycles and holding periods) as well as the regulatory context and local consumer demand.

Investing in quick wins and rational payback projects makes business sense even with short-term investment horizons. The first type of intervention concerns low-impact initiatives, which have generally short payback periods and can be implemented in currently occupied/leased buildings. These kinds of interventions usually lead to energy consumption reductions of 5 to 20 per cent and include measures such as lighting, energy management, control systems and the upgrading of heating and cooling devices.

Deep refurbishment pays off in market segments where the "green value" counts. Deep refurbishment projects aim to achieve high energy performance of the whole building and usually include insulation and/or window improvements. This usually involves higher investments that cannot be recovered solely through the energy savings of the first few years, and the financial analysis of investment opportunities needs to include the impact on asset values. Rocky Mountain Institute has recently published a relevant paper analysing ways to calculate and present the business case for deep retrofits.²⁷

B. RECOGNIZING THE CHALLENGES

Considering the investment potential and the evidence available for a robust business case for investing in energy efficiency as presented above, it is necessary to understand the main reasons why there is such a large market gap between the profitable retrofit market potential and the reality. At the root of it, the financial community is unclear on how to accurately price the risks and rewards of energy efficiency retrofit projects.

In the past few years, a number of reliable studies across geographies have pointed to a consistent set of causes and challenges. Beyond geographical and subsector differences, these can be robustly summarized as a mix of misaligned incentives, a lack of information and difficulties in accurately pricing the risks and rewards, leading to overly narrow approaches for calculating return on investment (ROI). In more detail, these include:²⁸

- Split incentives: Investors may not capture the value of energy savings
- Lack of information: Energy efficiency opportunities at building level often unknown
- First cost hurdles: Sunk costs to build retrofit business cases
- Debt constraints: Mortgage covenants prevent taking debt against the building
- Market fragmentation: Multiple ownership structures and asset class segments
- Complex project delivery: Complicated sales, engineering and financial analysis
- Underwriting: Lack of proven industry standards to evaluate projects
- Deal size: Deals are typically relatively small (e.g., less than USD 5 million)
- Elevated hurdle rate: Average expected payback period is 3.6 years
- Short holding period

To address these market failures, governments tend to introduce new policies, tax breaks, grants and loan programs.²⁹ In such cases, there has been increased retrofit activity; for example, in Australia, Germany, China and France. Indeed, all the most mature retrofit markets worldwide have mandatory disclosure processes, coupled with asset efficiency ratings and additional incentive or regulatory programs.³⁰ However, even in these supportive jurisdictions, the vast majority of profitable retrofit opportunities remain untapped. It does not appear to be economically rational to merely wait or lobby for even better policies.

A complementary approach is to translate these challenges into three investment-related root causes. A practical framework can then be developed to address these from an investor's perspective.³¹

1. Failure to provide a compelling business case for investment in retrofit with metrics and valuations.
2. Uncertainty about how to trigger the energy efficiency retrofit investment decision.
3. No designated role within an organization with the responsibility and authority to identify, plan and deliver energy-saving and carbon-reducing interventions. Additionally, the lack of any clearly defined approvals process or evaluation criteria.

C. TAKING CONTROL WITH A SYSTEMATIC APPROACH

Building on the experience of the UNEP FI Property Working Group members, this section proposes a seven-step process developed to support real estate investors to take advantage of this investment opportunity and cash in on the potential premium. These steps are explained in the following sections, each with the support of a practical example of how it has been addressed and implemented by an investor.

Seven-step process for real estate investors to drive value via energy efficiency retrofits

Information



1. Ensure executive awareness of the business case



2. Measure and benchmark building energy performance

Incentives



3. Set portfolio energy efficiency targets



4. Link asset manager compensation to energy performance



5. Align lease clauses to enable retrofits (green leases)

Investment: An inclusive approach



6. Include impact on asset value in investment analysis



7. Take a portfolio approach to determine next steps

INFORMATION



1. Ensure executive awareness of the business case

Making systematic progress on improving energy efficiency of properties in a portfolio requires time and money. It is imperative that the company's executives are aware of the initiative and that they see its value. To do so, they must believe in the business case for energy efficiency retrofits. It is valuable to spend time presenting enough evidence and working through objections with executives in order for them to be supportive. Energy efficiency retrofits are not just about the payback through reduced energy bills. There are many other benefits, and it is a matter of framing them to show how they help accomplish already-stated priorities of executives. Below is a short story of executive awareness at Bentall Kennedy that highlights these points.

Step 1 example

Bentall Kennedy³²

A number of Bentall Kennedy senior management partners are vocal supporters of sustainability. While they are aware of the key studies linking energy efficiency scores and building certification to increased asset valuations, their support is primarily based on first-hand experience. They have seen how integrating energy efficiency and sustainability principles into commercial real estate decisions has most often been a wise course of action. Each of them has been directly involved in significant decisions that included careful consideration of the life-cycle costs of new and existing buildings, including decisions around energy-efficient design and retrofits. Here are a few key milestones worth sharing.

Beginning in 2003, a conscious effort was made to get better utility data for properties. It was clear that energy prices had been rising and becoming increasingly volatile, with little expectation of this trend abating. While property management functions are handled at the local and regional levels, it was believed that there would be useful reporting and decision-making benefits from standardizing energy data and making it available at the portfolio level. This process took a few years to reach maturity. Executives were supportive in part because it aligned with the goals of the company to be a best-in-class manager.

In 2007, a push was made to train 40-plus asset and property managers on LEED. This led to Bentall Kennedy being one of the companies to pilot the LEED Volume Program and bulk certify about 50 office buildings in the US. Again, there was not an airtight business case with a clearly measurable ROI. The decision to train managers and certify what is now over 70 per cent of its assets under management was made on the strong agreement that this aligned with: the best available evidence for ensuring the company's properties are appealing to desirable tenants; the direction that investors wanted to go in; and the values of Bentall Kennedy. Large investments have been made at a variety of properties to surpass the minimum energy efficiency scores required by LEED and to maximize LEED points. Executives were able to frame these decisions within the overall strategies for client portfolios.

“While the evidence intuitively and directionally points to investments in energy efficiency to increase net operating income (NOI) and asset values, we are not able to say with 100% confidence that this is the case. Nor are we able to make a perfect financial prediction as to the percent increase in asset value due to an energy efficiency retrofit. We do not have a magic formula. With the support of senior management we are beginning to mine existing data to get a clearer picture of the correlation between certification, energy intensity, tenant satisfaction, occupancy rates, NOI and asset valuations. In the absence of the perfect business case, progress on energy efficiency is seen to be, at minimum, a strong defensive position. Choosing to not improve energy efficiency and/or certifying a building to the relevant standard for its asset type and market is a choice to limit the pool of investors who would consider buying the property and therefore likely reducing the number of bids and ultimately the selling price. Effectively managing energy costs at the property level and constantly making progress on driving down energy use through retrofits is now seen by executives as ‘table stakes’ for being a reputable asset management company”.

David Antonelli

Executive Vice President, Portfolio Management

Looking forward through the end of 2014, a formal training program for investment managers will refresh their knowledge of environmental, social and governance (ESG) management best practices. This training will lead to ESG key performance indicators being more broadly integrated into investment and asset management compensation in 2015.

INFORMATION



2. Measure and benchmark building energy performance

As the adage goes, you can't manage what you don't measure. This goes to the heart of why sustainability benchmarking is a fundamental tool to inform the real estate investment and asset management decision-making process. The key lessons are to think through which benchmarks will be useful for your business, what data is available and whether your market gives credit for reduced operating costs with increases in asset values. It is necessary to find a balance in the level of detail sought for in data. While it takes resources to gather and analyze a complex set of data, this provides a better understanding of the risks and how to mitigate them. Benchmarks enable the investment manager to present data in a form that is easily understood by other market players and shows the strength of the actions implemented in the portfolio. For those investors located in regions where established standards are not common, selecting a smaller set of metrics is a good starting point to gradually add complexity. An upcoming UNEP FI paper will further examine the topic of sustainability metrics and those that are of value to real estate investors and managers.³³

Step 2 example Hermes Real Estate

A priority for Hermes in 2006 was to better understand the cost-benefit implications of sustainability, and how they relate to asset value. Hermes' view at the time was that the sustainability profile of a building impacted its investment value. However, the firm lacked the analytics to tell by how much and in what time frame. Thus, Hermes decided to develop its own sustainability rating system to better understand the potential value of sustainability. The impact to financial performance was calculated as the impact of sustainability characteristics on cash flow internal rate of return (IRR) over a period of 10 years for each asset. The cash flow inputs included impact on rent, yield, taxes and other costs (insurance), while the driving sustainability characteristics included energy, weather resilience, building flexibility, building quality, transport, waste, water and community. This information fed into asset business plans.

The chart below shows how the sustainability score of individual buildings was improved. Note that improvements derived from capital expenditures are generally lower than those gained from service charges or improved management behavior. This is a recurring lesson: Improvements in energy efficiency in buildings do not need to start with capital improvements, but they do start with good measurement and data.

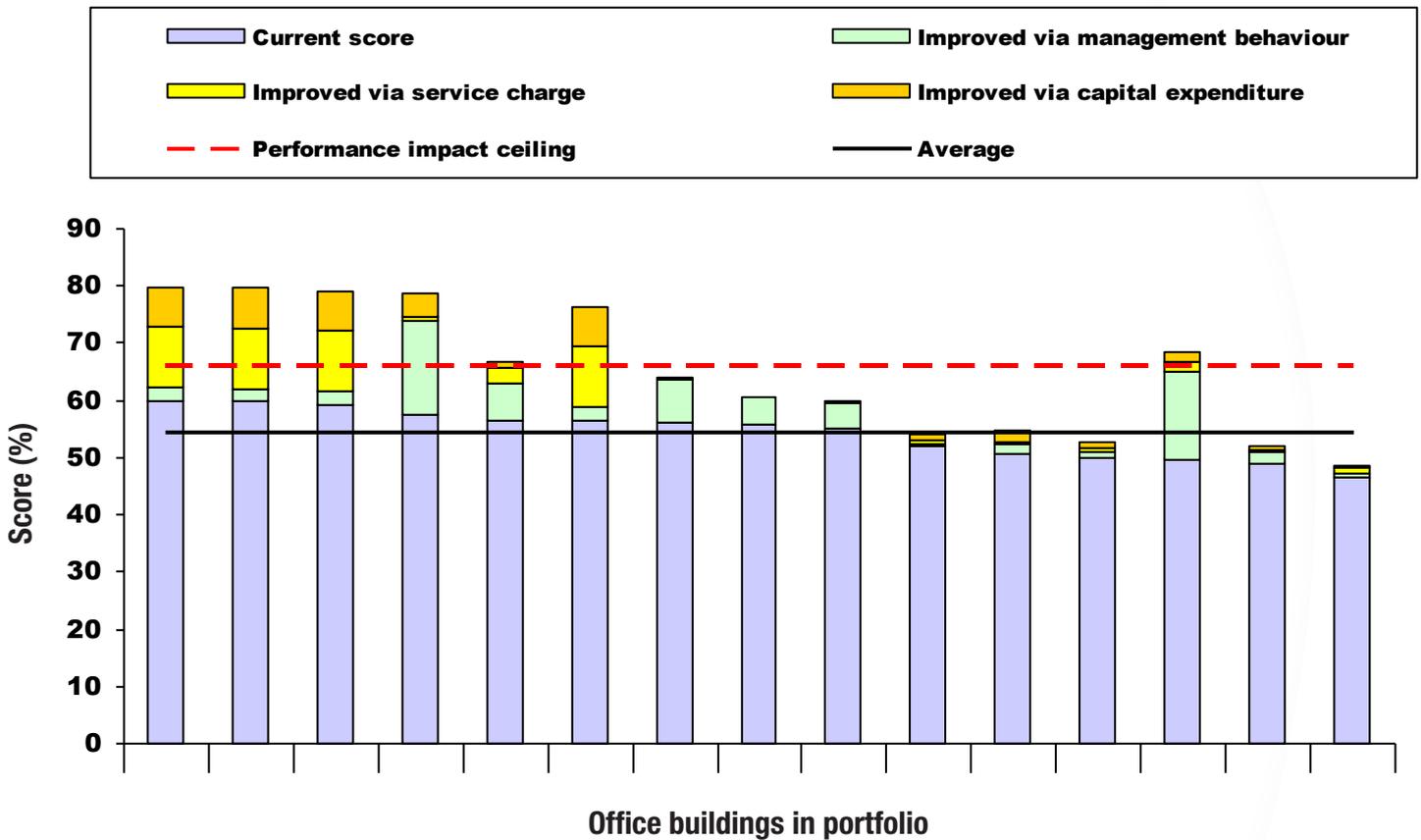


Figure 1

Hermes sustainability rating system (SRS): Analysis of sustainability scores of various buildings and their improvement in 2009

After carrying out this internal benchmarking, Hermes realised that the benchmarking would be more meaningful if it focused on fewer metrics and included a larger pool of buildings. This led Hermes to help initiate an industry-wide benchmark in the UK with the Jones Lang LaSalle (JLL) operational sustainability benchmark, which focuses on ongoing performance of energy, water and waste. Launched in 2008, this benchmark has now grown to cover 15 investment houses and over 500 offices and shopping centres in the UK. It enables Hermes to understand real operational performance year over year, with annual industry comparison, which helps to pinpoint action areas for improvements. Hermes uses this tool with its internal cost-benefit analysis to identify the most cost-effective improvements for a given asset and integrate this into the asset business plan in line with its investment life cycle.

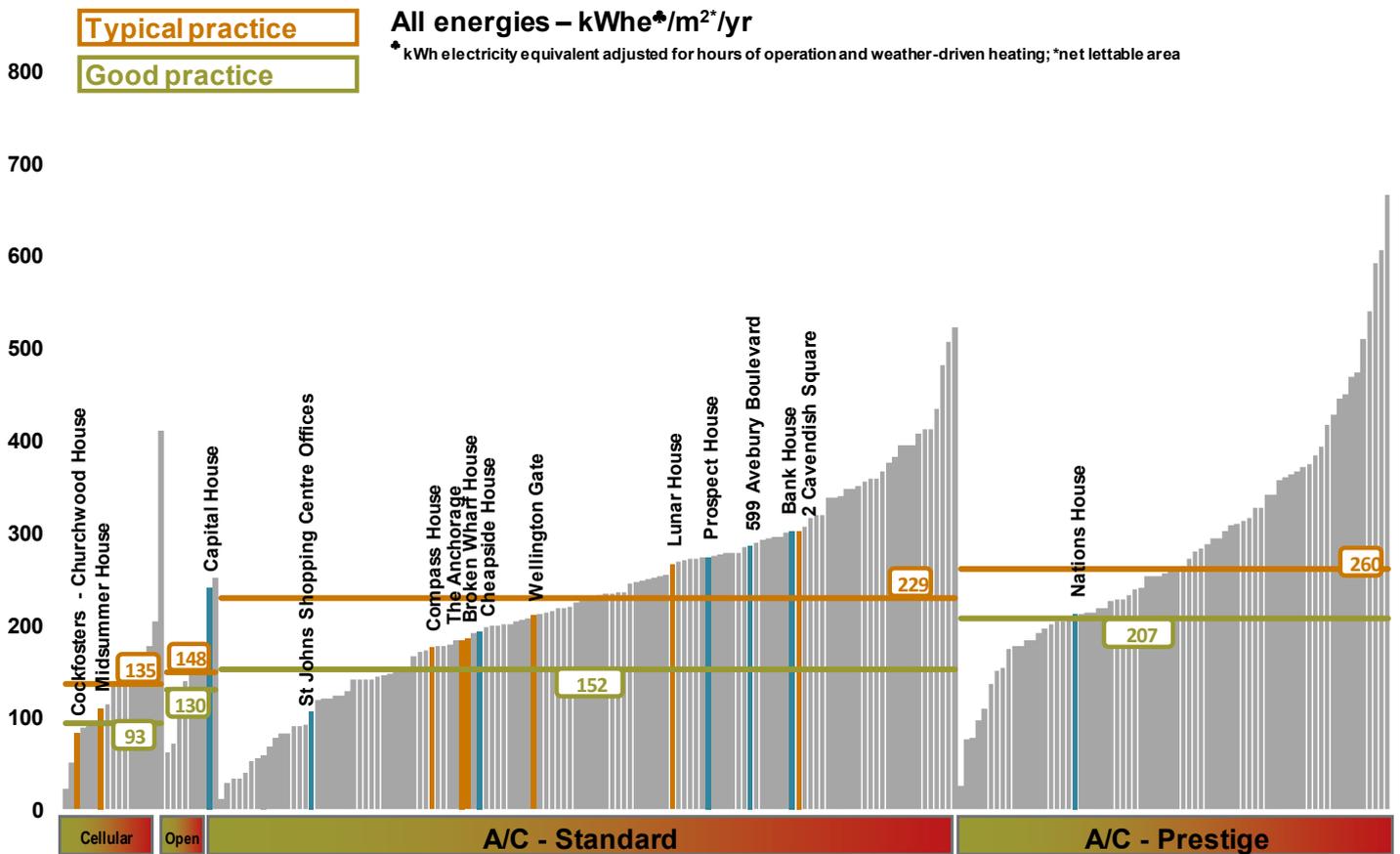


Figure 2

Energy intensity: Whole building offices – adjusted kWh/m₂/yr

This level of industry benchmarking enabled asset managers to understand the relative performance of their buildings and to quantify the degree to which they could improve (or the degree to which they were outperforming their peers). With the success of the industry benchmarking initiative, Hermes then proceeded to enable a further industry collaboration via the creation of the Investment Property Databank (IPD) EcoPAS initiative in 2012. This initiative is used to benchmark the sustainability risks to which a whole real estate fund is exposed. This is done by allowing peers to compare performance and, over time, to enable them to strengthen their analysis of the extent to which a whole portfolio and a building's asset value are enhanced due to sustainability practices.

The key lesson from the Hermes example is that an original push for greater energy and sustainability data has proven valuable enough for the initiative to have grown into the creation of new industry benchmarks/indices. Real estate owners and managers who want to create value do not wait for mandatory disclosure or industry benchmarks; they innovate and drive markets forward with data and collaboration.

INCENTIVES



3. Set portfolio energy efficiency targets

If you aim for nothing, you will hit it every time. The most powerful signal large asset owners with sizeable real estate portfolios can send is to declare and communicate a reasonable but ambitious target for reducing energy intensity across the portfolio. This sends a clarion call that reverberates throughout the entire real estate ecosystem. Organizations with building energy efficiency goals implemented 50 per cent more energy efficiency measures than did organizations without goals, according to the Institute for Building Efficiency.³⁴

Step 3 example CalPERS

An excellent example is CalPERS, the largest pension fund in the United States. In 2004, the CalPERS Investment Committee set a goal of reducing energy consumption in its Core real estate portfolio by 20 per cent by 2009. By the end of this program, CalPERS investment managers had exceeded the target, reporting a total energy reduction of 22.8 per cent. This cumulative energy reduction is roughly equivalent to preventing 126,000 tons of CO₂ emissions, removing around 22,000 cars from US roadways or powering 9,750 homes for a year.

More recently, CalPERS and all of its Core real estate managers became members of the Urban Land Institute's Greenprint Center for Building Performance and now report energy usage on selected assets. A worldwide alliance of real estate owners, investors and operators, Greenprint is committed to reducing carbon emissions across the global property industry. Greenprint provides an environmental management platform that enables property owners and managers to measure, analyse and benchmark environmental performance, specifically for energy consumption, emissions generation, water usage and waste diversion. As a member-driven nonprofit, Greenprint has created a community for participants to share and learn from one another while leading the way towards ongoing improvement in environmental performance. For the last three years, Greenprint members have collectively reduced energy consumption on a year-over-year basis.

According to CalPERS Senior Portfolio Manager Laurie Weir, "CalPERS looks to partner with our Core real estate managers through our shared commitment to sustainability. We set clear goals then empower our external managers to develop solutions that have a positive impact on energy usage, cost and risk based on the characteristics of the strategy and investment."

INCENTIVES



4. Link asset manager compensation to energy performance

Despite the predictable irrationality of humans, pay remains a powerful motivator. What we pay people to do really matters and is at the absolute core of corporate governance. Energy productivity is just one value driver for real estate asset managers, but it is an increasingly important one. The reason it is becoming more important is that we have entered into an era of rising and volatile commodity prices. It's true that natural gas prices have come down in some markets, but overall, real energy prices are rising and becoming increasingly volatile, making energy hedging strategies increasingly relevant to a company's ability to create value. So there is logic in aligning a portion of an asset manager's executive compensation package with resource efficiency.

Step 4 example Stockland

One of the most advanced companies in this respect is Stockland, a publicly traded Australian real estate asset manager. Stockland aligns the compensation of the managing director, business unit CEOs and other senior executives (as well as all direct reports of the managing director) with improving resource productivity. Approximately 25 per cent of total short-term variable compensation³⁵ is linked to sustainability performance, with a focus on resource use (see below).

25% Sustainability-linked short-term incentive compensation as a percentage of total short-term incentive compensation for fiscal year 2012.

AUD 77,024 Average sustainability-linked short-term incentive compensation (7 executives).

AUD 873,327 Average base salary (7 executives).

Note: Assumes on-target performance

Stockland uses a mix of quantitative and qualitative targets to focus its executives. In the realm of energy, Stockland has set a target and linked executive bonus pay to reduce energy intensity across its Commercial Property (office, industrial and retail) portfolio by 20 per cent by 2014 as well as attaining a 4.5-star average NABERS rating for its office portfolio.

Stockland's board links executive compensation to the qualitative aspect of making progress on a group climate change adaptation strategy by undertaking specific analysis and preparing adaptation plans for assets at potential risk to a changing climate. This has led executives to undertake climate vulnerability and building resilience assessments at eight representative properties across office and retail portfolios, which informed the development of Stockland's climate resilience assessment tool for Commercial Property assets. This assessment tool has now been adapted for Residential and Retirement Living assets.

There are four key factors that explained the effectiveness of using Stockland's executive compensation incentive program to drive down resource use:

1. The targets were based on solid data, and they were ambitious yet reasonable.
2. The incentives were meaningful, making up approximately 25 per cent³⁶ of short-term incentive compensation.
3. The incentives were tied to long-term targets with short-term milestones to gauge and reward progress at regular intervals.
4. Stockland's incentive program included a complement of qualitative targets as well, taking stock of Albert Einstein's prescient comment that an accountant is someone who knows the price of everything and the value of nothing. While quantitative targets are necessary, the net outcome is generally more impactful when qualitative and quantitative factors are combined.

INCENTIVES



5. Align lease clauses to enable retrofits (green leases)

The split incentive has been blamed for making energy efficiency retrofits hard or impossible to accomplish. If the owner/landlord invests money to drive down energy use, but the tenant is paying the energy bills, the owner claims to have no payback. Furthermore, various lease structures are such that energy efficiency retrofits often face an uphill battle for approval. Tenants can make it difficult to proceed with a retrofit. The best way to avoid such challenges is to include key clauses when a lease comes up for renewal. The most important green lease clause elements are:³⁷

1. Setting sustainability objectives and intent
2. Recovery of capital costs for sustainability initiatives through operating costs
3. Use of restrictions, usually through the environmental management plan
4. Prescriptive elements through tenant improvements, alterations and repairs
5. Monitoring and reporting requirements
6. Assignment and subletting requirements
7. Default, remedies and dispute resolution mechanisms

Step 5 example Colonial First State Property

One company that has taken a proactive and systematic approach to resolving these issues is Colonial First State Property.

“All of our commercial office leases are now Green Leases; i.e., they all contain a Green Lease Schedule which has the same legal status as the lease. The Green Lease has obligations for the landlord in terms of its ESG program and the landlord commits to achieving these. The tenant can either commit to certain outcomes, or decline if it is not so inclined because it does not have those commitments or CSR policies. The purpose of our Green Lease Schedule is to achieve better sustainability outcomes for the property and all occupants and users of the building”.

Rowan Griffin

Head of Sustainability for Colonial First State Property

The keys to making the company's green lease program work are:

- The legal commitments demonstrated by the landlord
- The Building Efficiency Management Plan, which is the implementation mechanism for the landlord and the tenant to administer the Green Lease Schedule
- Regular meetings to implement and ascertain the outcomes
- The understanding that a deal will go forward even if the tenant is not keen to get involved

To ensure that the Building Efficiency Management Plan is taken seriously, all staff have key performance indicators (KPIs) in their employment contracts, and among these are the requirements to improve energy efficiency as part of their job responsibilities. There are clear guidelines and processes to facilitate progress. The asset (property) plan includes energy efficiency opportunities; this is complemented during creation of the improvement plans that are done every three years and updated annually. All the identified opportunities are assessed and incorporated into the capital and operational budgets annually, provided the payback is within certain parameters.

The improvement plans use some consistent metrics across the portfolio, including the national benchmark for energy, emissions and sustainability (Australia's NABERS program). The portfolio-level data is then submitted to Global Real Estate Sustainability Benchmark (GRESB), for which Colonial First State Property was ranked number one in the world for global listed real estate investment trusts (REITs) in 2013. The energy intensity reduction seen since 2007 is an astounding 40.8 per cent and AUD 12 million.³⁸

INVESTMENT



6. Include impact on asset value in investment analysis

Energy efficiency investments do a lot more than just save energy. They also enable buildings to command higher rent, which, if properly considered, bumps up the value of the building asset.

Step 6 example Caisse des Dépôts et Consignations

At the end of 2009, Caisse des Dépôts et Consignations (CDC) initiated a project in anticipation of the French environmental law Grenelle II. The law requires a 38 per cent reduction in primary energy consumption by existing commercial property stock by 2020. CDC wanted to promptly address the challenge to limit the depreciation risk for its existing portfolio and spread out the refurbishment cost over time.

First, energy audits were carried out on the whole portfolio. Actual consumption invoices (from tenants and owners) were analysed to determine a breakdown of energy consumption per type of use (HVAC, lighting, others), and recommendations were issued through dynamic simulation. Major upgrades were timed according to life-cycle assessment to coincide with the replacement of components at the end of their lifespan, so they could be covered by the planned budgets for major repairs and maintenance.

When accounting only for energy expenses, the investment payback period exceeded eight years in many cases. However, the ratio (in percentage) of refurbishment cost to asset value was also calculated. This ratio depends on the functional quality of the asset and its location. Even with long payback periods, it may make sense to refurbish if the asset market attributes value to the performance benefits of greener buildings.

The first stage of this project has highlighted several indicators that were examined simultaneously for refurbishment decision-making. Key indicators are presented below:

PORTFOLIO	TIME FRAME	REFURBISHMENT COSTS (€/M ²)	COST-EFFICIENCY (€/KWH SAVED)	REFURBISHMENT COST TO ASSET VALUE (%)	PRIMARY ENERGY REDUCTION TARGET (%)
Commercial	2020	173	1.34	4.0	39
Residential 1	2020	100	1.07	2.1	36
Residential 2	2030	288	3.06	4.1	32

Table 1

Key indicators for refurbishment decision-making

The impact of environmental upgrades on value was illustrated through a deep refurbishment undertaken in 2010 of a 1930s-era building (7,500m²) in the Paris Central Business District (CBD). The building is now completely retrofitted and commercialized, making it possible to compare predictions with effective data. In order to assess the added value from the environmental retrofit, three scenarios were considered with the following results:

Business as Usual (BAU): No refurbishment, only standard maintenance. Rental prices correspond with rental prices for second-hand buildings. Asset liquidity is deemed poor, leading to higher exit yield and higher vacancy.

Conventional Refurbishment (RT): Refurbishment meets current regulatory requirements. The asset is valued as a first-hand building but does not benefit from a green premium (average rental price in first-hand market). Asset liquidity is expected to decrease over time.

Green Refurbishment (HQE): Energy upgrade enables owner to benefit from responding to tenants' requests and very good liquidity.

The valuation was performed using a discounted cash flow method and a Monte Carlo assessment of options casualties. To assess the difference in values due to the absence of environmental features, longer vacancy periods between leases were used in addition to the differences in rental and exit values. The discounted cash flow calculation (Figure 3) shows that the two refurbishment scenarios (RT and HQE) lead to lower cash flows respectively until years 7 and 9. Yet, over the long run, they present the highest net present value (NPV). However, refurbishment appears financially beneficial from the start since it enables the owner to increase rental revenue and decrease future depreciation risks. The initial investment costs are offset by the future benefits, in particular due to the higher exit rate expected.

	BAU	RT	HQE
Investment (€)	0	13 000 000	18 300 000
Annual rental revenue (full occupancy) (€)	4 288 611	5 685 730	6 054 200
Annual rental growth rate (%)	1.50	1.60	1.70
Discount rate (%)	7.75	6.80	6.70
Vacancy period between leases (months)	12	10	9
Maintenance and operation costs (including vacancy) (€)	124 257	91 855	76 310
Discounted cash flow (DCF) calculation (accounting for investment costs) (€)	52 748 917	82 191 774	88 243 576
Asset value (€)	52 748 917	89 926 650	100 377 224

Table 2

Principal findings from the Caisse des Dépôts et Consignations case study

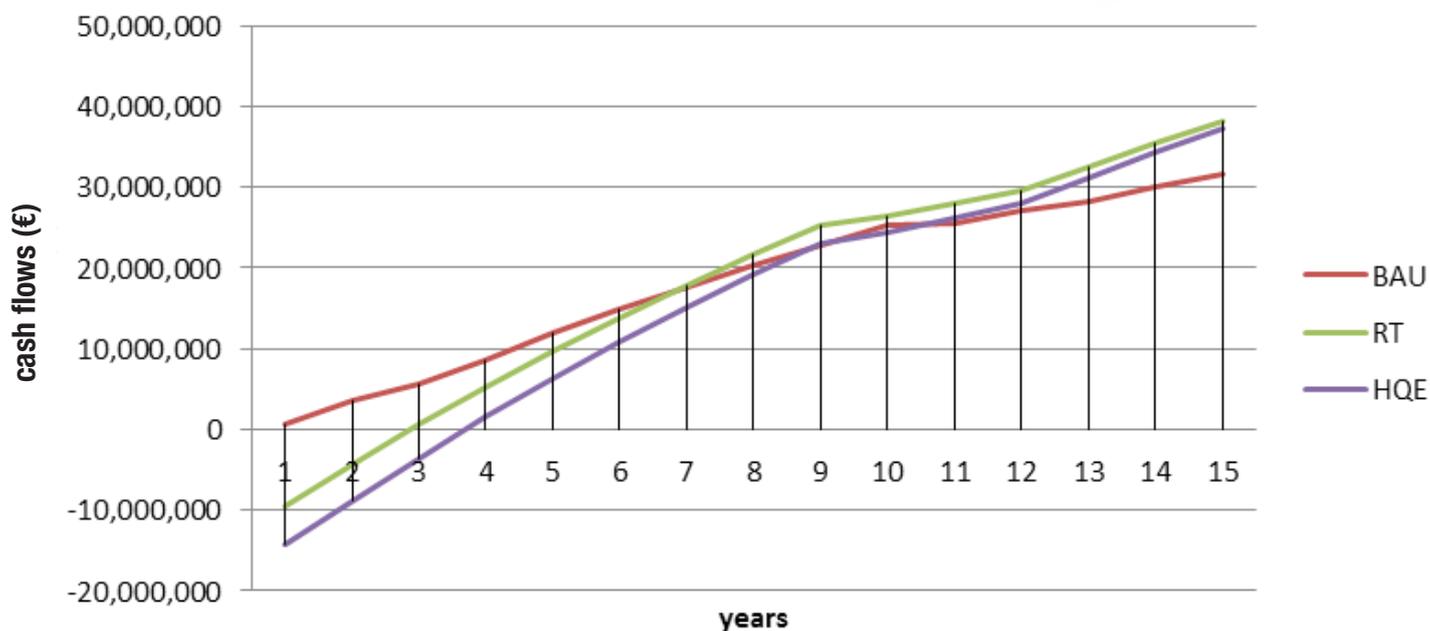


Figure 3

Evolution of the cumulative discounted cash flows over time

The green refurbishment of the Paris building, with a cost of approximately one third of the initial building value, enabled the investor to nearly double the initial value of its asset. In addition, it led to a 10 per cent value premium compared with the conventional refurbishment scenario. These results highlight that traditional payback calculations accounting only for energy savings can be misleading, as they do not account for the long-term asset value.

As energy retrofits become a regulatory requirement, investors will require an energy efficiency strategy at a portfolio scale in order to mitigate risk. Decisions will not only concern choosing refurbishment scenarios within buildings according to technical criteria, but they will also require prioritizing between assets to maximize the value of the portfolio over time according to financial and environmental criteria.

INVESTMENT



7. Take a portfolio approach to determine next steps

The first six steps will enable asset owners and managers to find and bring forward profitable energy efficiency opportunities. The seventh step is to understand and proactively manage four key variables: type of lease, lease duration, availability of capital and whether you are the owner, manager or tenant. Taking a portfolio approach and mapping out these variables will yield a number of achievable action items for each property. Systematically working on these action items will increase the likelihood of each building's deeper energy efficiency retrofits being financeable. Key variables to be considered are:

Type of lease

- **Net leases** refer to net rent, a type of lease wherein the tenant is responsible for paying the energy bills.
- **Gross leases** refer to a type of lease where the tenant pays a fixed monthly rent that includes the energy bills, common-area expenses and maintenance.

Lease duration

- **Long-term hold** refers to an owner and/or tenant who will own or lease the space for a longer period of time, generally five-plus years but ideally 10-plus years.
- **Short-term hold** refers to an owner or tenant who will own or lease the space for less than five years, though usually two years or less.

Availability of capital

- **Capital available** refers to owners or tenants who have ready access to capital at or near market rates; e.g., they can self-finance or can access a line of credit at competitive rates.
- **Constrained capital** refers to owners or tenants who would have to secure a special loan above market rates that would price in the risks of them capturing the financial benefit of the retrofit.

Whether you are the tenant, manager or owner

Combinations of these variables have often been used to state that energy efficiency retrofits are too complex. However, they can be put into a simple four-by-four table that creates 16 scenarios (see table below). Each case is given a gradient in terms of level of difficulty to complete a significant/deep energy efficiency retrofit.

A retrofit is easiest when the building/leased space:

- will be held for a long period of time by the owner,
- the tenant has multiple years remaining on the lease,
- the owner has capital available and
- the lease structure enables both to capture the benefit (or pass recoverable costs on to the tenant).

A retrofit is most difficult when:

- the owner and tenant only plan to be in the space for a short period of time,
- they are capitally constrained and
- the lease does not resolve split incentive issues.

Step 7

Key variables and likely next steps for each scenario

		LONG-TERM HOLD		SHORT-TERM HOLD	
		Owner	Tenant	Owner	Tenant
CAPITAL	Net	Deep measures with 8+-year payback, strategically building asset value	Approach landlord offering to share energy efficiency gains if landlord invests in retrofits Create long-term energy efficiency plan with landlord to enable deep measures	Building certification to help sale price All quick wins	Make renewal conditional on energy retrofits Green lease clauses
	Gross	Deep measures with 8+-year payback, strategically building asset value Green lease clauses to get support of tenant in reducing energy	Negotiate green lease clauses to benefit from reducing energy use	All quick wins	Make renewal conditional on energy retrofits Green lease clauses
CONSTRAINED CAPITAL	Net	Building certification All rational paybacks in own space Consider energy service company (ESCO) offering	All rational paybacks in own space Push landlord to complete all rational paybacks at building level	Green lease clauses Replace most inefficient lighting in common areas (if under 1- to 2-year payback) Operating hours	Green lease clauses Procurement policies Replace inefficient lighting (if under 1- to 2-year payback) Operating hours
	Gross	Rational replacement with efficient equipment Mid-level building automation system (BAS) upgrade Commissioning Consider ESCo offering	Negotiate recover-expense lease clause so owner pays for up-front cost of energy upgrades	Green lease clauses Replace most inefficient lighting (if under 1- to 2-year payback) Commissioning Operating hours	Green lease clauses Procurement policies

No matter where a building is in the table, there is a next step that can either improve energy efficiency or create the conditions to set up the building, the owner and the tenants for a profitable energy efficiency retrofit. It is useful to think of three levels of energy efficiency projects. The quick wins generally have paybacks of less than two years (depending on utility rates and local costs for technology and labour).

Three levels of projects

1. Quick wins

- a) Inserting green lease language
- b) Aligning operating hours with actual building occupancy (rather than lease agreement)
- c) Recommissioning (if not done in previous three years)
- d) Reducing plug load and introducing energy-efficient specifications into procurement policies
- e) Replacing very inefficient lighting (e.g. T12 fluorescent lamps, magnetic ballasts and halogen lamps)

2. Rational paybacks

- a) Commissioning an energy audit with recommendations for efficiency measures
- b) Replacing equipment at time of natural replacement (e.g. chillers, boilers) with up-to-date technology and more efficient equipment, for a smarter building with upgraded controls.
- c) Installing mid-level building automation system with interval energy data monitoring
- d) Upgrading lighting (often LED or T5 fluorescent luminaires and occupancy sensors)
- e) Achieving appropriate inspection and building certification for its market

3. Deep measures

- a) Upgrading the building envelope (windows, brise soleil, roof and wall insulation)
- b) Replacing base building lighting systems with digital addressable lighting interface (DALI)-controlled LED lighting systems
- c) Installing renewable energy systems
- d) Installing next-generation smart building automation system (BAS)

The most important factor when deciding if and when to do these energy efficiency retrofits is to have forward-looking investment plans that cover the whole portfolio. This means a portfolio-level strategy to prioritize investments in assets that will have the greatest return on investment in terms of energy savings as well as asset values. The forward-looking strategic view is necessary in order to avoid false opportunities; e.g. replacing a heating system with a more efficient device, and some years later realizing that a general overhaul of the building is necessary. The overhaul substantially cuts the heating demand of the building, and now the recently replaced heating device is oversized. In this case, resources were not efficiently allocated.

CONCLUSION

Energy efficiency retrofits have shown attractive returns on investment, even for short-term investors. This is because such measures do not only generate direct cost savings; they are also showing positive impacts on the overall value of buildings.

However, despite evidence of the cost-effectiveness and robustness of the business case for such investments, the vast majority of profitable retrofit opportunities remain untapped. A reasonable conclusion is that the market perceives a high risk to investing in energy efficiency retrofit projects. The proposed framework illustrates the benefits of energy efficiency retrofit investments and supports asset owners' and investors' decision-making process in understanding and managing the risks at stake and taking advantage of energy efficiency retrofit opportunities.

By following the seven-step process, real estate owners and investors can tap into significant sources of wealth creation within their portfolios. If owners have enough funds themselves, they can capture the financial benefit themselves. If they do not have the funds, they will be able to bring well-constructed business cases for energy efficiency retrofits to the financial markets where demand for such projects is growing.

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ENDNOTES

- 1** This paper does not address the details of energy retrofit financing models/arrangements. That topic may form the basis of a future UNEP FI PWG paper. For now, we can learn from the early adopters who have provided the lessons, business cases and scalable tools that energy efficiency retrofits can be profitably carried out and financed in all markets.
- 2** McKinsey & Company (2009). This 2009 figure of USD 231 billion is converted from the original figure of EUR 169 billion using <http://www.xe.com/> on 29 January 2014. McKinsey & Company (2009) provides a quantitative basis for such discussions. McKinsey & Company, supported by 10 leading global companies and organizations – The Carbon Trust, ClimateWorks, Enel, Entergy, Holcim, Honeywell, Shell, Vattenfall, Volvo and WWF – has assessed more than 200 GHG abatement opportunities across 10 major sectors and 21 world regions between now and 2030. The results comprise an in-depth evaluation of the potential and of the investment required for each of those measures.
- 3** Ceres (2013) estimate, based on IEA data, that around USD 300 billion per annum on average of additional investment is needed from 2010 to 2050 to close the clean energy gap (from 6 degrees Celsius [6DS] above pre-industrial levels to 2 degrees Celsius [2DS] above pre-industrial levels) by 2050.
- 4** McKinsey & Company (2009). This 2009 figure of USD 231 billion is converted from the original figure of EUR 169 billion using <http://www.xe.com/> on 29 January 2014.
- 5** Ceres (2013)
- 6** McKinsey & Company (2009). This 2009 figure of USD 231 billion is converted from the original figure of EUR 169 billion using <http://www.xe.com/> on 29 January 2014.
- 7** McKinsey & Company (2009). The figure of USD 270 billion is converted from the original figure of EUR 198 billion on 29 January 2014.
- 8** Ibid
- 9** Ceres (2012)
- 10** Kamelgarn, Y., & Hovorka, F. (2013)
- 11** World Green Building Council (2013)
- 12** Mills, E. (2009)
- 13** World Green Building Council (2013)
- 14** There are a few studies that show the quantitative results energy efficiency has had on appraised value on that property. The Appraisal Institute wrote an excellent paper called “Recognition of Energy Costs and Energy Performance in Real Property Valuation” (2012) and found a range in increased value from 8.5 per cent to over 100 per cent. This report also provides an excellent summary of the issues appraisers face in ascribing value to energy efficiency. However, more rigorous research is needed to establish the correlation between energy efficiency retrofits and property value. The Green Building Finance Consortium has published a free online book called *Value Beyond Cost Savings: How to Underwrite Sustainable Properties* (2010), which provides detailed methodologies for those looking to take on this challenge.
- 15** A good summary of further studies can be found in a report from the European Commission: “Energy performance certificates in buildings and their impact on transaction prices and rents in selected EU countries” (2013). The report “Energy efficiency strategy at the portfolio of a property owner” (Kamelgarn & Hovorka, 2013) covers impacts on occupancy rates. More examples of individual properties showing a connection between energy efficiency and appraised value can be found in the report “High Performance Green Building: What’s It Worth?” (Cascadia Region Green Building Council, 2009).
- 16** Pivo, G. A. (2010), shows a dataset of over 1200 buildings in the US and uses controls to isolate out intervening variables.
- 17** Eichholtz, Kok, & Quigley (2013)
- 18** Chegut, Eichholtz, Kok, & Quigley (2011)
- 19** Newell, MacFarlane, & Kok (2011) emphasized that it is worth noting that a high adoption of the NABERS system, high electricity prices (AUD 0.19+) and a real estate sector that is well versed in sustainability issues may be positive indicators in other countries. The price premiums and discounts may not yet be realized in other markets without such conditions but are likely to come.
- 20** Plan Bâtiment Durable (2013)
- 21** Institute for Building Efficiency (2013)
- 22** IEA (2013). While to date most of the regulatory requirements do concern new construction of buildings, requirements for refurbishment are under discussion and the European Commission has introduced a mandatory refurbishment rate for public buildings.
- 23** www.sustainablebuildingscentre.org/pages/aboutus
- 24** IIGCC (2013)
- 25** While future projections are always uncertain, there seems to be a trend towards increasingly volatile energy prices, which makes energy investments a good hedging strategy. In addition to rising electricity prices (US prices are up 40 per cent since 2000, with the industry projecting annual energy price increases of 6-plus per cent), a large number of global majors now operate with a shadow carbon price, suggesting a significant probability of carbon pricing on the horizon, which would also impact the volatility of energy prices.
- 26** A report by the World Green Building Council (2013) provides a great deal of evidence that employee productivity is higher in buildings that provide more outside views and daylight and better systems. It outlines that outside views provide workers with 10 to 25 per cent better mental function and memory; results in call centre workers processing calls 6 to 12 per cent faster; and hospital stays are reduced by 8.5 per cent. In addition, increased daylight allows: students to achieve 5 to 14 per cent higher test scores and learn 20 per cent faster; workers to be 18 per cent more productive; and retail sales to increase by 15 to 40 per cent. Systems can increase productivity by: 23 per cent from better lighting; 11 per cent from better ventilation; and 3 per cent from individual temperature control. While the research in energy productivity is far from bulletproof or conclusive, a positive correlation is increasingly apparent. In conclusion, many energy efficiency retrofits can improve the percentage of floor area with outside views, increase natural daylight and improve lighting, ventilation and temperature controls. While some of this may well already be included in the asset value increases previously mentioned, this is imperfect and likely understated.
- 27** Rocky Mountain Institute (2014)
- 28** Deutsche Bank Climate Change Advisors (2012), Marbek (2010), Better Buildings Partnership (2012) and Appraisal Institute (2012)
- 29** This paper does not explore the intricacies of energy efficiency financing largely because this area is very well documented. Some of the most detailed discussions of policy options are: Hilke, A., & Ryan, L. (2012); Marbek (2010), pp. 15-22; Deutsche Bank Climate Change Advisors (2012), p.9 p.38, World Economic Forum (2011) and Investment Property Forum (2012)
- 30** World Economic Forum (2011)
- 31** Better Buildings Partnership (2012), Marbek (2010)
- 32** Bentall Kennedy is a North American-based asset and property management company. A majority of assets under management are from large pension funds with longer investment time horizons. Roughly 150 million square feet are currently under management, including office, industrial, retail and multi-residential properties.
- 33** A report by UNEP FI will be launched in April 2014, available at <http://www.unepfi.org/publications/index.html>
- 34** Institute for Building Efficiency (2013)
- 35** Stockland 2012 Financial Report, pp. 23, 25, 29, 36, 80; Stockland 2012 Annual Review, p. 43; Stockland 2011 CSR Report, p. 2
- 36** Calculations are based on disclosed weights of the various sustainability-related performance targets in short-term incentive compensation. The sustainability-related performance targets include energy, GHG emissions, water, environmental impacts, employee turnover, employee engagement, employee health & safety and gender diversity in management. No sustainability-related performance targets were found to be linked to long-term incentives.
- 37** The author would like to thank the Montreal office of Fasken Martineau for this content: Marie Bourdeau, Anne Drost and Richard Clare.
- 38** Commonwealth Property Office Fund (2013)

ABOUT THE UNEP FI PROPERTY WORKING GROUP

Property investing is a multitrillion-dollar worldwide industry that can have profound positive or negative effects on environmental, social and cultural goals. Issues as diverse as urban poverty, global warming and indigenous people's rights are affected by decisions about the development, refurbishment and management of properties. Investors can have a positive influence on these decisions.

The UNEP FI Property Working Group (PWG) was created in 2006 with the aim to encourage property investment and management practices worldwide that achieve the best possible environmental, social and financial results.

The members of the PWG are:

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About the UNEP Finance Initiative

The United Nations Environment Programme Finance Initiative (UNEP FI) was established in 1992 as a partnership between policymakers and financial intermediaries. With over 200 members representing banks, insurers and investors from around the world, UNEP FI contributes the perspectives of financial institutions to the United Nations and global activities on sustainable finance. UNEP FI's mission is to bring about systemic change in finance to support a sustainable world by “changing finance, financing change”.

This briefing is a project of the UNEP FI Property Working Group.

Project Team

James Gray-Donald

Project Lead and Author

Vice President, Sustainability

Bentall Kennedy

Laurie Weir

PWG Co-Chair

Senior Portfolio Manager

CalPERS

Tatiana Bosteels

Head of Responsible Property Investment

Hermes Real Estate

Anuschka Hilke

Project Officer, Energy Transition

Caisse des Dépôts et Consignations

Toby Heaps

Co-Author

CEO

Corporate Knights Capital

Frank Hovorka

PWG Co-Chair

Responsible Property Director

Caisse des Dépôts et Consignations

Carrie Douglas-Fong

Investment Officer

CalPERS

Gil Levy

Partner

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Brochure design

Candy Factory, Genève

www.candy-factory.ch

UNEP Finance Initiative

International Environment House

Chemin des Anémones 15

CH-1219 Châtelaine, Genève

Switzerland

Tel: (+41) 22 917 81 78

Fax : (+41) 22 796 92 40

www.unepfi.org

UNEP FI Secretariat

Elodie Feller, Investment Commission and Property Working Group Coordinator

Annic Degen, Energy Efficiency Coordinator and Long-Term Finance Special Advisor

UNEP FI PWG Advisory Group

Gary Pivo, Professor of Urban Planning and Professor of Natural Resources, University of Arizona

Maria Atkinson, Director, XO, Australia

Michael Brooks, CEO, Real Property Association of Canada

Paul McNamara, OBE, Former Director, Head of Research, PRUPIM

Sarah Sayce, Professor and Head of the School of Surveying & Planning, Kingston University

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United Nations Environment Programme

Tel: (254 20) 7621234

Fax: (254 20) 7623927

E-mail: unepfi@unep.org

web: www.unep.org

