

REDUCING CARBON. BUILDING VALUE.

Greenprint Carbon Index™

VOLUME 1, OCTOBER 2010



REDUCING CARBON. BUILDING VALUE

Greenprint Foundation is a worldwide alliance of leading real estate owners, investors and financial institutions committed to reducing carbon emissions across the global property industry. Greenprint Foundation is a catalyst for change, taking meaningful, immediate and measurable actions to generate solutions that improve energy efficiency and create value in property portfolios. Greenprint focuses on the built environment, which represents one third of all carbon emissions.

Greenprint's mission is to lead the global real estate community toward value-enhancing carbon reduction strategies that support the Intergovernmental Panel on Climate Change (IPCC) goals for global greenhouse gas stabilization by 2030.*

FOUNDING MEMBERS

Aetos Capital
AvalonBay
Beacon Capital Partners
Douglas Emmett
GLL Real Estate Partners
Henderson Global Investors
Hines
Jones Lang LaSalle
McArthurGlen Group
Paramount Group
PATRIZIA Immobilien
ProLogis
Prudential Real Estate Investors
RREEF, a member of Deutsche Bank Group
Sonae Sierra

Analysis Provided by:



Real value in a changing world

* Contribution of Working Group III to the Fourth Assessment Report of IPCC (2007), Chapter 3: Issues Related to Mitigation in the Long-Term Context, p. 173: "Using the 'best estimate' assumption of climate sensitivity, the most stringent scenarios (stabilizing at 445–490 ppmv CO₂-equivalent) could limit global mean temperature increases to 2–2.4 degrees Celsius above the pre-industrial level, at equilibrium, requiring emissions to peak before 2015. Global CO₂ emissions would return to 2000 levels no later than 2030."

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Foreword

I am pleased to present our first issue of the Greenprint Carbon Index.™ The Index provides a consolidated view of our members' participating portfolios, detailing its current carbon output and giving us an important benchmark with which to measure our progress in reducing carbon emissions. This is an important first step in our overall goal of creating a clear and consistent standard of measurement and performance that helps us link reduced carbon emissions with increased property values.

The publication of the Index is the beginning of an exciting process ... not the end. With 600 properties and over 16 million square meters of commercial space represented, it is already one of the largest global measurements of real estate's carbon footprint, and it will only increase in size as we expand our membership and its participation in the database. In addition to this consolidated portfolio-level Index, each of our members receives a separate report providing performance data on its individual portfolio that includes an anonymous benchmark against their Greenprint peers.

Reducing Carbon. Building Value.

Greenprint and its members believe that the accurate measurement of a portfolio's carbon emissions is a critical step in identifying where property owners, managers and tenants can make effective changes to lower those emissions and create value. Greenprint is committed to being a catalyst for change by taking meaningful, immediate and measurable actions to generate solutions that improve energy efficiency while increasing property values. Our mission is to lead the global real estate community toward value-enhancing carbon reduction strategies that support the Intergovernmental Panel on Climate Change (IPCC) goals for global greenhouse gas stabilization by 2030. Our Greenprint Carbon Index is establishing the standard for carbon reporting for the industry in alignment with both the International Greenhouse Gas Protocol and the principles of ISO 14064. Importantly, we are also making every effort to harmonize our methodology with leading green building accreditation systems.

There is mounting evidence that properties with lower carbon emissions increase in value through the use of proven, energy reducing management strategies and technologies. Greenprint members share and collaborate in testing and evaluating a wide range of alternatives to lower carbon emissions for all institutional property types. Our members develop and participate in pilot programs that test new technology and management practices and, in addition to sharing results with their Greenprint colleagues, publish white papers and case studies which detail program results in terms of effectiveness and cost savings. Greenprint members are at the forefront of innovative Green Lease strategies which align owner and tenant interests in financing retrofit programs. We are also working to create collaborative programs centered on Procurement, Regulatory Trend Reports and Green Finance.

I hope that you find the Index as thought provoking as we do. We look forward to reporting on our progress in expanding the depth and breadth of the Greenprint Carbon Index through increased membership and participation. Our next Index is scheduled to be issued on March 31, 2011. I also look forward to having the opportunity to work with you toward our goal of reducing the carbon footprint of the built environment while we increase the value of our real estate assets.

Sincerely,

Charles B. Leitner III

Chief Executive Officer, Greenprint Foundation

1 Executive Summary

The natural balance of greenhouse gases in the atmosphere is changing, and the result of this is an altered global climate. The scientific community is now broadly in agreement that this change is at least in part influenced by human activities. Industrial processes, the burning of fossil fuels to generate energy, and changes in land use and agricultural practices are all responsible for greenhouse gas emissions. Reducing these man-made emissions is the focus of international and national agreements to avoid the negative impacts associated with predicted climate change scenarios. By working together to advance and implement new technologies and best operating practices, the real estate community can have a beneficial impact and, at the same time, enhance asset values.

The dialogue among owners and occupiers of commercial real estate has moved beyond questioning the effect of the built sector on climate change. The built environment accounts for 39% of global energy consumption and one-third of indirect carbon emissions. As the environmental, social and economic costs of climate change become better defined, and government regulation of carbon emissions expands, property owners and investors around the globe are under more pressure to reduce their carbon footprints. Increased government regulation, and growing investor and tenant demand for 'green' properties, are driving real estate owners to implement cost effective energy and carbon reduction strategies that simultaneously enhance their properties' long-term value.

Amidst an explosion of wide-ranging environmental initiatives, it has been difficult to find a common starting point to measure and benchmark carbon emissions across the worldwide property industry. Greenprint Foundation has launched its Carbon Index to establish that starting point and advance the industry's efforts to reduce energy usage and carbon emissions while building value.

Specifically, the Greenprint Carbon Index:

- Establishes an industry-wide standard for measuring, benchmarking and tracking operational energy usage and carbon emissions trends, aligned with both the International Greenhouse Gas Protocol and the principles of ISO 14064.
- Creates a reliable and transparent platform that enables collection and analysis of accurate property performance data that is verifiable.
- Strives to harmonize the Index's methodology with green building accreditation systems.

The Greenprint Carbon Index quantifies carbon emissions that are produced as a result of building energy use and fugitive emissions from refrigerant leakage. Emissions included in the Carbon Index are both direct emissions (generated from the onsite combustion of fuels to generate electricity, heat or steam, and the use of refrigeration and air condition equipment) and indirect emissions (arising from energy generated by another entity but consumed within the building's boundaries). The Index does not currently account for indirect emissions stemming from transportation related activities, waste generation and energy use within water and sewer facilities.

This first Carbon Index is based on our members' 2009 operating data for 601 properties located across 36 countries. It establishes a baseline for measuring the carbon footprint of the Greenprint portfolio over time. Future reports will chart our members' progress in reducing energy usage and carbon emissions as they seek to enhance their portfolios' value, implement improved retrofit technologies and respond to increasing government regulation.

1 Executive Summary (continued)

Key findings from the Carbon Index's baseline analysis include:

- The Greenprint portfolio presents a trend towards improved energy efficiency in the last decade, which coincides with stricter building codes and improved technology. (Page 6)
- The GHG emissions are nearly double in the Americas compared to Europe, Middle East and Africa (EMEA) despite a similar number of properties and floor area submitted. (Page 10)
- Onsite renewable energy is less than 0.2% and imported electricity certified as renewable, is less than 2.9% of the 1.7 billion kWh of energy obtained by Greenprint landlords in 2009. (Page 12)
- Over 35,000 tenants are represented throughout the 601 properties contributed by Greenprint members. (Page 15)

The Volume 1, October 2010 Greenprint Carbon Index is setting a baseline that will be used to track progress in reducing emissions. Future reports will:

- Present detailed data on carbon emission trends
- Expand the breadth of the portfolio
- Report on the members' success in terms of green lease strategies, procurements, green finance and other Greenprint initiatives

Future reports will chart our members' progress in reducing energy usage and carbon emissions as they seek to enhance their portfolios' value.

2 Greenprint Portfolio Overview

Distribution by Geography

The current Greenprint portfolio spans the globe, with the most significant number of assets currently in EMEA and the Americas, with a growing Asia Pacific portfolio. Each region includes countries with diverse regulatory environments, distinct cultures and inherent greenhouse gas intensities.

Greenprint members have self-selected which assets to submit to the Carbon Index on the basis of: ■ Data Availability¹ ■ Geographic Distribution ■ Managerial Control global overview ASIA PACIFIC AMERICAS **EMEA**

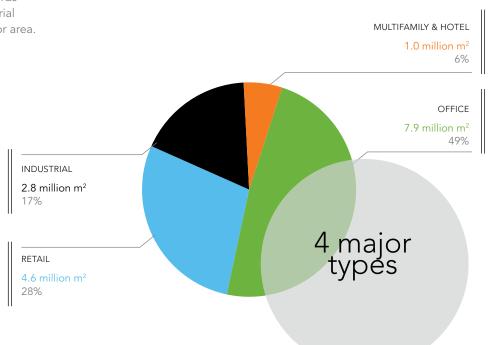
218 assets, 4 countries 7.4 million m² (80 MSF)

295 assets, 20 countries 6.7 million m² (72 MSF)

88 assets, 12 countries 2.2 million m² (24 MSF)

Distribution by Property Type

The Index includes all major building types, and is heavily weighted towards office, followed by retail and industrial properties, both in number and floor area.



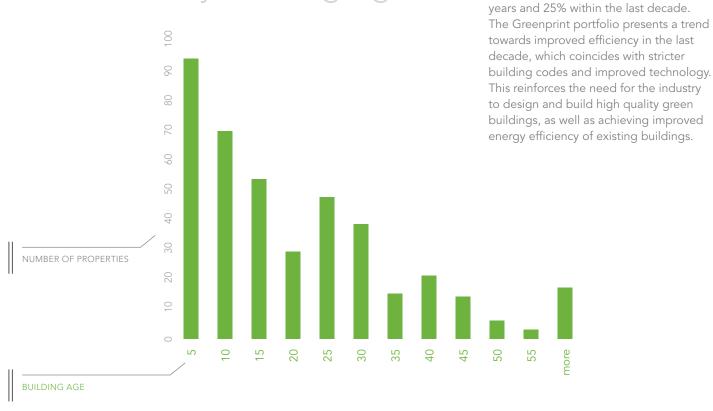
Office

Retail

Industrial

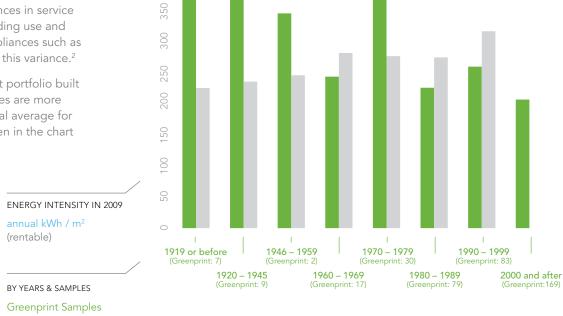
■ Multifamily & Hotel

Distribution by Building Age



In some countries, the age of the properties can be directly linked to their energy and associated carbon efficiency potential. For instance, North American properties built between 1970 and 1979 were less energy efficient, on average, than properties built during the first half of the 20th century. Differences in service levels, climate control, building use and the introduction of new appliances such as computers explain some of this variance.²

Properties in the Greenprint portfolio built during the last three decades are more efficient than the US national average for commercial property, as seen in the chart to the right.



Over half the properties in the Greenprint portfolio were built within the last 25

■ Greenprint Portfolio

 Commercial Building Energy Consumption Survey 3 Greenhouse Gas Emissions (GHGs)

Methodology

The Greenprint Carbon Index separates Greenhouse Gas Emissions (GHG) emissions into three categories – Scopes 1, 2 and 3. This reporting system is aligned to the World Resources Institute/WBCSD's Greenhouse Gas Protocol. Categorizing emissions by Scope enables separate accounting of GHG sources by different related entities, such as landlord and tenants, and also increases transparency.

Organizational Boundary: Greenprint Foundation has chosen to use the Operational Control approach, and defines areas under control to include all areas where Greenprint members (landlord or tenant) have full authority to introduce and implement operating policies at the building.

Scope 1 primarily covers onsite power generation. It includes emissions from the onsite combustion of fuels to generate electricity, heat or steam within Greenprint members' buildings. Fugitive emissions created by the operation of buildings, such as the use of refrigeration and air condition equipment, are also included.

Scope 1 does not include emissions from:

- Energy generated offsite
- Upstream activities such as building construction or equipment production
- Downstream activities such as waste disposal

Scope 2 covers emissions from energy produced offsite, but consumed onsite. These emissions are attributed to whoever pays for them, unless passed-through on a submetered basis. Emissions from energy that is submetered by landlords to their tenants falls into Scope 3.

Scope 2 includes indirect emissions associated with the consumption of purchased or acquired electricity and thermal energy, such as district heating or cooling. These emissions are a consequence of energy consumption that takes place within the building's boundaries, but occur at sources controlled by another entity. Scope 2 is associated with metered electrical or thermal energy consumption, for which the owner or tenant has control or financial responsibility.

Scope 2 does not include emissions from:

- Transport
- Upstream activities such as building construction or equipment production
- Downstream activities such as waste disposal
- Fugitive emissions
- Energy generated onsite

Scope 3 covers emissions from energy consumed onsite that do not fall into Scope 1 or 2.

Scope 3 includes emissions attributable to tenants through sub-metered energy consumption of the tenant space. These emission sources include tenant spaces where the energy consumption is known and attributable to an occupier other than the owner.

In this index, Scope 3 does not include emissions from:

- Energy generated offsite which the reporter is financially responsible for, likely through submetering
- Transport
- Upstream activities such as building construction or equipment production
- Downstream activities such as waste disposal
- Fugitive emissions
- Energy generated onsite

Emissions coefficients are used to calculate the amount of generated CO₂e. Developing and applying accurate emissions' coefficients is critical to reliable GHG emissions reporting. Please find additional information regarding emissions coefficients in Appendix B.

Absolute Emissions*

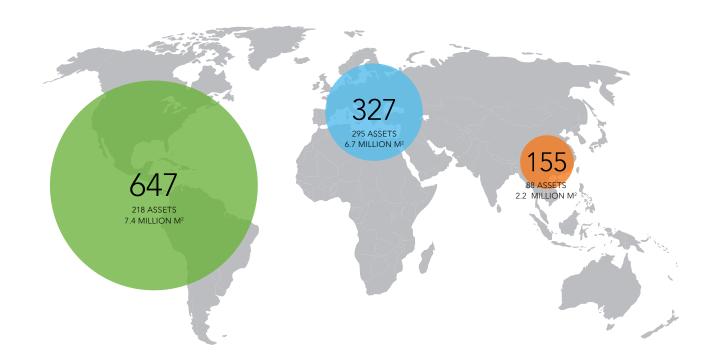
	Scope 1	Scope 2	Scopes 1+2	Scope 3
Thousand metric tonnes of CO ₂ e / year in 2009*	74	857	931	196

^{*} These are absolute emissions, without adjustments nor normalisations.

Emissions by Global Region

The following map illustrates the absolute carbon emissions (Scope 1, 2 and 3), in thousand metric tonnes, for:

- Americas
- EMEA
- Asia Pacific



Greenhouse gases (GHG) include methane, nitrous oxide and carbon dioxide and all contribute to climate change. Carbon emissions are frequently used as shorthand for all GHG. CO₂e translates the global warming impact of all GHG into the carbon dioxide equivalent

Emissions by Global Region (continued)

GHG emissions are nearly double in the Americas compared to EMEA, despite a similar number properties and floor area. Properties consuming the same amount of energy can emit different amounts of ${\rm CO_2e}$ for several reasons, including:

- Geographic Location: The viability and utilization of onsite renewable energy technologies varies by location according to natural factors, such as water availability, sunlight intensity, etc.
- Government Approaches: Policies and incentives to decarbonise the power supply vary. For example, combined heat and power (CHP) options are widely available in Germany due to government support⁴ and three quarters of French electricity is now produced by low carbon nuclear plants.⁵

Emissions by Global Region Comparison

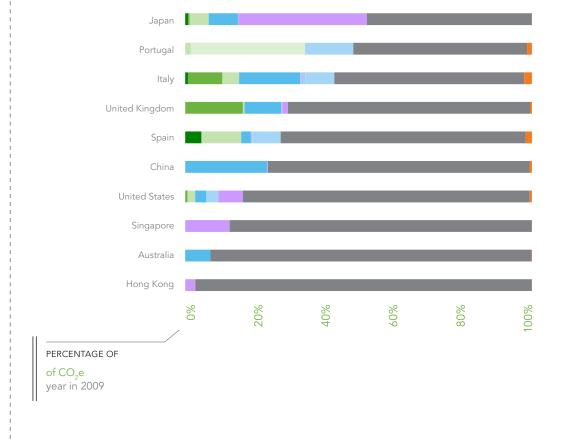
	EMEA	Asia Pacific	Americas
Number of properties	295	88	218
Floor Area	6.7 million m² (80 MSF)	2.2 million m² (24 MSF)	7.4 million m² (72 MSF)
CO ₂ e emissions (Thousand metric tonnes) Scopes 1, 2 and 3)	327	155	647
CO ₂ e emissions equivalent to how many barrels of oil	760,465	360,465	1,504,651
High GHG Intensity Economy in Region Tonnes CO ₂ e / Million international dollars, 2006)	Saudi Arabia: 699	China: 1,047	United States: 453
Medium GHG Intensity Economy in Region Tonnes CO ₂ e / Million international dollars, 2006)	Czech Republic: 553	Australia: 600	Mexico: 325
ow GHG Intensity Economy in Region Tonnes CO ₂ e / Million international dollars, 2006)	Sweden: 164	Japan: 314	Brazil: 216

CO₃e intensity source: World Resources Institute, CAIT. GHG Intensity of Economy in 2006 (excludes land use change). CAIT GHG data are derived from CDIAC, EDGAR, EIA, EPA, Houghton, IEA, and WB. http://cait.wri.org/cait.php?page=carbecon&mode=view

 $CO_{2}e$ equivalencies source: US Environmental Protection Agency. Greenhouse Gas Equivalencies Calculator. Accessed September 20, 2010. http://www.epa.gov/cleanenergy/energy-resources/calculator.html#results

Emissions Profile by Country

A view of selected countries' $\mathrm{CO}_2\mathrm{e}$ emissions profile reveals that properties in Japan, Italy and Spain are generating some on-site renewable energy. The majority of off-site certified renewable energy sources are purchased in Italy and the United Kingdom, with a minimum purchased in the United States. Standard grid electricity remains the dominant energy solution.



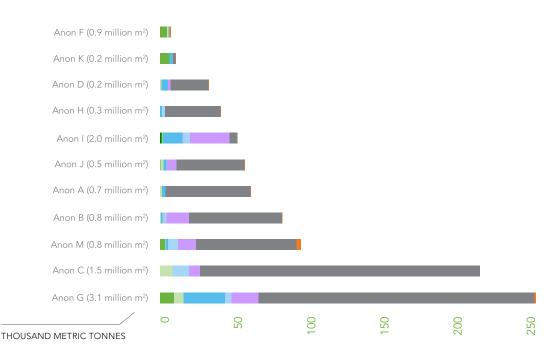
- CO₂e AVERTED as onsite renewable electricity
- CO₂e AVERTED as certified renewable imported electricity
- CO₂e emitted from onsite generated thermal energies
- CO₂e emitted from electricity generated onsite and exported offsite
- CO₂e emitted from all landlordobtained imported fossil fuels
- CO₂e emitted from all tenantobtained fossil fuels
- CO₂e emitted from tenantobtained electricity
- CO₂e emitted from non-certified grid electricity (for submetered exclusive-to-tenants)
- CO₂e emitted from non-certified grid electricity (for landlordshared services)
- CO₂e emitted from fugitive emissions (refrigerants)

Emissions Profile by Anonymous Member Portfolio

Greenprint members' portfolio greenhouse gas emissions (CO₂e) vary due to:

- Geographic distribution of individual portfolios
- Regional policies and incentives
- Property type allocation
- Corporate sustainability policies

The following chart is sorted based on the source of emissions. Only 0.16% of total energy consumption is generated by onsite renewables and 2.9% is attributable to the purchase of certified renewable energy. Four Greenprint members account for nearly all renewable generation and purchases.

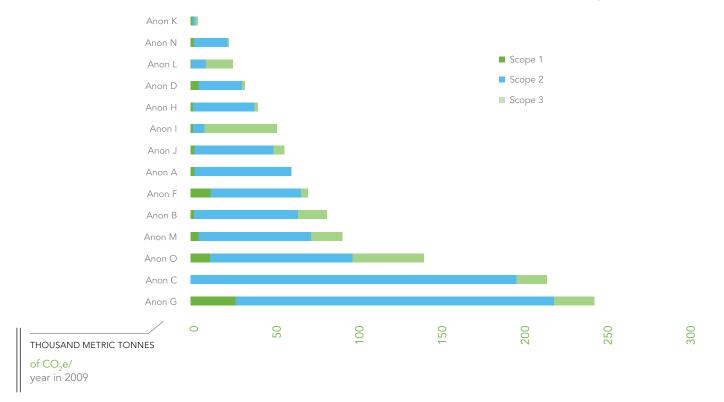


- CO₂e AVERTED as onsite renewable electricity
- CO₂e AVERTED as certified renewable imported electricity
- CO₂e emitted from onsite generated thermal energies
- CO₂e emitted from electricity generated onsite and exported offsite
- CO₂e emitted from all landlord-obtained imported fossil fuels
- CO₂e emitted from all tenant-obtained fossil fuels
- CO₂e emitted from tenantobtained electricity
- CO₂e emitted from noncertified grid electricity (for submetered exclusive-totenants)
- CO₂e emitted from noncertified grid electricity (for landlord-shared services)
- CO₂e emitted from fugitive emissions (refrigerants)

of CO₂e/ year in 2009

Scope of Emissions by Anonymous Member Portfolio

The following chart demonstrates that the proportion of Greenprint member portfolios' carbon footprints in each Scope varies significantly. Scope 2 emissions, arising from standard grid electricity, is the dominant form of energy consumption. Little tenant consumption data is gathered by landlords through submetering, as illustrated by the relatively small Scope 3 emissions.

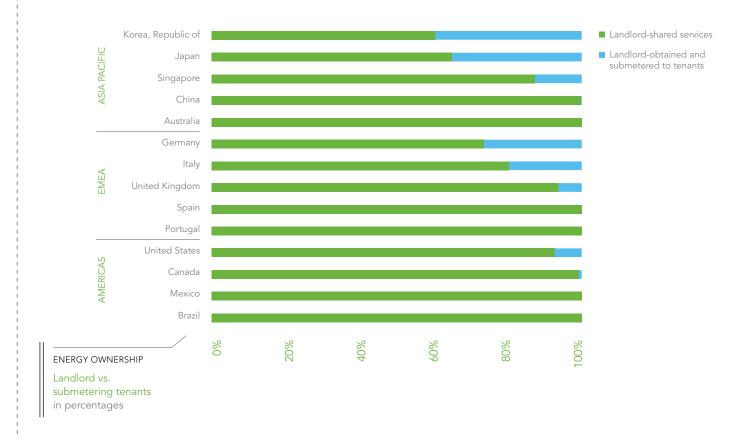


4 Landlord and Tenant Split Distribution

Landlord and Tenant Split Distribution

434 of the 601 properties in the Carbon Index are investor-submitted properties, for which owners reported direct energy use of common areas and tenant consumption where possible. In total, the Index represents over 35,000 tenants across 16.3 million m2. One quarter of the reported tenants use energy provided directly by the landlord, but only 30% of these properties were able to report accurate tenant consumption through the use of submeters, as illustrated in the following chart.

Landlords made every effort to obtain energy consumption data from the 75% of tenants who procure their own energy, but were only able to gather data from 20% of these tenants. Energy consumption data for 167 of the assets in the Carbon Index was provided by Greenprint members who are corporate occupiers and lease a significant amount of property. Tenants typically occupy only a portion of the property and, in nearly all cases, energy data provided is just for the occupier's own space.



What is submetering?

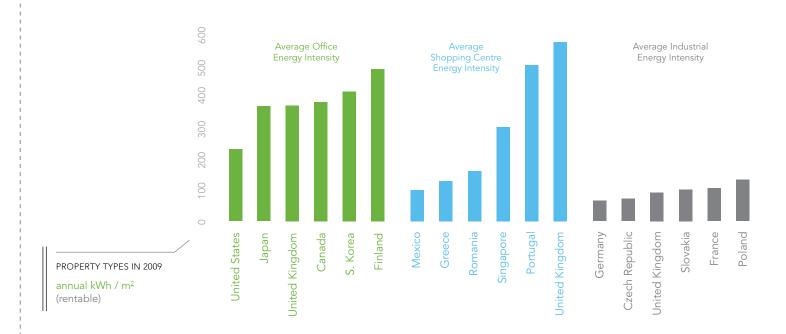
Measurement and billing of energy consumption between two parties, such as between a landlord and the tenants in its building. 5 Energy Intensity Benchmarking

Energy Intensity by Property Type and Select Countries

Greenhouse gas emissions generated during building operation are the product of a property's energy use intensity multiplied by the energy's CO₂e profile.

Energy use intensity focuses on energy efficiency and, in most instances, decreasing energy intensity reduces greenhouse gas emissions. Increasing energy efficiency in design, renovation and operations is the most accessible and potent tool in property owners' toolbox to reduce emissions.

The following charts benchmark average energy use intensity (EUI) for office, shopping centre and industrial properties. The six countries displayed for each property type were selected due to having the largest number of assets in each category.



Energy Use Intensity (EUI) is annual energy consumption divided by the floor area of the space. With energy less is more – so higher efficiency comes from properties with a lower energy intensity.

Office Properties in Select Cities

This chart presents the average office property energy intensity of three cities: Los Angeles, London and Singapore. Each city has the most Greenprint member properties with whole building data in its respective region (Americas, EMEA and Asia Pacific).

Commercial buildings are constructed and operated in a regulatory context with governments driving the nature of development. There are many factors that affect energy intensity, for example, the tropical climate of Singapore compared to the Mediterranean climate of Los Angeles, and the cool, rainy weather of London. Here we highlight just some of the policy drivers at play in these office markets.



Building Accreditation Programs

- Energy Star and LEED (US), BREEAM (UK), and Green Mark (Singapore).
- Los Angeles and Singapore recently adopted certification requirements for new developments. Singapore requires all new construction to obtain Green Mark certification and Los Angeles exempts new commercial property under 50,000 square feet.

Building Codes

- California and Singapore have had building codes in place since the 1970s, and the UK since 2006. California and the UK have taken fairly aggressive approaches to mandatory energy efficient equipment standards as well. For example, the UK began the phase-out of all incandescent light bulbs in 2007.
- California's Title 20, passed in 1976, sets mandatory minimum efficiency standards for equipment including air

conditioning, water heating, furnaces and lighting. The code was last updated in 2009.⁶

Incentives

- California utilities run massive energy incentive programs for efficient appliance purchases, renovations, HVAC systems and new construction. The state spent \$2 billion on efficiency programs between 2006 and 2008.⁷
- Singapore and the UK also run incentive programs, but not on the same scale. Both countries offer companies the ability to write-off or accelerate depreciation of energy saving equipment.

Government Policies

■ The UK's Carbon Reduction Commitment (CRC) incentivizes energy efficiency by forcing the UK's 5,000 largest electricity users to purchase allowances in a GHG cap and trade system. London developers

- must also contend with a requirement to provide 20% of energy with onsite renewables for new buildings.⁸
- In California all private sector new commercial construction over 50,000 square feet, plus some renovations, must attain LEED-certified status.9 Expedited permits are available for "silver" rating and above.10
- In 2008, the Code for Environmental Sustainability of Buildings incorporated Green Mark, Singapore's sustainable building certification program. All new buildings and major renovations over 2,000 square meters must achieve basic Green Mark certification.¹¹

6 Appendices

A. QUALITY CONTROLS & VERIFICATION

B. EMISSIONS COEFFICIENTS

C. GREENPRINT CARBON INDEX: DESCRIPTION OF FUTURE CAPABILITIES

ENDNOTES

Quality Controls & Verifications

To compile its Carbon Index, Greenprint Foundation employs a data collection, verification and calculation process aligned with the Greenhouse Gas Protocol and the principles of ISO 14064.

The Carbon Index Committee employs a quality management procedure to ensure accurate and verifiable results which follows the following steps:

	Responsibility	Role
1.	Identification of Sites	Member Approver
2.	Input of Property Data	Member Respondent
3.	Software Plausibility Checks	Greenprint Software
4.	Review and Approval of Data	Member Approver
5.	Verification of Data	Greenprint Validator
6.	Calculation of GHG Emissions	Project Coordinator
7.	Verification of Results	Greenprint Validator

Roles:

- Member Approver: A senior level employee from each Greenprint member who selects sites for inclusion in the Index and provides oversight of the review process on behalf of the member.
- Member Respondent: A property-level employee from the Greenprint member that collects property data.
- Project Coordinator: An ISO 9001certified contractor administers the web-enabled questionnaire, manages the software plausibility checks and performs the GHG emissions calculations.
- Greenprint Validator: Greenprint's Manager of Information Systems provides oversight review of the software architecture, data collection and results, and creates workflow process with Members' Approvers.

Data sources include:

- Property data based upon the records of the building landlords or their building management companies. Occupier space data is based upon tenant records and lease agreements.
- Energy data based upon utility bills, invoices, power supply company records or meter readings.
- Refrigerant data based upon or property maintenance logs.

Greenprint Foundation will commission an independent verification of its Carbon Index by an independent third party. The verifier will produce materiality thresholds to assess any material discrepancies in Volume One of the Index. The verification report will be publicly released in January 2011.

Emissions Coefficients

Electricity Emissions Factors (2006): kgCO, per kWh electricity GENERATED

European Union	
Belgium	0.2600
Czech Republic	0.5270
Finland	0.2420
France	0.0850
Germany	0.4040
Greece	0.7250
Hungary	0.3440
Ireland	0.5350
Italy	0.4040
Netherlands	0.3940
Poland	0.6590
Portugal	0.4160
Romania	0.4290
Slovakia	0.2230
Spain	0.3500
Sweden	0.0440

Non-EU	
Australia	0.9210
Brazil	0.0810
Canada	0.1840
China	0.7880
Hong Kong	0.8550
India	0.9440
Indonesia	0.6770
Japan	0.4180
Korea, Republic of	0.5330
Mexico	0.5410
New Zealand	0.3090
Philippines	0.4350
Russian Federation	0.3290
Singapore	0.5360
Thailand	0.5110
Turkey	0.4380
United Arab Emirates	0.8200
United Kingdom	0.4975
United States	0.5590
Vietnam	0.3963

Source

Emission factor data is from International Energy Agency Data Services, 2006 and 2008 for " ${\rm CO}_2$ Emissions per kWh Electricity and Heat Generated" and mainly sourced from the GHG Protocol website http://www.ghgprotocol.org/calculation-tools (via table 10a of 2010 Guidelines to Defra / DECC's GHG Conversion Factors for Company Reporting, Version 1.1 FINAL, Updated 6/Aug/2010, http://www.defra.gov.uk/environment/business/reporting/pdf/100805-guidelines-ghg-conversion-factors.xls

Notes

Emissions factors for electricity GENERATED (and supplied to the grid where relevant) – EXCLUDES losses from the transmission and distribution grid. This is in keeping with the guidance of the GHG Protocol, as stated:

"unless a company that purchases electricity, heat, and/or steam owns or controls the T&D operation, T&D losses should not be included in the company's GHG inventory."

Indirect CO_2 Emissions from the Consumption of Purchased Electricity, Heat, and/or Steam, Guide to calculation worksheets (January 2007) v 1.2, Section II.E. Accounting for transmission and distribution losses, Page 5

Emissions Coefficients (continued)

Fuel Emissions Factors	kg CO₂eq per kWh	
Diesel	0.26630	
Fuel Oils	0.28045	
LPG	0.22572	
Natural Gas	0.20417	
Petrol Gasoline	0.25537	

Source

Annex1 Fuel Conversion Factors, Table 1a of 2010 Guidelines to Defra / DECC's GHG Conversion Factors for Company Reporting, Version 1.1 FINAL, Updated August 6, 2010; http://www.defra.gov.uk/environment/business/reporting/pdf/100805-guidelines-ghg-conversion-factors.xls

Notes

Within this report, the same fuel emissions factors have been used across countries. This is in keeping with the following:

"... companies reporting on their emissions may need to include emissions resulting from overseas activities. Whilst many of the standard fuel emissions factors are likely to be similar for fuels used in other countries, grid electricity emission factors vary very considerably. It was therefore deemed useful to provide a set of overseas electricity emission factors to aid in reporting where such information is hard to source locally."

 $Paragraph\ 190,\ page\ 54:\ http://www.defra.gov.uk/environment/business/reporting/pdf/091013-guidelines-ghg-conversion-factors-method-paper.pdf$

Thermal Energies Emissions Factors	kg CO ₂ e / MBtu	kg CO ₂ e / kWh
District Steam	78.95	0.269488544
District Hot Water	78.95	0.269388544
District Chilled Water – Absorption Chiller using Natural Gas	66.50	0.226907387
District Chilled Water – Engine-Driven Chiller using Natural Gas	44.33	0.151260217

Source

Greenhouse Gas Inventory and Tracking in Portfolio Manager August 31, 2009; Table 2 Indirect Greenhouse Gas Emission Factors (District Energy) (page 3); http://www.energystar.gov/ia/business/evaluate_performance/Emissions_Supporting_Doc.pdf

In turn: Form EIA-1605, Voluntary Reporting of Greenhouse Gases, Revised Pursuant to 10 CFR Part 300; Guidelines for Voluntary Greenhouse Gas Reporting; Energy Information Administration, U.S. Department of Energy, October 15, 2007; http://www.eia.doe.gov/oiaf/1605/pdf/EIA1605_Instructions_10-23-07.pdf

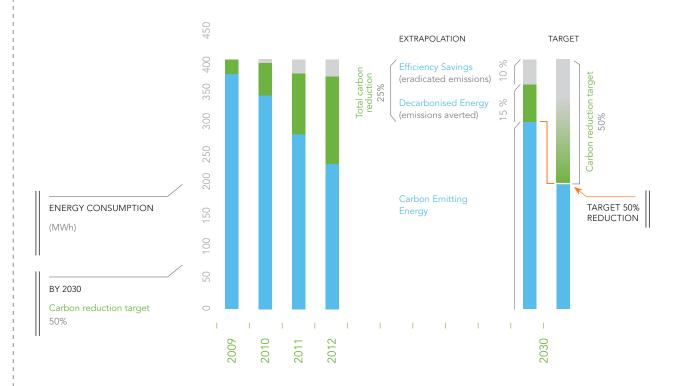
Greenprint Carbon Index: Description of Future Capabilities

The Volume 1, October 2010 Greenprint Carbon Index sets a baseline that will be used to track progress in reducing emissions. Future reports will:

- Present detailed data on carbon emission trends
- Expand the breadth of the portfolio
- Share case studies of improvements achieved through best practices and innovation
- Report on the members' success in terms of green lease strategies, procurements, green finance and other Greenprint initiatives

Greenprint ensures the accuracy of data and results as the portfolio grows and changes. The following chart illustrates how Greenprint will track its members' success in energy efficiency measures and the purchase of decarbonised energy. Greenprint's success is then benchmarked against the stated mission of reducing carbon emissions in line with IPCC goals.

GREENPRINT FOUNDATION GOAL Greenprint Portfolio vs. IPCC Target (for illustrative purposes only)



Endnotes

- Members have submitted properties for which they have a full 12-month period of energy consumption (and fugitive emissions) data.
- International Energy Agency. Energy Efficiency in the North American Existing Building Stock. http://www.iea.org/Papers/2007/NAM_Building_Stock.pdf
- The Commercial Building Energy Consumption Survey (CBECS) is a national sample survey that collects information on U.S. buildings' energy-related characteristics. http://www.eia.doe.gov/emeu/cbecs/
- Cogeneration and District Energy Sustainable Energy Technology for Today and Tomorrow IEA. http://www.iea.org/files/CHPbrochure09annex.pdf
- ⁵ International Energy Agency. Electricity/Heat in France in 2007.
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