

# Corporate Real Estate and Corporate Sustainability Reporting: An Examination and Critique of Current Standards

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**Abstract** This article examines Global Reporting Initiative's (GRI) corporate sustainability reporting standards and identifies existing and missing linkages with corporate real estate disclosures. Based on an analysis of the GRI reporting standards, results of corporate real estate content analysis in the 45 corporate sustainability reports examined, along with the low explanatory power of the models, there is evidence that establishes a lack of clear and consistent coverage of corporate real estate in corporate sustainability reports. There is a strong need for further disclosure, standardization of several corporate real estate-related reporting benchmarks, and increased transparency with respect to corporate owned or leased properties in corporate sustainability reports.

There is a growing body of literature on corporate sustainability accounting and reporting standards. Yet within this body of literature and policies, specific standards do not necessarily reflect the direct or indirect relationships of corporate real estate assets, practices, and strategies to corporate sustainability, social responsibility, or citizenship actions or reporting standards. As more private and public corporations, non-government organizations (NGOs), and government entities prepare and report on sustainability, citizenship, or social responsibility actions, it is important to independently examine and critique existing and underlying standards that form the basis of these reports<sup>1</sup> especially in limited, but critical subject areas such as corporate real estate, which includes such assets as a firm's facilities, headquarters, manufacturing plants, mines, office or retail locations, corporate campuses, or industrial sites.

Corporate sustainability, corporate citizenship, and social responsibility reporting standards and practices do not include sufficient data and management discussion regarding the operations, acquisitions, dispositions, or abandonment of corporate real estate assets, whether owned or leased, to produce meaningful and transparent stakeholder information and knowledge. Reporting standards do not necessarily include requirements or recommendations on how or where to include relevant disclosure and discussion between the roles of an entity's corporate real estate owned, leased, or managed assets to sustainability standards or practices within a corporate report. Thus it is reasonable to expect inconsistency, minimal transparency, and a lack of specific corporate real estate-oriented discussion in corporate sustainability, citizenship, or social responsibility reports.

There are two basic questions addressed in this study. The first question is why corporate real estate is a critical subject that requires significant discussion in corporate sustainability reporting, and second, how do current sustainability and social responsibility global reporting standards generally address corporate real estate, and more specifically the sustainability characteristics of a firms' commercial corporate real estate assets such as offices, industrial warehouses, facilities, plants, or other non-residential property types. If there is a significant relationship between management and operations of corporate real estate assets to sustainability, then is it not rational to expect sufficient detail and disclosure in corporate sustainability or social responsibility reports?

There are two reasons that confirm a direct linkage between corporate real estate and corporate sustainability actions and strategies. First, corporate real estate represents a sizeable universe and large segment of corporate balance sheets and expenses (Rodriguez and Sirmans, 1996; Roulac, 2003), and an integral part of corporate strategy (Roulac, 2001). Commercial property types are necessary for the production of goods and services as economic activity does not exist in a spatial vacuum. Corporations include property, plant, and equipment on their respective balance sheets. For example, ExxonMobil's annual report for December 2009 included approximately \$139.1 billion of property, plant, and equipment (net) out of total assets of \$233.3 billion.<sup>2</sup> ExxonMobil's corporate citizenship report (2008), which follows the reporting guidelines of the International Petroleum Industry Environmental Conservation Association (IPIECA) and the American Petroleum Institute (API)'s guidelines, includes respectful coverage topics such as facilities and greenhouse gas emissions, waste discharge, and energy usage, but limited discussion on properties or facilities that are abandoned, scheduled for decommissioning, or locations where the sustainability of the local community is negatively affected by the firm's decision such as the recent BP oil disaster in the Gulf of Mexico. When firms downsize operations and abandon properties, close operations, and cancel leases, this has a spillover impact on economic vitality and sustainability in local markets. The recession in the United States has caused Blockbuster to cancel leases in 545 stores in 2010<sup>3</sup> and Circuit City closed 567 stores in 2009,<sup>4</sup> leaving long-term physical assets abandoned and dark. Corporations can abandon previously owned properties creating high-impact temporarily obsolete abandoned derelict sites (HI-TOADS), as discussed by Hollander (2009), which impact the sustainability and economic vitality of local communities.

Corporate sustainability reporting standards need to recognize that corporations require various property types, whether owned or leased, to operate their business. There are environmental and sustainability differences of various property types based on the operation and management of such assets. The distributions of commercial real estate property types, identified as corporate real estate assets on a balance sheet, are somewhat unique to various economic sectors. For example, service-oriented firms such as financial institutions and banks, generally use office buildings to conduct business, whereas a utility firm or manufacturer will use industrial plants, warehouses, and distributions centers. Differences exist in the number of locations, property types, and sizes of corporate owned non-residential

assets required to produce an economic good or service. Manufacturing firms differ from information service, retailers, and other service-oriented firms in the demand for property, just as significant differences exist between similar industrial sectors based on the nationality of firms (Laposa and Charlton, 2002).

The second reason to elevate corporate real estate disclosure in corporate sustainability reporting is the relationship between commercial real estate, greenhouse gases (GHG), energy consumption, waste management, and sustainability. If the operation and management of corporate real estate is a significant negative or positive factor in social responsibility, citizenship, or sustainability actions, then global sustainability reporting institutions need to review existing standards and modify as necessary to address the critical environment role of corporate real estate assets. Commercial real estate is a depreciating asset in functionality without continued maintenance and capital improvements. The U.S. Department of Energy, Energy Information Administration estimates that the median lifetime for an office building is 73 years, warehouses 80 years, and lodging 80 years. As corporate real estate assets age so too the requirement of periodic capital improvements to maintain operation efficiencies and to mitigate structural obsolesces that potentially create negative environmental impacts.

Academic, industry, and governments produce reports on energy usage in the commercial real estate sector. Variations in such reports depend on several factors such as definitions of the building sector or whether direct, indirect, or total energy consumptions are separately indicated. For example, the U.S. Department of Energy, Buildings Energy Data Book reports that the building sector, including residential and commercial sectors, "...consumed 39% (38.77 Quads) of U.S. primary energy in 2006," (D&R International, 2009) with residential accounting for approximately 20% and commercial 18% of primary energy consumption in 2006. Global GHG related to residential and commercial buildings are also estimated at 7.9% in 2004<sup>5</sup> and the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report estimates that "...when including the emissions from electricity use, energy-related CO<sub>2</sub> emissions from the buildings sector were 8.6 Gt/yr, or 33% of the global total in 2004."<sup>6</sup> The IPCC also reports that "...the largest growth in GHG emissions between 1970 and 2004 has come from energy supply, transport and industry, while residential and commercial buildings, forestry (including deforestation) and agriculture sectors have been growing at a lower rate," (Pachauri and Reisinger, 2007).

Cost-effective retrofits of existing commercial buildings have been recommended as a critical component of reducing GHG emissions in the U.S. (Brown, Southworth, and Stovall, 2005; McKinsey & Company, 2007). Urge-Vorsatz, a contributor to the IPCC report, claims that commercial buildings offer "...the largest low-cost potential in all world regions by 2030" to reduce GHG (Urge-Vorsatz, 2007). According to another study, there are three options of reducing greenhouse gas emission; one option identifies the real estate sector. Levine identifies: "...reducing energy consumption and embodied energy in buildings, switch to low-carbon fuels including a higher share of renewable energy, or

controlling the emissions of non-CO<sub>2</sub> GHG gases,” (Levine, Urge-Vorsatz et al., 2007).

The hypothesis explored in this article is that corporate sustainability reporting standards, such as the Global Reporting Initiative (GRI), do not include corporate real estate disclosure requirements commensurate with corporate real estate’s role and impact in sustainability and the environment. Other prominent international agreements such the U.N. Global Compact do not specifically address corporate real estate’s role in corporate citizenship; rather there are important, yet limited factors including environmental guidelines for suppliers, corporate environmental policies, and greenhouse gas inventory of operations (Fussler, 2004).<sup>7</sup> Triple bottom line (TBL) reporting standards and even the word ‘sustainability’ is an emerging trend, still evolving in definition in the industry, the scope and application of sustainability, and finally acceptance for firms, whether public or private, large or small. Surveys find that even in the institutional real estate investment arena, acknowledgement of sustainability is still not a significant role in investment decisions (GVA Grimley, 2007; Sustainable Facility, 2007), but is slowing showing signs of acceptance with real estate companies (Mattson-Teig, 2007).

Despite the limited requirements in corporate sustainability reporting standards and similar broad-based international agreements, a sample of corporations include corporate real estate management and operations in corporate sustainability reports. Exhibit 1 highlights selected text from a sample of corporate sustainability reports that include corporate real estate or facilities references.

This research bridges an existing gap in the literature between corporate real estate and corporate sustainability reporting. Corporate real estate is a critical asset and a sizeable universe that directly and indirectly impacts the environment. The Literature Review briefly highlights the role of corporate real estate in a corporation and then discusses recent research on corporate real estate and environmental and sustainability issues. There are three bodies of literature relevant to corporate real estate and corporate sustainability reporting: corporate real estate, corporate sustainability reporting standards and practices, and corporate sustainability reporting analysis and research. A separate section examines existing Global Reporting Initiative standards and how they address corporate real estate or how, with minor modifications, can improve corporate real estate disclosure in corporate sustainability reports. The Methods and Data introduces the academic standards applied to the collection and analysis of corporate real estate content in the sample 45 corporate sustainability reports, which is followed by the Results. Finally, the Conclusion summarizes the findings, outlines limitations of this research, and presents ideas for further research.

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## Literature Review

The management and operations of corporate real estate were initially identified as ‘undermanaged’ (Veale, 1989), but eventually evolved to include corporate real estate as an integral part of corporate strategy (Nourse and Roulac, 1993). Later

**Exhibit 1** | Sample Corporate Real Estate References in Corporate Reports

Company, Report Title, Year	Reference Quote
Allergan, Sustainability Performance Report (2009)	Reduce the amount of electrical energy used by 5% from 2006 to 2010 using 2005 as the baseline year both on an absolute and normalized to square footage basis. Implement existing technologies such as cogeneration and photovoltaic systems. Implement new technologies such as fuel cells. Change the fuel types used from fuel oil to natural gas. Increase the fuel efficiency. Increase the use of renewable energy sources.
Bristol-Myers Squibb, Sustainability Website Contents (2009)	We are setting land aside for conservation in a wide range of our operations worldwide. Our campuses for manufacturing, R&D, distributions and administrative offices are able to conserve habitats, including forests, grassland, marshes, bogs and reefs. We are planting trees, installing birdhouses and more. Many of our facilities worldwide have adopted and support a local endangered or threatened species, in many cases with direct involvement of site employees.
SAS Institute, Corporate Social Responsibility Report (2008)	Our Austin office is the only other SAS-owned facility in the United States. It is located on 94 acres of mostly undisturbed land and features grounds where deer and other wildlife freely roam. Only about three acres are used for facilities and access roads. It has intentionally been left wild and features a long, winding driveway and natural walking trails surrounding the more landscaped areas around the building. The property is home to several types of endangered birds and spiders, which are protected by landscaping and conservation guidelines to include the Balcones Canyonlands Conservation Plan (BCCP). The BCCP is a joint venture of the City of Austin and Travis County that protects habitats for several locally occurring species protected under the federal Endangered Species Act. SAS works closely with BCCP managers in a joint effort to maintain the natural integrity of these important habitats.

**Exhibit 1** | (continued)

## Sample Corporate Real Estate References in Corporate Reports

Company, Report Title, Year	Reference Quote
Pfizer, Corporate Responsibility Report (2009)	In 2008, as part of our Plant Network Strategy productivity initiative, eight plants were sold or closed in Canada, Germany, Italy, Sweden, Puerto Rico and the U.S. We plan to continue reducing our internal network of plants worldwide to 41 by 2010. It should be noted that often facilities are divested to other companies with an agreement to supply Pfizer for several years. This allows the acquiring company to develop additional business to make the plant sustainable. We never make these decisions lightly, realizing how difficult they are for our colleagues and their families who are impacted. However, we believe that the cumulative benefit to Pfizer will be a more focused, streamlined and competitive manufacturing operation.
Dell Corporation, Inspire & Innovate, Achievements in Corporate Responsibility (2009)	Incorporated LEED design elements into global design standards Dell is a corporate member of the U.S. Green Building Council, a nonprofit organization dedicated to expanding green building practices and education and promoting the use of its LEED...Green Building Rating System...Our long-term goal is to double the "greenness" of our buildings and operations, using the scoring system created by the U.S. Green Building Council's LEED program. A few of the related activities undertaken in fiscal year 2008 include: (o)ur manufacturing facility in North Carolina adopted a green cleaning program; it mandates cleaning products and techniques designed to be gentler to the environment and promote improved indoor air quality. We composed a new Dell global design guide that incorporates many of the LEED requirements for sustainable building design, construction and operation.
Coca Cola, Live Positively, Sustainability Review (2008 / 2009)	As we build new facilities, we seek to make them as energy efficient as possible. In Great Britain, our new Automated Stock Retrieval System at our Edmonton facility...has eliminated the need for separate warehousing and distribution. Meanwhile, our new warehouses in Toulouse, France, and Ghent, Belgium, have eliminated the need for heating through the use of better insulation. In the United States, we are working toward attaining Leadership in Energy and Environmental Design (LEED™) Certified status from the U.S. Green Building Council for our new sales center in Coachella, California. This requires meeting targets for reducing non-process water and energy use, using recycled and regional materials, and diverting 75 percent of construction waste.

Source: Company reports.

studies estimated that corporate real estate represents approximately 25% to 40% of total corporate assets ((Rodriguez and Sirmans, 1996) and the body of literature on corporate real estate research continues to expand in topics and (Manning and Roulac, 2001).

The role of corporate real estate in corporate sustainability strategies is an emerging body of literature. New studies confirm the benefits of green buildings on energy savings, with one study showing 26% less energy use, 13% lower maintenance costs, 27% higher occupant satisfaction, and 33% fewer CO<sub>2</sub> emissions (Powell, Fowler and Parman, 2009). A multiple case study using life cycle analysis concepts estimated that facilities activities caused over 50% of environmental impact of service firms although facility-related expenses account for 5% of total expenses (Junnila, 2004). Another survey of corporate real estate executives indicated that 57% are now involved in funding sustainability investments, 49% are adding sustainability staff, 44% rate suppliers' sustainability, and 53% indicate improved communications with senior management due to sustainability issues (Bloomfield and Kadzis, 2009). Numerous surveys indicate a trend toward sustainability or environmentally-friendly practices in the real estate industry (Mattson-Teig, 2007; Sustainable Facility, 2007; Environmental Design & Construction, 2008), and also integrating corporate social responsibility with property investment (Roberts, Rapson, and Shiers, 2007). The role of corporate real estate executives to justify management and operations of properties to benefit the environment is challenging (Roper and Beard, 2006) just as the limited universe of environmentally-accredited properties impact corporate location decisions to support strategies to increase the percentage of leased space in such certified locations (St. Lawrence, 2004). There is a complex system of environmental ratings for the built environment (Reed, Bilos, Wilkinson, and Schulte, 2009), and the importance of incorporating building efficiency into capital improvements for properties is gaining respect (Reed and Wilkinson, 2005).

Early research on corporate social responsibility and financial performance dates back to the 1960s (Cochran and Wood, 1984). Cochran and Wood (1984) found a significant relationship between the average age of corporate assets to corporate social responsibility rankings, specifically finding that "Asset age and asset turnover are related with Moskowitz's CSR categories." In particular, asset age is strongly and significantly negatively correlated with the "worst" CSR firms. In addition, asset turnover is weakly correlated to Moskowitz's ratings.<sup>8</sup> Thus, one impediment to disclosing critical information on corporate real estate assets is the potential stigma that as the average age of corporate assets increases for buildings, plants, and facilities, the lower potential for corporate social responsibility ranking and requirements for environmental mitigation strategies. Furthermore, if industry standards such as Global Reporting Initiative do not require significant discussion or metrics for corporate real estate assets, then the motivation to report on corporate real estate assets at a critical level of age or functional obsolesces is diminished. Research has shown that the service sector compared to chemicals, manufacturing, and the oil and gas sectors, has the least social pressure regarding those stated (e.g., published reports vs. actual or implemented environmental strategies) (Ramus and Montiel, 2005). Corporate real estate portfolios of service

sector firms generally include property types as office, retail, or flex properties that are less susceptible to impacting the environment, such as refineries, large-scale manufacturing plants, and processing facilities.<sup>9</sup>

Corporate sustainability reporting continues to increase in the number of reporting entities, academic research, and acceptance in the industry although less than 100 U.S. firms produced sustainability reports in the early 1990s (White, 2005). The continued increase in the number of firms publishing corporate sustainability reports has caused a complimentary increase in reporting sustainability standards, research, and auditing guidelines (O'Dwyer and Owen, 2007). O'Dwyer and Owen (2007) provide a synopsis of recent history and trends in the corporate sustainability accounting literature. The authors use a sample of 51 award-winning sustainability reports and compare them by AA1000, FEE, and GRI reporting standards. Growth in corporate sustainability reporting has significantly increased in the largest 100 global firms (Milne and Gray, 2008) and the Fortune Global 250 (Kolk, 2003). Yet, there are questions on the one-size-fits-all concept to corporate sustainability practices across geographies, sectors, and maturity of firms (Marrewijk and Were, 2003) including standards for corporate real estate reporting standards. Paul (2008) shows minimum corporate real estate discussion based on website content of the Global 100 Most Sustainable Companies.

Corporate sustainability assurance reporting is an emerging field of practice by corporations. Current practices across geographies, governments, and stakeholder participation are not necessarily the same in quantity or quality (Kolk and Perego, 2008). Environmental, social, or citizenship reporting has improved the social responsibility of corporations, yet current practices lack sufficient disclosure, dialogue, or development of sustainable issues (Hess, 2008). Models have been proposed to improve the communication framework and moral discourse between corporations and stakeholders as corporate sustainability reporting continues to evolve (Reynolds and Yuthas, 2008). Several studies question the relevance of corporate environmental policies, even claiming they may be a form of greenwashing (Ramus and Montiel, 2005), rhetorical or disingenuous (Aras and Crowther, 2009), or 'self-laudatory' communications (Holder-Webb, Cohen, Nath, and Wood, 2009). Ramus and Montiel (2005) find that service companies are more likely to commit to sustainable development policies rather than manufacturing, hinting at a potential moral hazard issue in corporate real estate as manufacturing firms are more likely to own and operate facilities with environmental issues than service-oriented firms.

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## Global Reporting Initiative Analysis

Corporate sustainability reporting standards are still evolving. Organizations such as the Global Reporting Initiative<sup>10</sup> (GRI) originally published corporate sustainability guidelines in 2000 (G1), 2002 (G2), and 2006 (G3). According to a KPMG report, corporate sustainability reports following the GRI standards account for 77% of global Fortune firms.<sup>11</sup> According to GRI, the purpose of "Sustainability reporting is the practice of measuring, disclosing, and being accountable to internal and external stakeholders for organizational performance

towards the goal of sustainable development.”<sup>12</sup> Furthermore, GRI provides guidance on report content, protocols such as indicators, sector supplements, and technical and standard disclosures.

GRI’s reporting standards are summarized by three standard disclosures: (1) strategy and profile, (2) management approach, and (3) performance indicators. Real estate, property, or the built environment terms are not found in the latest reporting standard recommendations (2006). Although corporate real estate’s characteristics fit well in the performance indicators such as how much space is used in the business (year-over-year changes), number of international, national, regional, and local offices, plants, or places of business operations, such performance indicators do not exist in current GRI standards. The standards do address locations, limited to reporting significant changes in a company’s locations or, under the environmental performance indicators (section EN11) on biodiversity, GRI standards recommend the “Location and size of land owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas.” Overall, there is not even a requirement to include a simple lifecycle matrix of corporate real estate assets by such factors as location, age distributions, energy-ratings, operating or abandoned, or property types.

Global Reporting Initiative<sup>13</sup> is recognized as the leading international organization setting forth reporting standards for environmental reporting for corporations. The rise of GRI, from two individuals in the late 1990s, to the leading global sustainability guidelines entity is a classic case of institutional entrepreneurship (Brown, de Jong, and Lessidrenska, 2009). GRI’s sustainability guidelines have evolved since the initial standards in 2000 with recent standard edition of 2006 known as the G3 reporting guidelines. Exhibit 2 briefly identifies several GRI sections and expands the description of sections to include direct and indirect corporate real estate implications not specifically recommended in current standards. Included in this exhibit there are suggested modification of existing standards to address and accommodate corporate real estate disclosures. Based on the analysis and review of numerous corporate sustainability reports, the corporate real estate implications listed in Exhibit 3 are lacking in the majority of sustainability reports.

In addition to the general reporting guidelines, GRI produces sector guidelines for such industries as apparel and footwear, airports, food processing, community impacts, and the construction and real estate sector.<sup>14</sup> One of the top five topics for community impacts listed in the GRI guidelines is community expenditures that includes the number of projects developed and completed. According to the GRI analysis and research, “The practice of sustainability reporting is not as well established in the Construction and Real Estate (C&RE) compared to other sectors, such as the financial services or the electric utilities sectors.” Although GRI recognizes the lack of sustainability reporting in the construction and real estate industries, an examination of GRI 2006 standards clearly indicates a lack of corporate real estate disclosures and transparencies for the non-construction and real estate industries regarding current and future operations and management of corporate real estate assets.

**Exhibit 2** | GRI Standards and Real Estate

GRI Section	Description	CRE Implications Not Specifically Addressed in GRI Standards
Organization profile, section 2.9 (Reporting Guidelines)	The location of, or changes in operations, including facility openings, closings, and expansions.	Direct property linkages, yet no requirement on corporation's summary square footage or square meter data, properties and certification status or strategies for new construction properties, matrix of properties by lifecycle stage, table of owned properties, size of properties, type of properties, age of properties especially list of at-risk properties due to functional obsolesce, environment contaminants, or subject to national or local changes in building or certification codes.
EN11	Location and size of land owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas.	Does not include land owned or leased not adjacent to protected areas; not required if corporation's real estate assets listed under section 2.9.
EC1	Economic Value Generated and Distributed (EVG&D); monetary value to local economies.	Identify revenues from sale or donation of property and other assets that benefit local economies.
EC2	Financial implications and other risks and opportunities for the organization's activities due to climate change.	List significant scheduled or planned capital improvements to maintain, rectify, or certify corporate owned properties.
EN3, EN4, and EN5	Direct energy consumption by primary energy source. Indirect energy consumption by primary source. Energy saved due to conservation and efficiency improvements.	Standardize direct and indirect energy consumption according to corporate real estate inventory of properties; discuss energy savings due to efficiency improvements for corporate owned properties.
EN13	Habitats protected or restored.	Discuss the role of corporate real estate properties or facilities in protecting or restoring habitats.
EN16, EN17, and EN18	Total direct and indirect greenhouse gas emissions by weight. Other relevant indirect greenhouse gas emissions by weight. Initiatives to reduce greenhouse gas emissions and reductions achieved.	Standardize direct and indirect greenhouse gas emissions according to corporate real estate inventory of properties, e.g., GHG per square foot or square meter; discuss initiatives to reduce greenhouse gas emissions relative to efficiency improvements for corporate owned properties.
SO1	Nature, scope, and effectiveness of any programs and practices that ...manage the impacts of operations on communities, including entering, operating, and exiting.	Identify corporate owned properties scheduled for disposition, abandonment, or closing; identify significant corporate leased properties scheduled for closure or nonrenewal that may negatively impact local communities.

**Exhibit 3** | Content Analysis Selected Firms

Companies	Content Analysis
3M	ITT
Abbott	Johnson & Johnson
Albemarle	Kohl Corp
Alcoa	Marathon Oil
Allergan	Massey Energy
Allstate	Mattel
American Express	McDonald's
Apple	Medtronics
Bank of America	Merck
Baxter	Motorola
Best Buy	Occidental Petroleum
Bristol-Myers Squibb	OfficeMax
Chevron	Pfizer
Cisco Systems Inc.	PG&E
Coca-Cola	Qualcomm
Company	Sara Lee
Dow Chemicals	Sun Microsystems
Duke Energy	Target
EcoLab	Texas Instruments
Gap	The Kroger
Halliburton	Company
Hewlett Packard	UnitedHealth Group
IBM	Wainwright
	Xerox

## Methods and Data

Although existing GRI standards do not adequately or consistently address corporate real estate in corporate sustainability reporting as shown in Exhibit 2, Exhibit 1 shows that several corporations include corporate real estate disclosures in CSRs. In order to test the hypothesis that corporate real estate content is deficient in CSRs, a diverse sample of CSRs were initially collected and reviewed, which focused on the corporate real estate disclosures related to the GRI sections listed in Exhibit 2. Content analysis methodologies were used as in previous research to further empirically test for corporate real estate coverage in the 45 sample CSRs.

This study recognizes the limitations and consistent reliability issues associated with the application of content analysis and corporate reporting. In order to mitigate potential bias, all corporate sustainability reports were obtained from a single source, the CorporateRegister.com<sup>15</sup> website, a site devoted to collecting corporate sustainability reports produced under the Global Reporting Initiative, AccountAbility AA1000, or Global Compact standards and guidelines. All reports used in this study were produced under the GRI guidelines and included reports

from 2008 or 2009. Thus, the restricted use of the sample reports from one source, developed under the same guidelines, limits content analysis problems due to inconsistency of documents as identified by Unerman (2000). Unerman's review of 25 articles on the use of content analysis of corporate reporting also highlights various measurement methods employed in the literature.

Content analysis has been used for over 30 years in analyzing corporate audit reports (Fisher, Oyelere, and Laswad, 2004), chairman's statements (Smith and Taffler, 2000), web-based triple bottom line reporting according to GRI indicators (Gill and Dickinson, 2008), developing economies and country level sustainability reporting (Belal, 2001; Skouloudis, Evangelinos, and Kourmousis, 2010), and social, environmental, and accounting reports (Guthrie and Abeysekera, 2006). Early research applied content analysis to identify minor relationships between environmental disclosures and social performance indicators (Ingram and Frazier, 1980). Milne and Adler (1999) provide a significant list of content analysis used in social and environmental accounting report analysis and find general correlation between content analysis results by experienced and non-experienced users. In the real estate sector, content analysis has recently been used to compare commercial versus residential brokerage websites (Henderson and Cowart, 2002) and used to examine corporate social responsibility reporting via websites, annual reports, and social responsibility reports of the top 10 hotel firms (Holcomb, Upchurch, and Okumus, 2007).

Content analysis methodologies found in the literature are employed and applied using a computer-assisted quantitative software application (NVivo 8.0). Initially, over 100 reports were randomly selected from the CorporateRegister website. According to its website, CorporateRegister is the largest online depository of corporate sustainability reports,<sup>16</sup> whereas GRI lists 1,251 corporate sustainability reports covering over 35 industry sectors for 2009.<sup>17</sup> Final sample selection was impacted by security and password protections of the Adobe Acrobat corporate sustainability files, which limited complete importing of the CSR files into NVivo (see Exhibit 3 for list of 45 companies). If NVivo was not able to successfully import the entire CSR file, then the respective firm was excluded from the final sample. Sectors represented by the 45 final firms include several of the top sector rankings as identified by GRI and include the following number of firms by sectors: healthcare and healthcare products (6), energy and energy utilities (7), technology and computer hardware (6), consumer (11), manufacturing (5), financial services (6) and other (4).

Exhibit 4 shows the textual queries initially used in the analysis with descriptions and limitations. Wildcards and other criteria such as 'corporate within 10 words of property' were used to expand and identify potential CRE-related content. Each text or phrase was individually searched in all corporate sustainability reports in the sample. Once a query identified a text or phrase in the respective report, the entire sentence was highlight and coded. There are debates in the literature on the measurement methods used in content analysis and corporate reporting. For example, the literature shows a broad and diverse set of methods from counting words or whole sentences relevant to a set of codes or themes. Sentences were used as the unit of analysis measurement and pictures of corporate real estate were

**Exhibit 4** | CSR Textual Queries

Text Queries	Description, Objectives, and Limitations
Land, lands	Corporate land, not including landfill usage
CASBEE, BREEAM, ENERGY STAR, LEED, USGBC, ISO 14001, Green building or green buildings	Facility certifications, inclusion of standard industry associations that certify the environmental characteristics of commercial properties
Corporate property, corporate properties, or corporate real estate, property or properties, facility or facilities, property near within 10 words of corporate, office, plant or plants, headquarter, location or locations, square feet or square meters	General references to inclusion of corporate properties, facilities, plants, locations, measurements of corporate properties

excluded, although there are several reports in the sample that included photographs of buildings and facilities. NVivo summarized each text or phrase's coverage in a report by dividing the selected sentence or sentences that included the text or phrase by the overall report area.

Once a specific text or phrase was identified in the CSR, the relevant sentences containing the text or phrase were coded into one of 20 nodes in NVivo. A node is a classification structure that collects similar results from textual queries. For example, in Exhibit 4, there are numerous texts and phrases associated with general references to corporate properties and other queries associated with facility certifications. Therefore, selected texts identified within all corporate sustainability reports coded by the various general corporate property phrases were coded to the corporate properties reference node. As previously mentioned, pictures and graphs were not included in any textual query. Facilities and sustainability (136.69 average words per report) and LEED references (125.73 average words per report) ranked first and second respectively as top nodes by average words per report. Exhibit 5 lists the 20 nodes with the average number of words per report per node.

After all text or phrases were identified and coded, the 20 nodes were summarized into four primary variables. The four variables essentially clustered similar nodes. As Exhibit 5 illustrates, several nodes had minimal average number of words and thus coverage percentages were minor. For example, the codes beginning with 'EN' collectively identified content areas in the CSRs associated with GRI guideline references. We combined the 'CASBEE, BREEAM, or ENERGY STAR,' 'ISO 14001 and corporate properties,' and 'LEED references' nodes into a facility certifications variable to estimate the coverage corporations include in corporate sustainability reports and not necessarily individual LEED, CASBEE, or ENERGY STAR references. Exhibit 6 illustrates the relationships between the 20 nodes to the four summary variables.

Although the primary focus of this research is to highlight and examine corporate real estate coverage in corporate sustainability reports, the typical list of corporate

**Exhibit 5** | Individual Node Listings and Average Words per Report

CASBEE, BREEAM, or ENERGY STAR (38.20 words)	EN12 real estate references (6.71 words)	Facilities and environment (99.35 words)	LEED references (125.73 words)
Community lands (0.18 words)	EN13 real estate references (10.69 words)	Facilities and GHG (77.73 words)	Real estate and energy usage (21.18 words)
Corporate properties references (20.86 words)	EN14 real estate references (13.10 words)	Facilities and sustainability (136.69 words)	Real estate taxes (0.24 words)
Emissions management (0.31 words)	EN16 real estate references (0.88 words)	Facilities and waste management (40.96 words)	Specific real estate references not elsewhere classified (2.00 words)
EN11 references (11.06 words)	EN17 real estate references (1.78 words)	ISO 14001 and corporate properties (7.59 words)	Supply chain third party real estate references (16.98 words)

Source: Authors, 45 CSRs.

**Exhibit 6** | Nodes to Summary Variables

Referenced Nodes	Associate Primary Variables
CASEBEE, BREEAM, or ENERGY STAR, ISO 14001 and corporate properties, LEED	Facility certifications
Community lands, corporate properties references, real estate taxes, specific real estate references	General corporate real estate
EN11, EN12, EN13, EN14, EN15, EN16, and EN17	GRI CRE references
Emissions management, facilities and the environment, facilities and GHG, facilities and waste management, real estate energy usage, supply chain third party references	Facilities and sustainability

variables is extended such as firm size, industry sector, and profitability as outlined by Raar (2007) that attempt to explain content analysis results. This study introduces three new real estate-related financial benchmarks as independent variables to explain variances of corporate real estate content in corporate sustainability reports. The three CRE benchmarks are shown in Exhibit 7 and proxy the ratios of corporate owned or leased real estate-related assets. The

**Exhibit 7** | Corporate Real Estate Financial Benchmarks

Benchmark	Description and Objective
Property, Plant, and Equipment (net)/Total Assets ( <i>OWN</i> )	Proxy for a firm's corporate real estate ownership intensity.
Rental commitments five years/Net income ( <i>RENT</i> )	Proxy for a firm's corporate real estate leasing intensity.
<i>OWN</i> / <i>RENT</i> ( <i>OwnRent</i> )	Ratio of owned versus leased properties used by the firm.

rational is that if a corporation has a higher ratio of property, plant, and equipment to total assets, then the quantity of reporting on corporate real estate assets is theoretically more likely and higher than for a firm with low property, plant, and equipment ratio that leases more than owns properties. Conversely, corporations that primarily rent real estate assets are less likely to include corporate real estate disclosures in corporate sustainability reports. As tenants and users of properties owned and managed by others, corporations find that they are occupiers, not owners of real estate and thus sustainability is someone else's problem as noted as one of the myths of corporate real estate and corporate sustainability in CoreNet Global's survey (Kadzis, 2007).

Based on the calculated corporate real estate content percentages ( $CRE_p$ ) in a CSR and the three corporate real estate financial benchmarks, the following models were constructed to test the hypotheses that *OWN*, *RENT*, and *OwnRent* explain variances of corporate real estate coverage in corporate sustainability reports:

**Exhibit 8** | Descriptive Statistics 45 CSRs

	<i>N</i>	Min.	Max.	Mean	Std. Dev.
Facility certifications (%)	45	0.00	4.83	1.020	1.427
CRE references (%)	45	0.00	3.16	0.555	0.870
GRI CRE references (%)	45	0.00	3.42	0.134	0.620
Facility and sustainability (%)	45	0.00	29.63	3.362	6.164
CRE coverage as % of total ( $CRE_p$ )	45	0.00	31.01	5.071	6.526
CRE coverage total words	45	0.00	4159.00	717.844	918.633
Net PPE to Total Assets ( <i>OWN</i> )	45	0.01	0.777	0.271	0.227
Rent 5 yrs to Net Income ( <i>RENT</i> )	40	-16.01	4.867	0.046	3.051
PPE to Rent ratio ( <i>OwnRent</i> )	40	-0.56	9.685	1.420	2.388
Valid <i>N</i> (listwise)	40				

**Exhibit 9** | CRE Coverage and Four Factors Correlations

		Facility Certifications	CRE References	GRI References	Facility and Sustainability	CRE Coverage as % of total
Facility certifications	Pearson Correlation	1.000				
	Sig. (2-tailed)					
	N	45				
CRE references	Pearson Correlation	0.194	1.000			
	Sig. (2-tailed)	0.201				
	N	45	45			
GRI CRE references	Pearson Correlation	-0.151	0.108	1.000		
	Sig. (2-tailed)	0.322	0.482			
	N	45	45	45		
Facility and sustainability	Pearson Correlation	0.040	0.108	-0.101	1.000	
	Sig. (2-tailed)	0.793	0.480	0.508		
	N	45	45	45	45	
CRE coverage as % of total	Pearson Correlation	0.268	0.288	-0.019	0.958**	1.000
	Sig. (2-tailed)	0.075	0.055	0.900	0.000	
	N	45	45	45	45	45

*Note:*  
**\*\*** Correlation is significant at the 0.01 level (2-tailed).

**Exhibit 10** | CRE Benchmarks vs. CRE Factors Correlation

		Net PPE to Total Assets (Own)	Rent 5 yrs to Net Income (Rent)	Facility Certifications	CRE References	Facility and Sustainability	GRI References
Net PPE to Total Assets (Own)	Pearson Correlation	1	-0.044	-0.047	0.332*	-0.226	0.052
	Sig. (2-tailed)		0.786	0.760	0.026	0.136	0.734
	N	45	40	45	45	45	45
Rent 5 yrs to Net Income (Rent)	Pearson Correlation	-0.044	1	0.328*	0.198	0.050	0.045
	Sig. (2-tailed)	0.786		0.038	0.220	0.760	0.784
	N	40	40	40	40	40	40
Facility certifications	Pearson Correlation	-0.047	0.328*	1	0.194	0.040	-0.151
	Sig. (2-tailed)	0.760	0.038		0.201	0.793	0.322
	N	45	40	45	45	45	45
CRE references	Pearson Correlation	0.332*	0.198	0.194	1	0.108	0.108
	Sig. (2-tailed)	0.026	0.220	0.201		0.480	0.482
	N	45	40	45	45	45	45
Facility and sustainability	Pearson Correlation	-0.226	0.050	0.040	0.108	1	-0.101
	Sig. (2-tailed)	0.136	0.760	0.793	0.480		0.508
	N	45	40	45	45	45	45
GRI references	Pearson Correlation	0.052	0.045	-0.151	0.108	-0.101	1
	Sig. (2-tailed)	0.734	0.784	0.322	0.482	0.508	
	N	45	40	45	45	45	45

Note:

\*Correlation is significant at the 0.05 level (2-tailed).

**Exhibit 11** | Equation Summary Results

	Equation 1 (OWN)	Equation 2 (RENT)	Equation 3 (OwnRent)
<i>F</i>	1.345 (0.252)	0.789 (0.380)	0.157 (0.694)
Constant	6.425 (0.000)	5.298 (0.000)	5.575 (0.000)
OWN	-4.999 (0.252)		
RENT		0.321 (0.888)	
OwnRent			-0.184 (0.694)
Adj. R <sup>2</sup>	0.008	-0.005	-0.022

$$CRE_p = \alpha + \beta_1 OWN + \varepsilon. \quad (1)$$

$$CRE_p = \alpha + \beta_2 RENT + \varepsilon. \quad (2)$$

$$CRE_p = \alpha + \beta_3 OwnRent + \varepsilon. \quad (3)$$

## Results

Exhibit 8 includes descriptive statistics for the four factors and corporate real estate financial benchmarks. For the sample CSRs, the average corporate real estate coverage percentage is 5.07%, with a wide variance from 0.00% to a high of 31.01% (the median is 3.42% for corporate real estate coverage percentage). The highest average for the four factors is ‘facility and sustainability’ at 3.36% (1.34% median) and the lowest average ‘GRI CRE references’ at 0.13% (0.00% median).

Correlations between the four factors and corporate real estate coverage percentages are generally insignificant with the exception of CRE coverage percentage to the facility and sustainability factor (Exhibit 9). Regardless of the CRE coverage percentage in a CSR, the results for the 45 CSRs indicate a higher focus on facilities and sustainability than any other factor. At a 10% significance level, facility certifications and CRE coverage as a percentage of the total are slightly significant whereas the correlation of CRE coverage percentage to GRI CRE references is essentially zero.

Exhibit 10 extends the previous correlation matrix and includes the Own and Rent CRE benchmarks and four primary factors. CRE references (%) to OWN is

significant at the 5% level, with a 0.332 correlation indicating a positive relationship between the intensity of net property, plant, and equipment assets to corporate real estate references in CSRs. Paradoxically, there is also a positive correlation between RENT and facility certifications (%) at 0.328, significant at the 5% level. The latter referenced relationship supports corporate real estate surveys that indicate a preference for corporations to lease LEED-certified properties and mention it in CSRs (Mattson-Teig, 2007; Sustainable Facility, 2007; Environmental Design & Construction, 2008).

Results of Equations 1, 2, and 3 are shown in Exhibit 11 and confirm insignificant relationships between each independent variable (*OWN*, *RENT*, and *OwnRent*) to the dependent variable (*CRE<sub>i</sub>*). Such results are not surprising due to several reasons. First, GRI guidelines do not require significant discussion of CRE ownership or operations in CSRs, and second, there are non-linear relationships of the dependent and independent variables with large standard deviations for all variables. Alternative transformations such as logs and squaring variables also resulted in low explanatory outcomes. Until CRE content in CSRs is consistently improved and increased across industry sectors and geographies, increasing the sample size of CSRs is likely to show similar insignificant results based on the three CRE benchmarks.

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## Conclusion

This article argues for increased transparency and disclosures on corporate real estate assets, whether leased or owned, in corporate sustainability reports. There are three reasons to support this argument. First, commercial real estate is a significant asset class globally, whether owned, leased, operated, abandoned, or managed by corporations. Second, research and environmental studies identify the direct and indirect impacts and contributions of commercial real estate operations to climate impacts and greenhouse gas emissions. Third, although current GRI (2006) guidelines do not sufficiently address corporate real estate disclosures in CSRs, minor modifications and extensions of existing GRI guidelines have the potential to correct the gap of CRE reporting. The results of the content analysis research of the sample 45 CSRs based on GRI (2006) guidelines indicate that corporate real estate disclosures in corporate sustainability reporting are limited in scope, consistency, transparency, and coverage.

Exhibit 2 illustrates how existing GRI standards can be modified to address corporate real estate disclosures in corporate sustainability reports. The requirement (EN11) to disclose corporate locations adjacent to high biodiversity valued areas or protected areas is reasonable and understandable. There are, however, critical questions about corporate locations adjacent to non-protected areas in urban, rural, developing counties, or corporate locations in less developed countries too. For example, the geographic landscape of cities and rural areas is littered with abandoned commercial and industrial real estate properties just as inner cities are littered with abandoned and non-inhabitable residential properties.

GRI standards need to account for the vast role of the operations and management of corporate real estate assets in corporate sustainability reporting. Research

confirms the relationship of commercial real estate to GHG emissions and energy usage. Research also confirms the significant financial value and risks of corporate owned real estate assets to corporations, and yet, this research proves that corporate real estate disclosure is limited and inconsistent in corporate sustainability reporting. Do corporations account for owned and leased property changes such as divestitures, disposition, or reductions in leased space when reporting changes in CO<sub>2</sub> or GHG emissions?<sup>18</sup> Why are CO<sub>2</sub> emissions not reported on a square footage or square meter basis over time in an attempt to standardize analysis?<sup>19</sup> Do firms disclose significant differences in corporate real estate sustainable management strategies regardless of local geographies, economics, or demographics (Gouldson, 2006)? Is there an agency problem with corporate real estate, whereby companies that lease more than they own, view corporate real estate and sustainability as someone else's problem (Kadzis, 2007)?

A majority of corporate real estate executives in 2009 already believe that sustainability is an important issue.<sup>20</sup> There is, however, a continuing debate on the role of corporate real estate within the overall corporate strategies and the lifecycle of the firm. Are corporate real estate executives adequately viewed, organized, and empowered within the firm as relevant managers of corporate assets and integrated in corporate sustainability strategies (Manning and Roulac, 1996, 1999)? Another factor is the level of corporate real estate assets and the financial structures that facilitate whether a firm owns or leases the necessary space for the production of goods and services. Are corporations that own most of their properties more likely to link corporate real estate with sustainability strategies than corporations who primarily lease commercial properties?

There are several limitations to this research and areas for further research. CRE content percentages in the sample reports did not include photographs and graphics that may alter content analysis results due to areas in the reports that feature pictures or illustrations of corporate properties and facilities. Thus further research using the measurement methods espoused by Unerman (2000) may result in different results. Corporate real estate coverage and content in corporate sustainability reports written under non-GRI guidelines may produce alternative results. Furthermore, evidence of a lack of corporate real estate content in CSRs may not necessarily portray the extent of sound corporate real estate sustainability strategies employed and implemented by firms and reported in other media than CSRs. The authors recommend further research, expanding the sample size, geographic coverage, and industry representations of corporations in order to empirically prove a dissonance exists as identified by (Adams and Whelan, 2009). In summary, this research recommends that GRI and other international institutions developing CSR standards need to consider developing new standards and guidelines that encourage transparency and significant discussion of corporate real estate assets in corporate sustainability reporting. As Exhibit 2 illustrates, many of the existing GRI sections offer the opportunity to expand relevant discussions and content to address the empirical evidence and research linking commercial real estate to greenhouse gas emissions, climate impacts, and environmental and community sustainability challenges.

## Appendix

**Exhibit 12** | CRE Coverage % by Four Factors

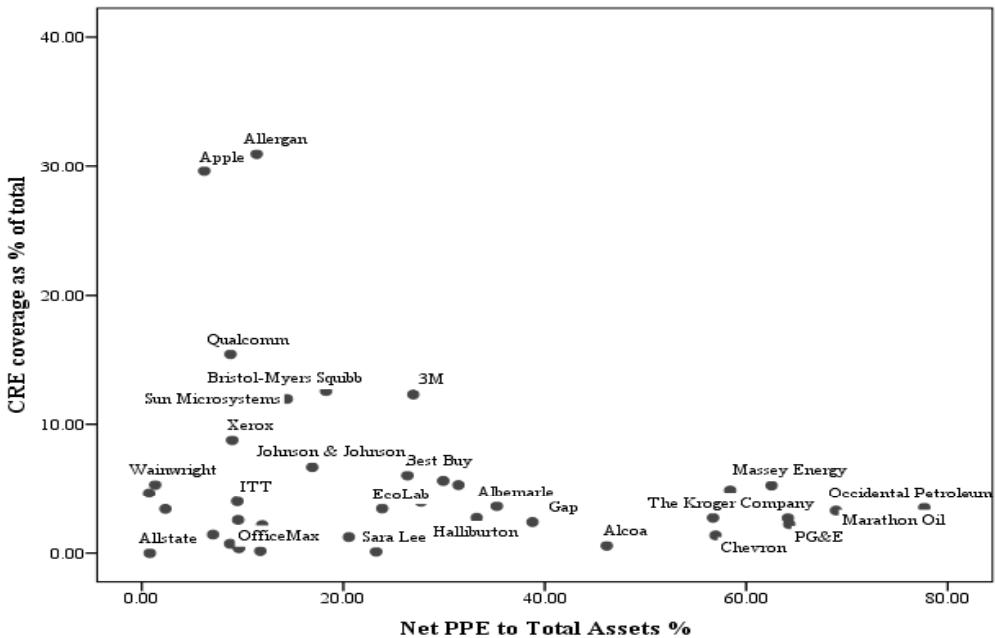
Company	Facility Certifications	General CRE References	GRI References	Facilities and Sustainability	Total CRE % Coverage
3M	0.00	0.00	0.00	12.29	12.29
Abbott	0.36	0.00	0.00	1.34	1.70
Albemarle	0.00	0.44	2.45	0.74	3.63
Alcoa	0.00	0.00	0.00	0.57	0.57
Allergan	3.61	2.26	0.00	25.14	31.01
Allstate	0.00	0.00	0.00	0.00	0.00
American Express	0.80	0.00	0.00	2.62	3.42
Apple	0.00	0.00	0.00	29.63	29.63
Bank of America	3.49	0.68	0.00	0.51	4.68
Baxter	0.51	0.00	0.00	5.14	5.65
Best Buy	4.45	0.17	0.00	1.44	6.06
Bristol-Myers Squibb	2.08	2.06	0.00	8.42	12.56
Chevron	0.85	0.52	0.00	0.00	1.37
Cisco Systems Inc.	0.10	0.86	0.00	0.47	1.43
Coca-Cola Company	0.00	0.00	0.00	1.24	1.24
Dow Chemicals	0.08	1.41	3.42	0.42	5.33
Duke Energy	0.78	0.54	0.00	1.39	2.71
EcoLab	1.03	0.00	0.00	2.42	3.45
Gap	1.34	0.00	0.00	1.06	2.40
Halliburton	0.00	0.00	0.00	2.73	2.73
Hewlett Packard	0.75	0.00	0.00	1.82	2.57
IBM	0.00	1.03	0.00	0.43	1.46
ITT	0.14	0.00	0.00	3.88	4.02
Johnson & Johnson	0.27	0.00	0.00	6.43	6.70
Kohl Corp	3.51	0.00	0.00	0.00	3.51
Marathon Oil	0.00	2.67	0.00	0.62	3.29
Massey Energy	0.00	3.16	0.00	2.13	5.29
Mattel	0.00	0.00	0.00	1.36	1.36
McDonalds	2.54	1.78	0.00	0.00	4.32
Medtronics	0.38	0.00	0.00	0.00	0.38
Merck	0.09	0.00	0.00	0.36	0.45
Motorola	0.00	0.00	0.00	0.72	0.72
Occidental Petroleum	0.61	0.57	0.00	2.35	3.53

**Exhibit 12** | (continued)  
CRE Coverage % by Four Factors

Company	Facility Certifications	General CRE References	GRI References	Facilities and Sustainability	Total CRE % Coverage
OfficeMax	0.00	0.00	0.16	0.00	0.16
Pfizer	0.08	0.36	0.00	1.73	2.17
PG&E	0.00	1.78	0.00	0.45	2.23
Qualcomm	0.47	0.00	0.00	14.92	15.39
Sara Lee	0.11	0.00	0.00	0.00	0.11
Sun Microsystems	1.41	1.77	0.00	8.77	11.95
Target	1.48	0.62	0.00	2.81	4.91
Texas Instruments	3.97	0.00	0.00	0.00	3.97
The Kroger Company	0.65	0.00	0.00	2.08	2.73
Unitedhealth Group	1.00	0.00	0.00	0.00	1.00
Wainwright	4.12	0.00	0.00	1.22	5.34
Xerox	4.83	2.31	0.00	1.64	8.78
Average	1.02	0.56	0.13	3.36	5.07

**Exhibit 13** | CRE coverage vs. Independent Variables

Correlations		CRE Coverage as % of Total	Net PPE to Total Assets (OWN)	Rent 5 yrs to Net Income (RENT)	PPE to Rent Ratio (OwnRent)
CRE coverage as % of total	Pearson Correlation	1.000			
	Sig. (2-tailed)				
	N	45			
Net PPE to Total Assets (Own)	Pearson Correlation	-0.174	1.000		
	Sig. (2-tailed)	0.252			
	N	45	45		
Rent 5 yrs to Net Income (Rent)	Pearson Correlation	0.143	-0.044	1.000	
	Sig. (2-tailed)	0.380	0.786		
	N	40	40	40	
PPE to Rent ratio (OwnRent)	Pearson Correlation	-0.064	0.292	0.031	1.000
	Sig. (2-tailed)	0.694	0.067	0.848	
	N	40	40	40	40

**Exhibit 14** | CRE Coverage % vs. Net PPE to Total Assets %

## Endnotes

- <sup>1</sup> There are several definitional issues that need to be addressed. Corporations, NGOs, municipalities, and other entities produce and publish reports under a variety of names. For purposes of this paper, social responsibility, citizenship reports, and sustainability reports are collectively referenced as corporate sustainability reports (CSR). References to the generic term corporation also include other institutions, firms, and entities such as municipalities, public and private firms, and non-government organizations unless otherwise noted.
- <sup>2</sup> ExxonMobil, December 31, 2009 Annual Report.
- <sup>3</sup> CoStar Advisor Newsletter, "Lease Up/Lease Down," <http://www.costar.com/news/Article.aspx?id=46973A98AA4F44A738F3B1D460734E03> [March 4, 2010].
- <sup>4</sup> Haynes (2009).
- <sup>5</sup> See Figure 2.1 (c) in Climate Change 2007: Synthesis Report, An Assessment of the Intergovernmental Panel on Climate Change, United Nations ([http://www.ipcc.ch/publications\\_and\\_data/publications\\_ipcc\\_fourth\\_assessment\\_report\\_synthesis\\_report.htm](http://www.ipcc.ch/publications_and_data/publications_ipcc_fourth_assessment_report_synthesis_report.htm)) [March 28, 2010].
- <sup>6</sup> See [http://www.ipcc.ch/publications\\_and\\_data/ar4/wg3/en/tssts-6.html](http://www.ipcc.ch/publications_and_data/ar4/wg3/en/tssts-6.html) [March 28, 2010].
- <sup>7</sup> See <http://www.unglobalcompact.org/> [March 28, 2010].
- <sup>8</sup> For further information, see Moskowitz (1972, 1975).
- <sup>9</sup> See Exhibit 14 in the Appendix; note that many of the firms with high ratios of net property, plant, and equipment to total assets that have low corporate real estate coverage percentages in corporate sustainability reports are in the oil and gas industries.

- <sup>10</sup> See <http://www.globalreporting.org/Home> [March 28, 2010].
- <sup>11</sup> According to KPMG International Survey of Corporate Responsibility Reporting 2008, KPMG International reports 77% of Global Fortune firms use GRI standards.
- <sup>12</sup> Global Reporting Initiative (2006). Sustainability Reporting Guidelines. Amsterdam, Global Reporting Initiative. Version 3.0, page 3.
- <sup>13</sup> See <http://www.globalreporting.org> [March 28, 2010]; “The environmental dimension of sustainability concerns an organization’s impacts on living and non-living natural systems, including ecosystems, land, air, and water. Environmental Indicators cover performance related to inputs (e.g., material, energy, water) and outputs (e.g., emissions, effluents, waste). In addition, they cover performance related to biodiversity, environmental compliance, and other relevant information such as environmental expenditure and the impacts of products and services.”
- <sup>14</sup> See <http://www.globalreporting.org/LearningAndSupport/GRIPublications/ResearchPublications/ReportingPractices.htm#RealEstate> [March 28, 2010].
- <sup>15</sup> See <http://www.corporateregister.com/> [March 26, 2010].
- <sup>16</sup> See <http://www.corporateregister.com/> [July 16, 2010]. As of July 16, 2010, CorporateRegister claimed to have 26,515 CSR reports for 6,592 firms.
- <sup>17</sup> A full list of GRI reporting firms from 1999 to 2010 is available in an Excel spreadsheet at <http://www.globalreporting.org> [July 16, 2010].
- <sup>18</sup> Bristol-Myers Squibb reports that “We include facilities in our data collection and reporting systems for full calendar years only. Newly opened facilities are included in the first full calendar year of operation. New acquisitions are included within two full calendar years. If a facility is divested or closed, data from the facility are included through the last full calendar year it was part of Bristol-Myers Squibb.”
- <sup>19</sup> For example, Allergan reports that the firm “...has seen generally a decline in total energy consumption on a per square foot basis since 2000. This trend demonstrates Allergan’s effective energy program. The reduction in 2008 versus 2007 was approximately 6% on a per square footage basis. Using 2000 as a baseline, the decrease was 20% in 2008. When energy consumption is normalized per sales, in 2008 a decrease of 11% in energy consumption occurred versus 2007. The normalized trend demonstrates Allergan’s commitment and results regarding energy conservation and management.”
- <sup>20</sup> See Jones Lang LaSalle, Perspectives on Sustainability, 2009.

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## References

- Adams, C.A. and G. Whelan. Conceptualising Future Change in Corporate Sustainability Reporting. *Accounting Auditing & Accountability Journal*, 2009, 22:1, 118–43.
- Aras, G.L. and D. Crowther. Corporate Sustainability Reporting: A Study in Disingenuity? *Journal of Business Ethics*, 2009, 87, 279–88.
- Belal, A.R. A Study of Corporate Social Disclosures in Bangladesh. *Managerial Auditing Journal*, 2001, 16:5, 274–89.
- Bloomfield, C. and R. Kadzis. Global Trends in Sustainable Real Estate: Corporate Perspectives. *The Leader*, 2009, 28–32.
- Brown, H.S., M. de Jong, and T. Lessidrenska. The Rise of the Global Reporting Initiative: A Case of Institutional Entrepreneurship. *Environmental Politics*, 2009, 18:2, 182–200.
- Brown, M.A., F. Southworth, and T.K. Stovall. Towards a Climate-friendly Built Environment. Oak Ridge National Laboratory, Pew Center on Global Climate Change, 2005.

- Cochran, P.L. and R.A. Wood. Corporate Social Responsibility and Financial Performance. *Academy of Management Journal*, 1984, 27:1, 42–56.
- D&R International. 2009 Buildings Energy Data Book, U.S. Department of Energy, 2009.
- Environmental Design & Construction. Real Estate Firm Forms Sustainability University, Commits To Hire And Train 500 LEED and BREEAM Accredited Professionals. *Environmental Design & Construction*, 2008, 11:7, 6.
- Fisher, R., P. Oyelere, and F. Laswad. Corporate Reporting on the Internet: Audit Issues and Content Analysis of Practices. *Managerial Auditing Journal*, 2004, 19:3, 412–39.
- Fussler, C. Responsible Excellence Pays! *Journal of Corporate Citizenship*, 2004, 16(Winter), 33–44.
- Gill, D.L. and S.J. Dickinson. Communicating Sustainability: A Web Content Analysis of North American, Asian and European firms. *Journal of Communication Management*, 2008, 12:3, 243–62.
- Global Reporting Initiative. Sustainability Reporting Guidelines. Amsterdam, Global Reporting Initiative, 2006.
- Gouldson, A. Do Firms Adopt Lower Standards in Poorer Areas? Corporate Social Responsibility and Environmental Justice in the EU and the US. *Area*, 2006, 38:4, 402–12.
- Guthrie, J. and I. Abeysekera. Content Analysis of Social, Environmental Reporting: What is New? *Journal of Human Resource Costing & Accounting*, 2006, 10:2, 114–26.
- GVA Grimley. How Green is My City? The Carbon Footprint of U.K. Cities and the Role of Property. Winter 2007. Available at: [http://www.gvagrimley.co.uk/PreBuilt/Research%20web/Occasional%20Bulletins/Green\\_Cities\\_2007.pdf](http://www.gvagrimley.co.uk/PreBuilt/Research%20web/Occasional%20Bulletins/Green_Cities_2007.pdf).
- Haynes, V.D. Circuit City Shutting Down, Leaving 34,000 Out of Work. *The Washington Post*, 2009, D01.
- Henderson, K.V. and L.B. Cowart. Bucking E-commerce Trends: A Content Analysis Comparing Commercial Real Estate Brokerage and Residential Real Estate Brokerage Websites. *Journal of Corporate Real Estate*, 2002, 4:4, 375–85.
- Hess, D. The Three Pillars of Corporate Social Reporting as New Governance Regulation: Disclosure, Dialogue, And Development. *Business Ethics Quarterly*, 2008, 18:4, 447–82.
- Holcomb, J.L., R.S. Upchurch, and F. Okumus. Corporate Social Responsibility: What Are Top Hotel Companies Reporting? *International Journal of Contemporary Hospitality Management*, 2007, 19:6, 461–75.
- Holder-Webb, L., J.R. Cohen, L. Nath, and D. Wood. The Supply of Corporate Social Responsibility Disclosures among U.S. Firms. *Journal of Business Ethics*, 2009, 84, 497–527.
- Hollander, J.B. *Polluted and Dangerous: America's Worst Abandoned Properties and What Can Be Done About Them*. Lebanon, NH: University Press of New England, 2009.
- Ingram, R.W. and K.B. Frazier. Environmental Performance and Corporate Disclosure. *Journal of Accounting Research*, 1980, 18:2, 614–22.
- Junnala, S. The Environmental Significance of Facilities in Service Sector Companies. *Facilities*, 2004, 22:7/8, 190–98.
- Kadzis, R. Shattering the Myths of Sustainability: New Survey Results Will Reflect Widening Embrace of Socializing Responsible Globalization. Industry Tracker, CoreNet Global. November/December, 2007.
- Kolk, A. Trends in Sustainability Reporting by the Fortune Global 250. *Business Strategy and the Environment*, 2003, 12, 279–91.

- Kolk, A. and P. Perego. Determinants of the Adoption of Sustainability Assurance Statements: An International Investigation. *Business Strategy and the Environment*, 2008, 19:3, 182–98.
- Laposa, S. and M. Charlton. European versus U.S. Corporations: A Comparison on Property Holdings. *Journal of Corporate Real Estate*, 2002, 4:1, 34–7.
- Levine, M., D. Urge-Vorsatz, et al. Residential and Commercial Buildings. In *Climate Change 2007: Mitigation. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. B. Metz, O.R. Davidson, P.R. Bosch, R. Dave and L.A. Meyers, 2007.
- Manning, C.A. and S.E. Roulac. Structuring the Corporate Real Property Function for Greater “Bottom Line” Impact. *Journal of Real Estate Research*, 1996, 12, 383–96.
- . Corporate Real Estate Research within the Academy. *Journal of Real Estate Research*, 1999, 17, 265–79.
- . Lessons from the Past and Future Directions for Corporate Real Estate Research. *Journal of Real Estate Research*, 2001, 22, 7–58.
- Marrewijk, M. and M. Werre. Multiple Levels of Corporate Sustainability. *Journal of Business Ethics*, 2003, 44:2/3, 107–19.
- McKinsey & Company. Reducing U.S. Greenhouse Gas Emissions: How Much at What Cost? 2007.
- Mattson-Teig, B. *Why Green Building Has Staying Power*. *National Real Estate Investor*. October 31, 2007. Available at: [http://nreionline.com/brokernews/greenbuildingnews/green\\_building\\_survey/](http://nreionline.com/brokernews/greenbuildingnews/green_building_survey/).
- Milne, M. and R.W. Adler. Exploring the Reliability of Social and Environmental Disclosures Content Analysis. *Accounting Auditing & Accountability Journal*, 1999, 12:2, 237–56.
- Milne, M. and R. Gray. International Trends in Corporate ‘Sustainability’ Reporting. *Chartered Accountants Journal*, 2008, 87:11, 60–3.
- Moskowitz, M. Choosing Socially Responsible Stocks. *Business and Society Review*, 1972, 1, 71–5.
- . Profiles in Corporate Responsibility. *Business and Society Review*, 1975, 13, 29–42.
- Nourse, H.O. and S.E. Roulac. Linking Real Estate Decisions to Corporate Strategy. *Journal of Real Estate Research*, 1993, 8, 475–94.
- O’Dwyer, B. and D. Owen. Seeking Stakeholder-Centric Sustainability Assurance. *Journal of Corporate Citizenship*, 2007, 25, 77–94.
- Pachauri, R.K. and A. Reisinger (Eds.). *Climate Change 2007: Synthesis Report*. Geneva, United Nations, 2007.
- Powell, K.M., K. Fowler, and J. Parman. Assessing Green Building Performance: U.S. Government’s ‘Landlord’ Evaluates 12 Buildings. *The Leader*, 2009, 8:1, 11–23.
- Raar, J. Reported Social and Environmental Taxonomies: A Longer-term Glimpse. *Managerial Auditing Journal*, 2007, 22:8, 840–60.
- Ramus, C.A. and I. Montiel. When are Corporate Environment Policies A Form of Greenwashing? *Business Society*, 2005, 44, 377–414.
- Reed, R., A. Bilos, S. Wilkinson, and K-W. Schulte. International Comparison of Sustainable Rating Tools. *Journal of Sustainable Real Estate*, 2009, 1:1, 1–22.
- Reed, R.G. and S.J. Wilkinson. The Increasing Importance of Sustainability for Building Ownership. *Journal of Corporate Real Estate*, 2005, 7, 339–50.

- Reynolds, M. and K. Yuthas. Moral Discourse and Corporate Social Responsibility Reporting. *Journal of Business Ethics*, 2008, 78, 47–64.
- Roberts, C., D. Rapson, and D. Shiers. Social Responsibility: Key Terms and Their Uses in Property Investment. *Journal of Property Investment & Finance*, 2007, 25:4, 388–400.
- Rodriguez, M. and C.F. Sirmans. Managing Corporate Real Estate: Evidence from the Capital Markets. *Journal of Real Estate Literature*, 1996, 4, 13–33.
- Roper, K.O. and J.L. Beard. Justifying Sustainable Buildings—Championing Green Operations. *Journal of Corporate Real Estate*, 2006, 8:2, 91–103.
- Roulac, S.E. Corporate Property Strategy is Integral to Corporate Business Strategy. *Journal of Real Estate Research*, 2001, 22, 129–52.
- . Corporate-Owned Real Estate Represents a Substantial Investment Universe. *Journal of Real Estate Portfolio Management*, 2003, 9, 167–78.
- Skouloudis, A., K. Evangelinos, and F. Kourmousis. Assessing Non-financial Reports According to the Global Reporting Initiative Guidelines: Evidence from Greece. *Journal of Cleaner Production*, 2010, 18:5, 426–38.
- Smith, M. and R.J. Taffler. The Chairman’s Statement: A Content Analysis of Discretionary Narrative Disclosures. *Accounting Auditing & Accountability Journal*, 2000, 13:5, 624–46.
- St. Lawrence, S. Review of the U.K. Corporate Real Estate Market with Regard to Availability of Environmentally and Socially Responsible Office Buildings. *Journal of Corporate Real Estate*, 2004, 6, 149–61.
- Sustainable Facility. National Study Details Increasing Environmental Awareness, Investment by Commercial Real Estate Industry. *Sustainable Facility*, 2007, 32:11, 8.
- Unerman, J. Methodological Issues: Reflections on Quantification in Corporate Social Reporting Content Analysis. *Accounting Auditing & Accountability Journal*, 2000, 13:5, 667–80.
- Urge-Vorsatz, D. Climate Change Mitigation in the Buildings Sector: The Findings of the 4th Assessment Report of the IPCC. New York, United Nations, 2007.
- Veale, P.R. Managing Corporate Real Estate Assets: Current Executive Attitudes and Prospects for an Emergent Management Discipline. *Journal of Real Estate Research*, 1989, 4, 1–22.
- White, G.B. How to Report a Company’s Sustainability Activities. *Management Accounting Quarterly*, 2005, 7:1, 36–43.

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