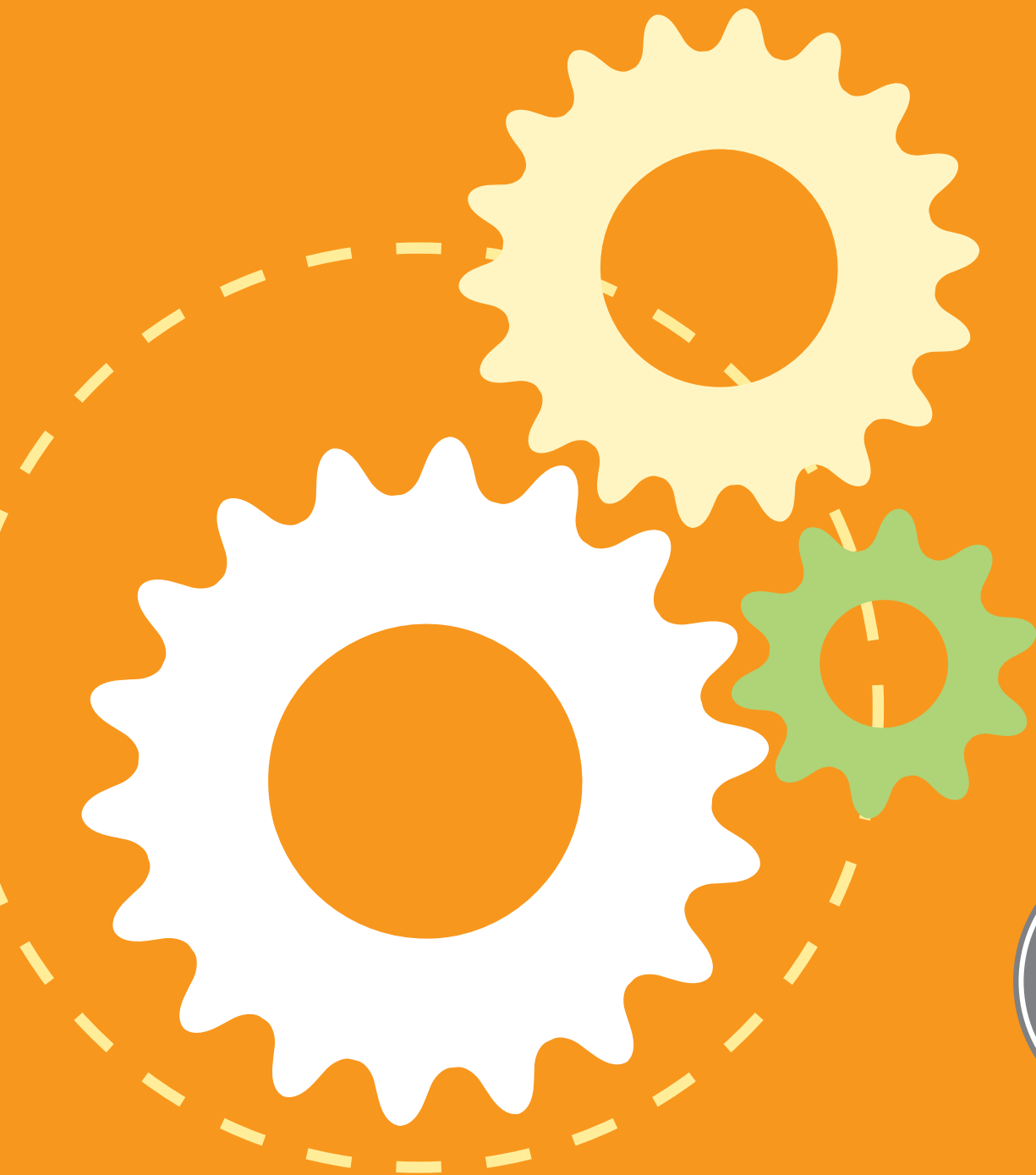


LEED IN MOTION:

PLACES AND POLICIES



The LEED in Motion report series provides a holistic snapshot of the green building movement, equipping readers with the numbers and insight they need to build a strong case for sustainability.

The second of three reports, **LEED in Motion: Places and Policies** showcases the global, regional and local impact of LEED and the critical policy work that is driving it.

Stay tuned for the third and final LEED in Motion report: **Impacts and Innovation**, or look back at our first report, **People and Progress**.

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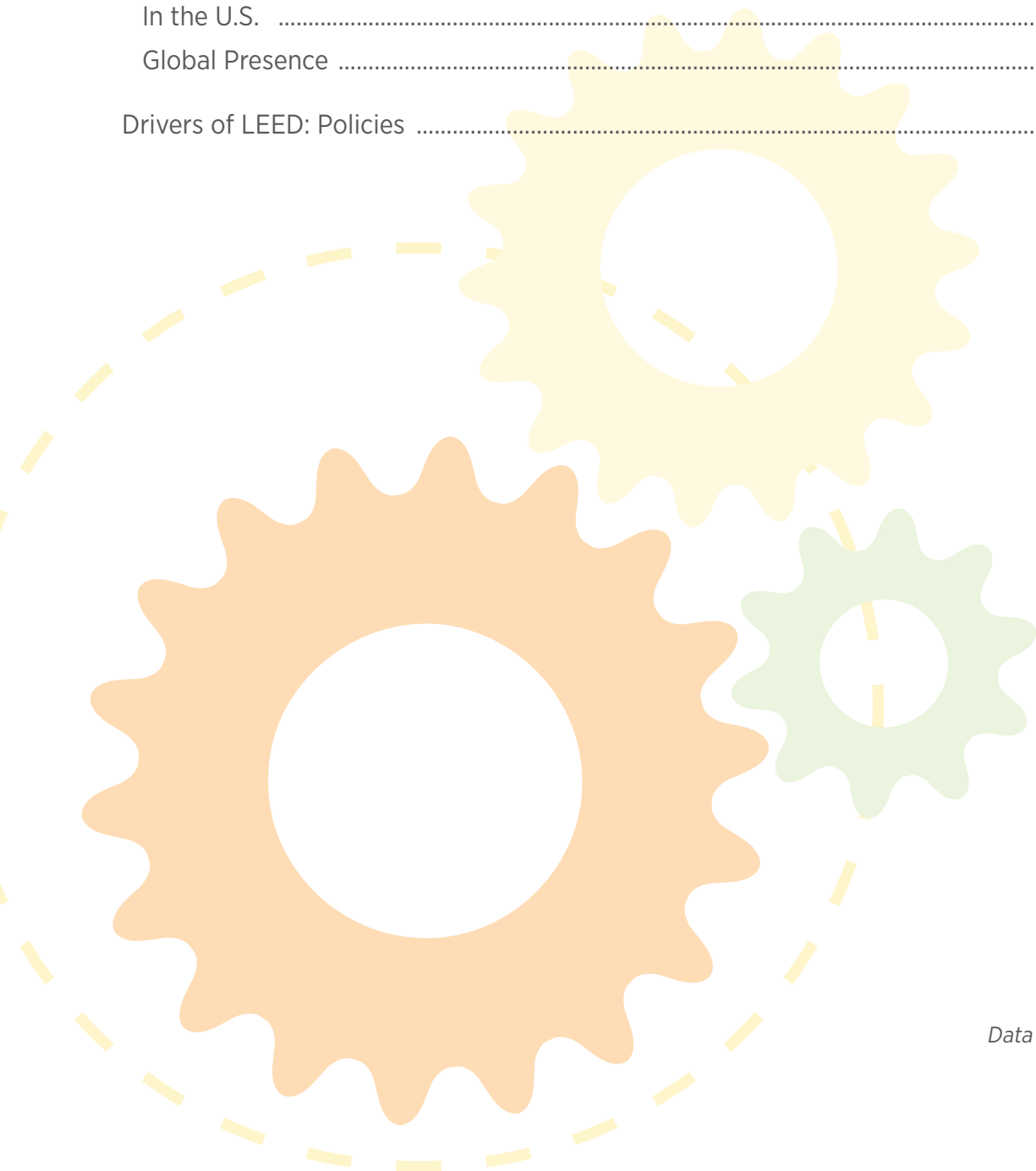
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*Data in this report is current
as of July 2, 2013*

IN THE MIDST OF A GLOBAL REVOLUTION

Foreword from Rick Fedrizzi

“One touch of nature makes the whole world kin.”
- William Shakespeare

The TAIPEI 101 tower in Taiwan has some substantial differences compared to a department store in Chile: climate, culture and project type all come in to play when crafting an optimal green building. But LEED is a common language for both projects.

And it can be for all global green building projects. Conceived in the U.S., developed over the years with international partners and now being applied globally, LEED has projects in more than 140 countries – with 40 percent of new project registrations coming in from outside of the U.S. That’s a figure that makes us extraordinarily proud: it’s indicative of LEED’s incredible global network, stretching from the United States to the United Arab Emirates, from a LEED Professional in Hong Kong to a policymaker in eastern Europe. It’s a network of leaders that transcends and even eliminates boundaries, physical or otherwise. It’s a network that’s bound together by a common drive to make our communities and our entire world greener, healthier, and more efficient – and that commitment can be expressed in many regions, across many buildings, and in many languages.

USGBC is constantly innovating to make LEED even more adaptable and easy-to-use for international projects, from creating Alternative Compliance Paths that allow project teams to take regionally specific approaches in order to fulfill LEED credits, to working with advisers from the LEED International Roundtable, who advance the relevancy of LEED worldwide. One of our own aspirational projects is to certify our Project Haiti orphanage and children’s center, located in Port-au-Prince, to LEED Platinum. As we move forward on our own global model for LEED, we are gaining valuable insight in to how to push LEED in to the future on a truly international scale.

None of this would be possible without the advocates and policymakers, both domestic and international, who have driven LEED’s early success and continue to build LEED in to the DNA of our cities, states and countries. This report will give you an idea of both the magnitude of policies and policymakers that support LEED, but also the impact of those efforts.

LEED was not designed with a single paradigm, or project – or country – in mind. It’s adaptable. It’s flexible. It changes with the market. And it’s a testament to the innovative green building leaders all around the world who apply it in Saudi Arabia as well as South America and South Carolina.

That common passion and drive for better buildings *everywhere* is what binds us all together. And don’t forget—every story about a LEED building is a story about people.

With gratitude,

Rick Fedrizzi

President, CEO and Founding Chair
U.S. Green Building Council



FOREWORD

from Boston Mayor Thomas M. Menino

Green building has become a global movement. You could even call it a revolution – and the City of Boston knows a thing or two about those.

Boston is in the midst of our own sustainability revolution – Greenovate Boston – and it is growing in strength every day. In 2007, we became the first city in the nation to incorporate green building standards into a zoning code, requiring that all large-scale projects meet LEED certification standards. Promoting green affordable housing, greening our municipal operations, and adopting a stronger energy code have all been priorities for Boston’s green building efforts. Collectively, these measures have led us to 141 LEED-certified projects spanning 37.1 million square feet, with another 223 LEED-registered projects on the way. You’ll find LEED plaques proudly displayed on Boston landmarks like the Prudential Center and the Boston Children’s Museum. And very soon you will find LEED Platinum energy positive homes as new homeowners move in to the first E+ Green Building Program homes and prove we can build regenerative buildings right in Boston’s neighborhoods.



This kind of progress is happening all over the country and around the world, bringing business leaders, government officials, non-profits and others together around a common mission: securing a better future. The City of Boston is working toward our target to reduce greenhouse gas emissions by 25 percent by 2020. In May, we passed an ordinance requiring all large and medium-sized buildings to report their annual energy and water use and greenhouse gas emissions to encourage energy efficiency improvements in the private sector. We’re driving change by embedding building performance into the fabric of our city, with transparency and accountability as the foundation of our success.

Our ongoing work with the U.S. Green Building Council has also played a key role in our forward motion. In 2008, Boston hosted USGBC’s annual Greenbuild International Conference and Expo, during which some 28,000 sustainability leaders from all over the world gathered in our city to generate ideas for future progress. Through the Center for Green Schools Fellowship Program, we have a full-time sustainability officer placed in Boston Public Schools, transforming the environments in which our students learn. It’s moments and initiatives like these that underscore how I feel about green building: it’s not about the buildings themselves - it’s about the people inside.

From Greenovate Boston to the Green Monster, and the American Revolution to the green building revolution, Boston believes in making sustainability a part of our culture. LEED is at the heart of that. Whether you’re here in Boston or any other corner of the world, I hope you’ll join me in advocating for better buildings. As citizens, as taxpayers, as idealists and as human beings: we deserve them.

Mayor Thomas M. Menino
City of Boston

LEED®

“When we see land as a community to which we belong, we may begin to use it with love and respect.” - Aldo Leopold

LEED drives the green building industry. Launched by USGBC in 2000, LEED, or Leadership in Energy and Environmental Design, is a green building program that provides third-party verification of the features and effectiveness of green buildings. LEED is about strategies and outcomes. It is the world's premier green building certification program, and the force by which an unprecedented amount of buildings, leaders, companies and project teams have rallied to have a collectively enormous impact in creating better buildings: those that save energy, resources and money, and that are healthy for our families, friends, coworkers and customers.

usgbc.org/leed

LEED for All

LEED for New Construction

LEED for New Construction and Major Renovations takes an integrative approach to creating buildings that are designed to be efficient and have a lower impact on their environment. LEED for New Construction is applied to many building types, including offices, libraries, churches, hotels and government buildings.

LEED for Existing Buildings: Operations and Maintenance

LEED for Existing Buildings: Operations and Maintenance helps maximize the efficiency of building operations while minimizing the impact on the environment. The rating system encourages owners and operators of existing buildings to implement sustainable practices and reduce the environmental impacts of their buildings, while addressing the major aspects of ongoing building operations to help save money on utilities.

LEED for Core and Shell

LEED for Core and Shell is for projects where the developer controls the design and construction of the entire core and shell base building (e.g., mechanical, electrical, plumbing, and fire protection systems) but has no control over the design and construction of the tenant fit-out. Projects could include a commercial or medical office building, retail center, warehouse, or lab facility.

LEED for Commercial Interiors

LEED for Commercial Interiors is the recognized system for certifying high-performance green tenant spaces that are healthy, productive places to work; are less costly to operate and maintain; and have a reduced environmental footprint. It gives tenants and designers, who do not always have control over whole building operations, the power to make sustainable choices.

LEED-Certified Commercial Projects by Certification Level



3,825



6,243



7,686



1,281

LEED for Retail

LEED for Retail is designed to guide and distinguish high-performance retail projects, including banks, restaurants, apparel, electronics, big box and everything in between. LEED for Retail recognizes the unique nature of the retail environment—including occupancy characteristics, hours of operation, parking, process water and energy consumption—and addresses the different types of spaces retailers need for their product lines.

LEED for Schools

LEED for Schools is the recognized third-party standard for high performance schools that are healthy for students, comfortable for teachers, and cost-effective. The LEED for Schools rating system was developed to address the design and construction of K-12 schools.

LEED for Homes

With more than 100,000 residential units, LEED for Homes is the right fit for multifamily and single family projects. Homes project are third party inspected, performance-tested, and certified to perform better than a conventional home.



Total Commercial LEED Projects Globally

(LEED-registered, LEED-certified, LEED for Neighborhood Development):

59,211

Gross Square Footage of LEED Projects in the U.S.

(LEED-registered, LEED-certified):

10.6 billion

LEED for Homes Units:

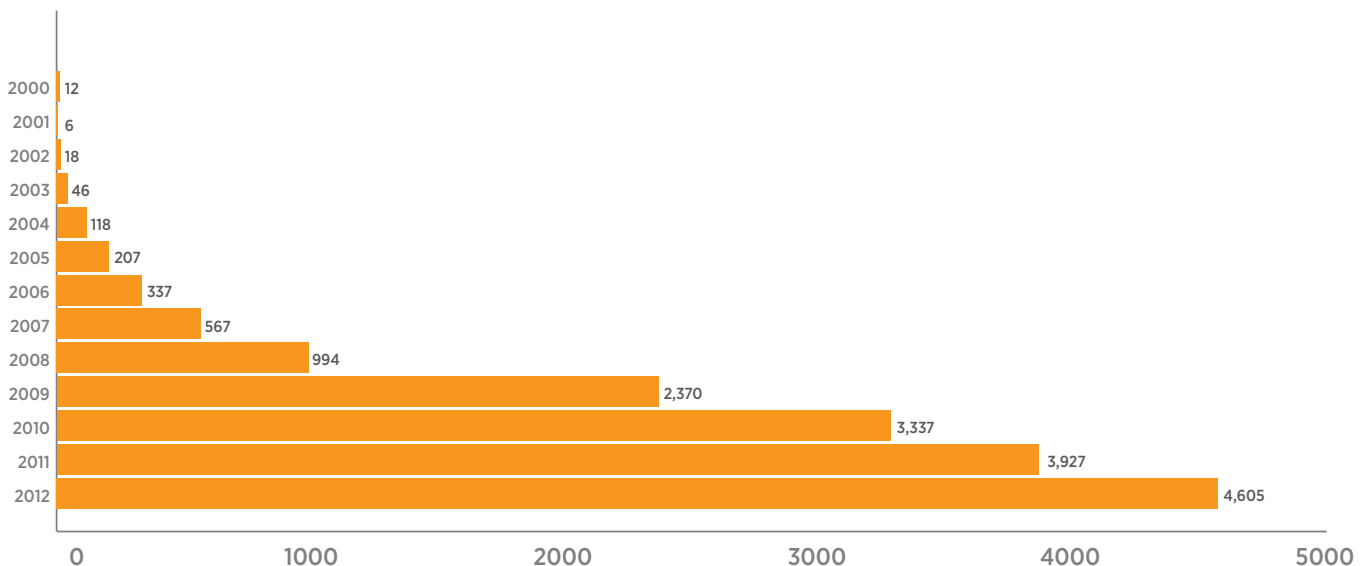
115,783

Certified: 41,271

LEED-certified Single Family: 11,677 LEED-certified Multi-Family: 29,594

LEED-certified Affordable: 18,977 LEED-certified Market Rate: 22,294

LEED-Certified Projects Over Time



LEED for Neighborhood Development

LEED for Neighborhood Development integrates the principles of smart growth, urbanism and green building into the first national system for neighborhood design. Whole neighborhoods, portions of neighborhoods, multiple neighborhoods—there is no minimum or maximum size for a LEED for Neighborhood Development project.

LEED for Healthcare

The goal of LEED for Healthcare is to help project teams design, build and operate, high-performance healing environments. The needs of healthcare facilities are very unique. Healthcare buildings often have strict regulatory requirements, 24/7 operations and specific programmatic demands not covered in LEED for New Construction. LEED for Healthcare acknowledges these differences by both modifying LEED existing credits and creating new, healthcare-specific credits. The goal is to help promote healthful, durable, affordable and environmentally sound practices in these projects.

LEED v4

In an age of innovation, USGBC is proud to present a new vision for green building: LEED v4. Launching at the end of 2013, LEED v4 provides an organized ecosystem of forward thinking, green building knowledge and application strategies.

New market sectors in LEED v4 are designed to enhance the user experience:

- Schools (existing buildings)
- Retail (existing buildings)
- Data centers (new construction and existing buildings)
- Warehouses and Distribution Centers (new construction and existing buildings)
- Hospitality (new constructions, interiors, existing buildings)
- Mid-Rise Residential (new construction)

LEED v4 raises the bar on what defines a green building, and is designed to challenge existing benchmarks and thresholds. Users will know they've implemented a deeply impactful project.

LEED IN THE U.S.

“You never change things by fighting the existing reality. To change something, build a new model that makes the existing model obsolete.” - Buckminster Fuller

Initially launched in the United States, LEED saw rapid uptake and ultimately evolved in to a global green building solution. Without a doubt, one of the preeminent reasons for LEED’s success in the U.S. (and ultimately abroad) was the leadership of the U.S. federal government. With an impressive amount of projects, the government has remained committed to green building and was an early leader in implementing it. That influence allowed LEED to grow in to a nationally-recognized rating system in just a few years, enabling building projects to save an impressive amount of energy, water, resources and waste across the board.

In the U.S., buildings account for:



38% of all CO₂ emissionsⁱ



73% of U.S. electricity consumptionⁱⁱ



13.6% of all potable water, or 15 trillion gallons per yearⁱⁱⁱ

Green buildings consume less energy and fewer resources: LEED projects are responsible for diverting more than **80 million tons** of waste from landfills, which is expected to grow to **540 million tons** of waste diversion by 2030.^{iv}

ⁱ Energy Information Administration (2008). Assumptions to the Annual Energy Outlook.

ⁱⁱ Department of Energy (2011). Buildings Energy Data Book. Buildings Share of Electricity Consumption/Sales.

ⁱⁱⁱ U.S. Geological Survey (2000). 2000 data.

^{iv} Watson, Rob. Green Building and Market Impact Report – 2011.

* U.S. Department of Energy (2011). Buildings Energy Data Book. Buildings Share of Electricity Consumption/Sales.



Total Commercial LEED Projects in the U.S.

(LEED-registered, LEED-certified, LEED for Neighborhood Development):

45,745

Gross Square Footage of LEED Projects in the U.S.

(LEED-registered, LEED-certified):

6.4 billion

LEED for Homes Units in the U.S.:

115,639

Certified: 40,431

Compared to the average commercial building, the LEED Gold buildings in the General Services Administration’s portfolio generally:

Consume **25%** less energy and **11%** less water

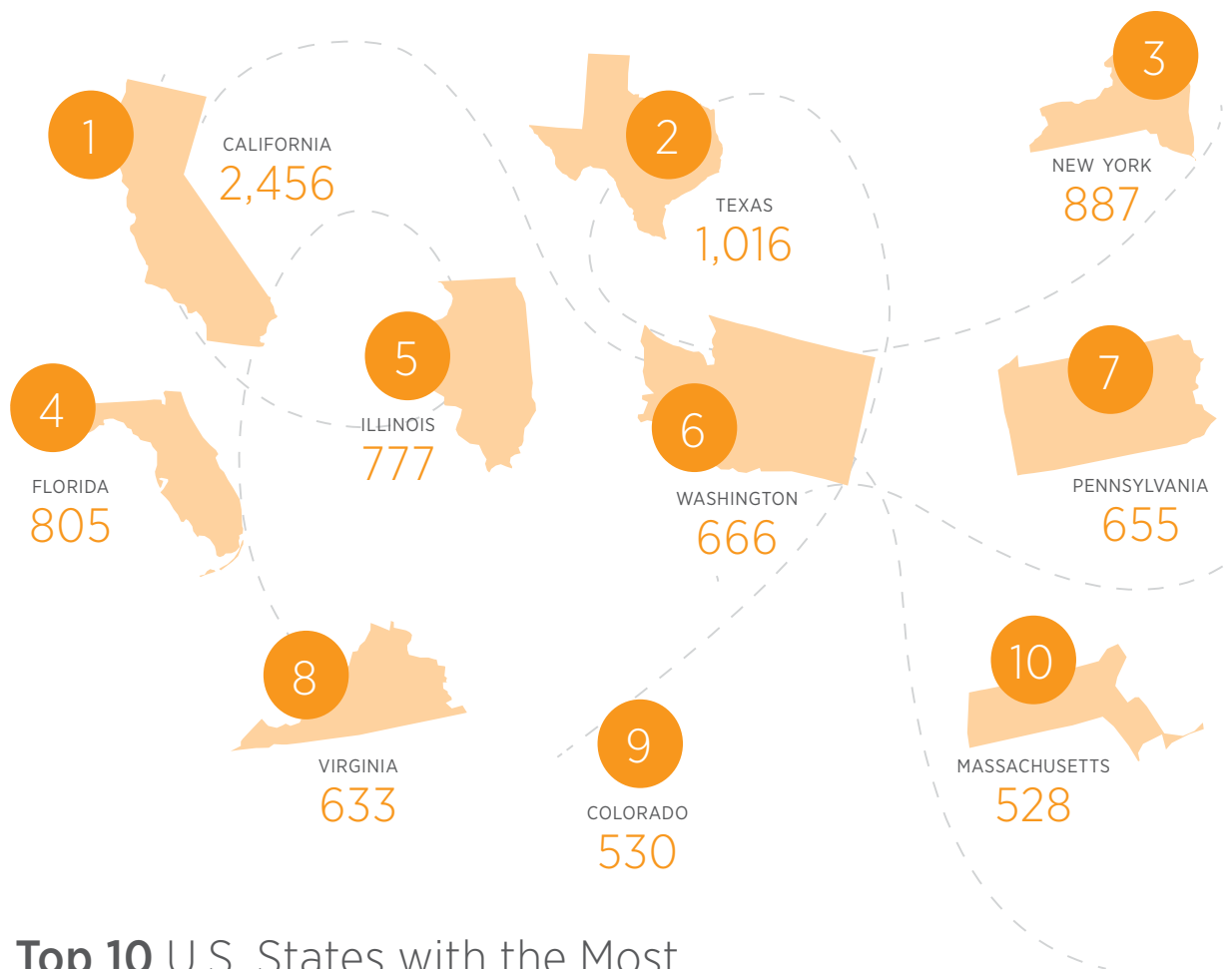
Have **19%** lower maintenance costs

Experience **27%** higher occupant satisfaction

Generate **34%** lower greenhouse gas emissions*

WHERE THEY ARE:

Top 10 U.S. States with LEED-Certified Buildings



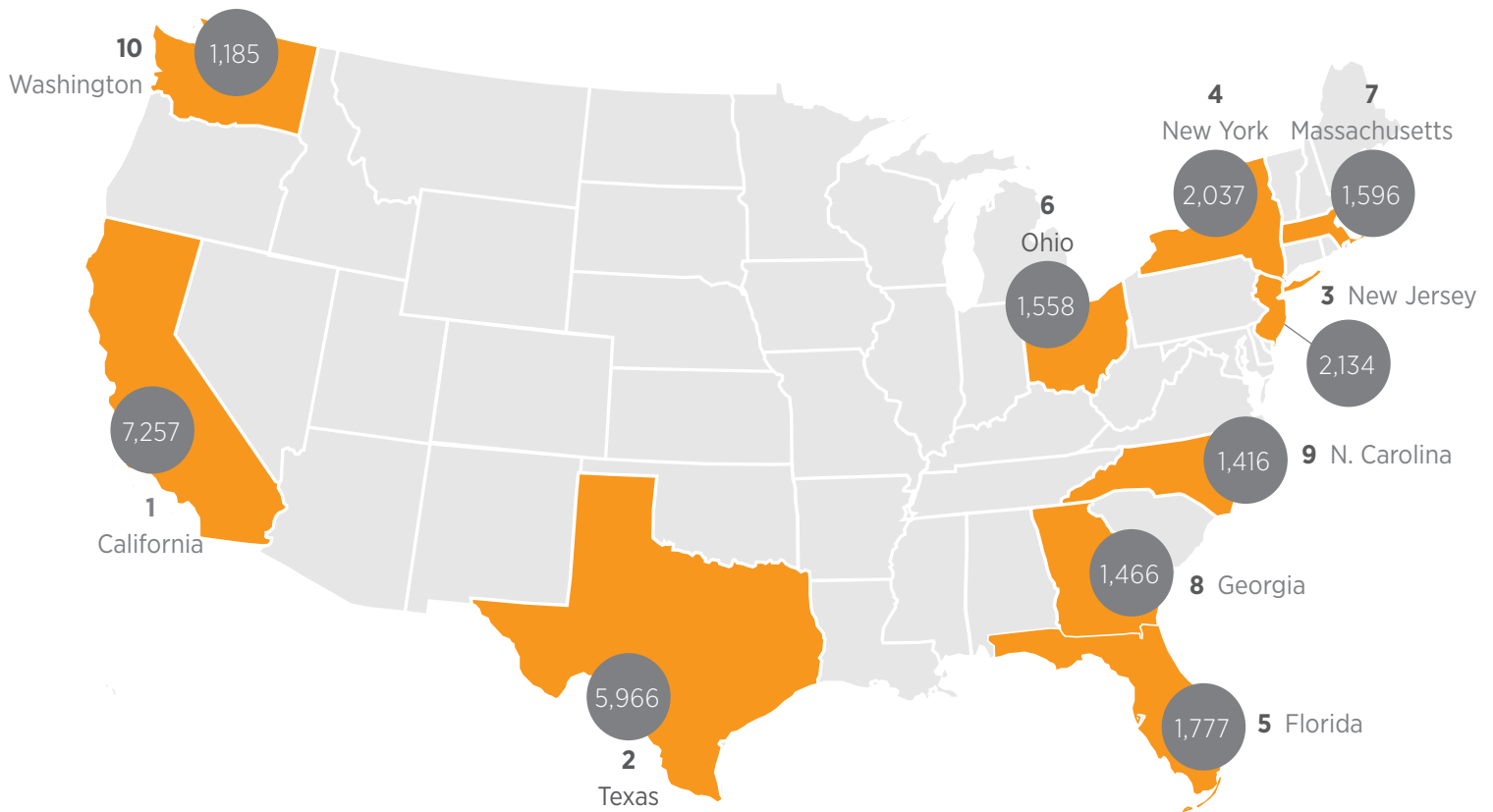
Top 10 U.S. States with the Most LEED-Certified Projects Per Capita

Including the District of Columbia



*Full list of states can be found in the "Additional Information" section.

Top 10 U.S. States With the Most LEED for Homes Certified Units



*Full list of states can be found in the "Additional Information" section.

U.S. General Services Administration (GSA) LEED-certified federal buildings use **27% less energy** and cost **19% less to operate** compared to the national average.*

A recent report from GSA shows the agency has successfully **reduced its energy use by almost 20%** since 2003 and water use by almost 15% since 2007.**

*Green Building Performance: A Post Occupancy Evaluation of 22 GSA Buildings

** U.S. General Services Administration - January 2012 OMB Scorecard on Sustainability/Energy



LEARN MORE about government
LEED projects. Visit usgbc.org/projects

LEED PROJECT SPOTLIGHT

Treasury Building Washington, D.C.

**LEED for Existing Buildings: Operations
and Maintenance - Gold**
Certified on Nov. 14, 2011

The Treasury Building is iconic for a number of reasons, not limited to being the third oldest federal building in the nation's capital and a National Historic Monument. The building made history once again when it earned Gold certification for LEED for Existing Buildings: Operations and Maintenance, effectively saving American taxpayers an impressive \$3.5 million every year.

At the time it was certified, the Treasury Building was the oldest building in the world to earn this LEED designation – and is an incredible example of both the federal government's extensive commitment to green building and how historic, existing buildings can be updated to perform well and save precious resources and money.

A number of strategies went in to the Treasury Building's certification, including increased use of natural day lighting to reduce energy consumption, enhanced utility metering, and advanced control and management of the HVAC systems. Green cleaning programs, waste stream audits, a green procurement program for materials and services, and other strategies made the Treasury Building a holistic green space.

The Treasury Building also achieved:

- 43% decrease in the use of potable water
- 7% decrease in electrical usage
- 53% decrease in the use of steam

ADVOCATE SPOTLIGHT



Dennis Murphy

Founding Chair, USGBC California

USGBC's advocacy network drives key green building policies forward. Read Dennis' story.

What's a day in the life at USGBC California like?

Every day is different, with sporadic activity as needed. USGBC California is a virtual, volunteer-driven coalition of the eight chapters within California devoted to state policy and advocacy. I refer to it as my night job. With the help of professional representation in Sacramento, our statewide network of advocates, and a whole host of allied organizations, we manage to get involved in a number of interesting initiatives, oftentimes at the formative stage. Lately, it seems what I do most is direct traffic, putting people together with resources and other people expert in a particular field. We are ultimately about knowledge acquisition and transfer. Through our Council of Experts, we try to mine subject matter expertise and put it to best use through “green papers,” “brown bag” presentations as well other colorful means.

What do elected officials in California need to know about green building?

To paraphrase the always-inspiring Kevin Hydes, everyone needs to understand that green building is a movement towards establishing the environment for a better world. USGBC was founded in San Francisco and California has historically been a leader in advancing green building concepts, energy efficiency and many enabling technologies that can propel us forward.

Green building is, after all, great business. USGBC members comprise a diverse, forward-thinking collection of business people representing a full spectrum of professions and disciplines, all united in the desire to transform the built environment and thereby create a better world. At every opportunity, we remind legislators that these people, numbering some 25,000+ LEED APs in California, are their prized constituents and valuable, informed, organized allies that vote.

What's been the most exciting or impactful green building initiative that you've worked on?

The initiative that could have the biggest, boldest impact involves innovative finance and, potentially, a new multi-billion dollar market. CO₂toEE, a financial mechanism developed by Greg Kats, USGBC's 2011 President's Award winner, working with a range of industry partners and the state's major real estate groups, seeks to recognize the economic value of building energy efficiency by integrating building performance into the emerging carbon markets. This approach would reward the value of the CO₂ reductions that result from their energy efficiency investments to businesses, schools and real estate owners. By allowing energy efficiency improvements in buildings to participate in California's Cap & Trade market, CO₂toEE would reduce overall societal costs of achieving the state's climate change commitments. It would also harness market forces by shifting the value of CO₂ from a point of low or no leverage to a point of high leverage. This shift would deliver a large, market-based expansion of EE funding and – critically – deepen building EE retrofits, providing an efficient way to tap the market potential for more effective, cost-efficient, performance-based CO₂ reductions.

This program would unleash a number of very positive impacts, from making commissioning, benchmarking and continual energy data dashboarding the new normal, to expanding employment throughout the green building industry, and turbo-charging California's Cap & Trade Program and fully engaging the built environment in carbon reduction goals. USGBC California is currently working with an expanding coalition of construction and building industry organizations and esteemed policy leaders to demonstrate the power of this concept through pilot programs. (www.co2toEE.com)

How do you envision the future of the green building movement? What's in the cards and how will we get there?

I hope USGBC California and our member chapters and other chapters around the country can involve more and more people at more and more levels, to consumers and teachers and school kids. Strong consensus building can move mountains of things like coal ash.

If your organizational (and your personal) goal is the transformation of the way buildings are designed, built, operated, financed, retrofitted and performance monitored... it just gets hard to stop. You find yourself smack dab in the middle of public policy, from how land is used to how we get around to what we do (and consume) when get there. Life cycles involve all our lives, after all: what we breathe, what we eat and what we leave for next generations. Green can be just a flavor of the month or a life-long commitment. The more involved one gets, the more one can see the interconnectedness of things. There's the cliché of the butterfly wing beating, but it really just makes sense that trying to build a better world doesn't stop when you leave the office. Your world is all around you. Go out and manufacture some change.

LEED IS GLOBAL

“Do your little bit of good where you are; it’s those little bits of good put together that overwhelm the world.” - Desmond Tutu

LEED is global. With projects in more than 140 countries and territories around the world, LEED is being adapted and applied virtually everywhere. And since a high-rise in Beijing has many different considerations than a children’s center in Haiti, USGBC is working everyday—alongside fellow green building councils, LEED International Roundtable members, and committees and volunteers from around the world—to optimize LEED for global use. International projects are encouraged to utilize any of the LEED rating systems, which are adaptable for all markets, especially with the inclusion of Regional Priority Credits and Global Alternative Compliance Paths.

Buildings are the single greatest contributor to greenhouse gas emissions of any sector, and the least costly way to alleviate the environmental stresses of our changing planet. LEED is a global language and a catalyst for transformation toward a sustainable future. USGBC is committed to bringing LEED to every country in the world, meeting the demands of a rapidly evolving global marketplace and working to ensure the flexibility of LEED for all markets, climates and a range of building projects across the globe.

usgbc.org/international

Global Green Building Councils

It’s in the heart of USGBC’s mission to promote distributed global intelligence on green building. That’s why USGBC is proud to be a part of a network of global green building councils advocating for better buildings in nearly every corner of the Earth. United by the efforts of the World Green Building Council, these organizations are country and region-specific organization taking on tangible projects to ensure the uptake of green building in their area.

worldgbc.org

Established:	27	Prospective:	34
Emerging:	14	Associated:	22

LEED International Roundtable

The LEED International Roundtable consists of a group of green building experts across the world who help build regionally and locally applicable rigor and technical guidance into LEED. These members form a central nervous system of knowledge that enables LEED to reflect regional priorities and nuances. Their leadership is essential as we strive to make “one LEED” — a unified global program with regional and local applications.

usgbc.org/committees/international

Approximately **40%** of all square footage pursuing LEED certification is outside the U.S.

LEED Works All Over the World

Global Alternative Compliance Paths

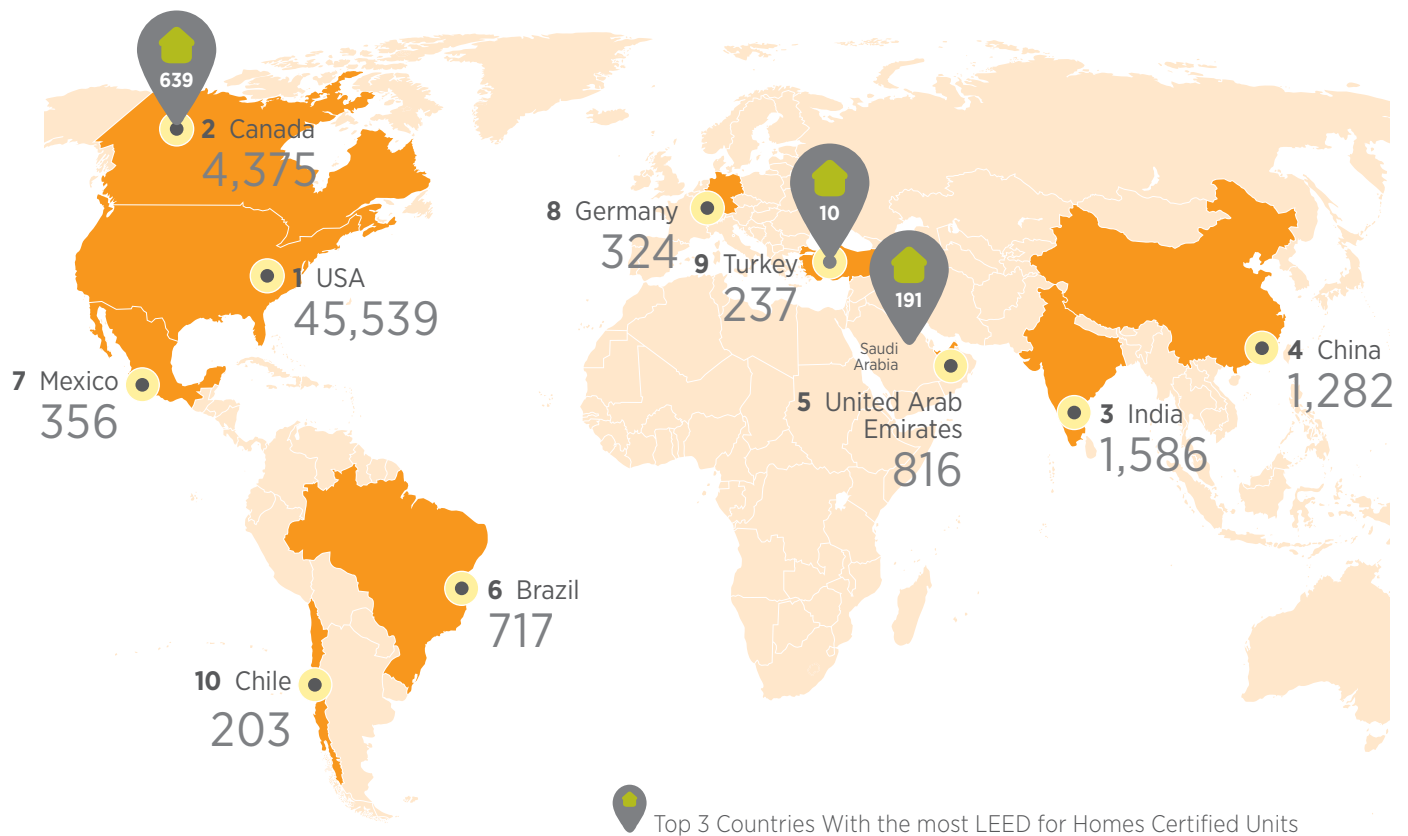
Global Alternative Compliance Paths (ACPs) provide additional options or approaches to LEED credits that address local and regional needs. ACPs allow LEED projects in other countries to be more flexible and applicable for a range of building projects across the globe, and enable LEED to recognize other third party standards. Europe was selected as a starting point due to LEED's growth in the region and use of the LEED for Existing Buildings: Operations and Maintenance rating system. USGBC plans to announce LEED ACPs for Asia and South America in the near future.

Regional Priority Credits

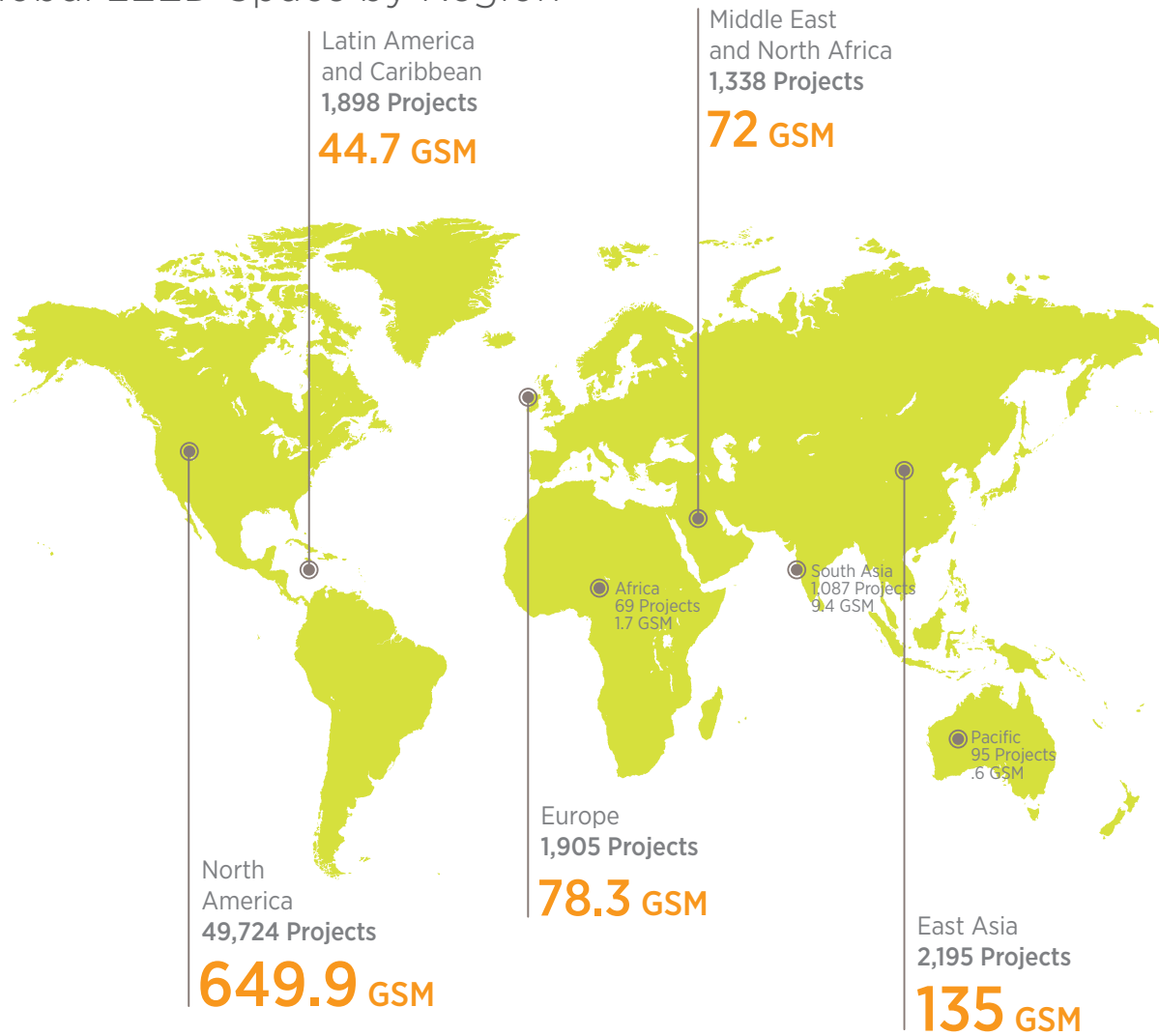
Regional Priority Credits (RPCs) are available for a number of countries (and local regions of the U.S.), to incentivize the achievement of credits that address geographically specific environmental priorities. RPCs are existing LEED credits that regional experts have designated as being particularly important for their areas. USGBC continues to work with these experts to identify their biggest environmental issues and the outcomes that must be achieved. [usgbc.org/rpc](https://www.usgbc.org/rpc)

WHERE THEY ARE:

Top 10 Countries with LEED-Certified and LEED-Registered Projects



Global LEED Space by Region



*Gross square meters (GSM) are reported in millions.

Growth Rate in New LEED-Certified Projects by Region from 2011 to 2012

REGION	2011	2012	GROWTH RATE
US & CANADA	3,312	3,645	10%
EAST ASIA	132	212	61%
EUROPE	92	155	68%
LATIN AMERICA & CARIBBEAN	53	92	74%
SOUTH ASIA	81	97	20%
MIDDLE EAST & NORTH AFRICA	18	26	44%
AFRICA	2	6	300%
PACIFIC	1	6	600%

LEED PROFESSIONAL SPOTLIGHT



Lili Pan, LEED AP BD+C, O+M

Managing Director
L. GEES, Hong Kong

LEED's international advocates drive global progress.

Hear from Lili, who works for LEED International Roundtable member organization L. GEES.

Can you describe your professional path that led you to the field of green building?

My major in college was civil engineering, and I rarely found inspiration and breakthroughs, apart from copying the existing conceptions. In my first job interview, I was asked, "What is green building in your eyes?" and "Are you interested in doing something related to green building?" These two questions guided me into the sector – one that changes everyday. It was destiny. Those two questions burn the fire in my heart to bring about revolution and create value by innovation. I am so thankful for finding my lifetime career in my first job.

How would you describe the green building movement in Hong Kong?

As a prospering metropolis, Hong Kong enjoys the advantage of realizing and implementing new technology brought from all around the world. As a result, Hong Kong has had an earlier start than the other Chinese cities in green building, making it fourth in LEED registrations and second in LEED certification among East Asia Countries. In Hong Kong, the most popular certification system is LEED for Commercial Interiors followed by LEED for Core and Shell, LEED for New Construction and LEED for Existing Buildings: Operations and Maintenance (LEED EB: O&M). Compared to the U.S., Hong Kong has significantly less LEED EB: O&M projects. I personally consider LEED EB: O&M certification and green operations in general the key to realizing the green building movement. I believe it will bring a new growth point in Hong Kong.

What type of work do you do on the LEED International Roundtable?

I work on LEED project implementation feedback, comparing LEED standards and related local standards, and applying the special characters in Hong Kong. Recently I also took part in the development of Regional Priority Credits and International Alternative Compliance Paths for LEED v2009 and LEED v4.

What's been the most exciting or impactful green building project that you've worked on?

Hong Kong International Finance Centre II, which earned LEED for Existing Buildings: Operations and Maintenance certification. The biggest problems for this project were intense energy consumption through its data centers and trading floors, multi-tenants (around 70), and high water consumption. We spent two years overcoming those problems during the re-commissioning period. At that time, fixture upgrading was implemented, and most importantly, we established constant communication with tenants to obtain their understanding, support and collaboration. Ultimately, the project achieved LEED Gold certification with a very low cost premium, resulting in increased energy and water efficiency with corresponding savings.

How do you envision the future of the international green building movement? What's in the cards and how will we get there?

Without a doubt, the green building movement will be prosperous. However, with more and more green certified buildings, the excitement to see a certification plaque will start to fade. People will pay more attention to the performance beyond the medal. And more professionals are certainly needed to deliver the performance we are looking for. As green building advocates, we will continue to see commitment to this movement, professional ethics, the selfless sharing of knowledge and the overall pursuit of excellence.

LEED PROJECT SPOTLIGHT

TAIPEI 101

Taipei, Taiwan

LEED for Existing Buildings:

Operations & Maintenance - Platinum

Certified on July 7, 2011

With 101 floors and over 2 million square feet, TAIPEI 101 is one of the tallest buildings in the world. Since its completion in 2004, it has become an icon for Taipei City, Taiwan and has set the quality and performance benchmark for supertall buildings in Asia.

From 2008 to 2010, TAIPEI 101 invested in significant energy efficiency retrofit projects to generate energy and water savings. A review of public lighting was undertaken and resulted in the conversion to more energy efficient luminaires and lighting controls. By utilizing Energy Management and Control Systems (EMCS), building managers are able to adjust operating temperatures, modify chiller plant operating schedules and modify chilled water distribution according to actual tenant needs.

TAIPEI 101 earned LEED for Existing Buildings: Operations and Maintenance certification and succeeded in:

- Decreasing potable water usage by at least 30% compared to average building consumption
- Saving 28,000,000 liters of potable water annually
- Being ranked in the top 30% of high-rise office buildings as benchmarked by the U.S. ENERGY STAR database
- Reducing energy consumption by 33.41 million kWh per year
- Saving more than \$2 million per year





LEARN MORE about LEED projects
Visit usgbc.org/projects



LEED PROJECT SPOTLIGHT

King Abdullah University of Science and Technology (KAUST)

Thuwal, Saudi Arabia

LEED for New Construction - Platinum
Certified September 2009

KAUST is an international research university established to drive innovation in energy and the environment. In an extremely hot climate, the design team created a highly sustainable project and the world's largest LEED Platinum higher education project. The design process relied on passive, climate based solutions modeled in an iterative manner. Buildings were situated to self-shade, window to wall ratios were kept below 30% and external shading systems were utilized for all glazing surfaces. A monumental roof system provides additional shading and solar towers induce natural ventilation.

Other efficiency strategies include energy recovery, chilled beams, UFAD, 35% decrease in LPD with daylight and occupancy sensors. Solar arrays provide 7.6% of energy demand. The project achieved a weighted reduction of 50.6% from AIA 2030 baselines. The design team response to an extraordinary schedule, 990 days from master planning to move-in, was driven by early climate analysis, modeling and utilization of BIM. This allowed the team to streamline the design process among 500 architects, 600 consultants and 25,000 on-site workers. KAUST is rooted in cultural typologies, such as the Arabic souk and Bedouin tent. These elements welcome nearby residents into the campus and demonstrate new ways to build sustainably within the region.

Photo credit: JB Picoulet

DRIVERS OF LEED: POLICIES

“How wonderful it is that nobody need wait a single moment before starting to improve the world.” - Anne Frank

Policies that stimulate and reward green building have been instrumental in making LEED the most widely used third party green building program in the world. USGBC works with an extensive network of advocates, from USGBC chapter members to global policymakers, who believe in better buildings and advance them through important policy work. Advocacy efforts are focused around seven areas of policy-based campaigns: **Leadership with LEED**, **Data access**, **Benchmarking**, **Green schools**, **Green affordable housing**, **Greening the MLS** and **Building better codes**. Similarly, the U.S. government sector continues to lead by example, using LEED to advance better performing buildings across all sectors. As a study by the National Resources Defense Council (NRDC) points out, “states, municipalities, corporations, and government departments are now requiring green building certification, and the concept of green building has moved from a few pilot projects into one of the most important forces shaping the U.S. building market.”¹

Governments can “influence the behavior of other socio-economic actors by setting the example, and by sending clear signals to the market place.”² Government policies reduce the cost of green building by engaging more than

a single market sector, allowing increased participation by private developers.³ That’s exactly what we’ve seen happen with LEED. Private sector investment in better buildings augments public sector investment and vice-versa; leadership begets leadership. Government investment is, in many ways, influenced by the success of green buildings in the private sector. It’s a win-win because more efficient buildings across the board are the result.

LEED POLICIES IN THE U.S.

“We find that private sector LEED adoption is roughly 80 percent greater in municipalities with a green-building policy than in a matched control sample of cities of similar size and demographic characteristics.”⁴

LEED was referenced in more than 200 bills in 2012.⁵ Government entities at the local, state and federal level have a diverse menu of policy tools to choose from that encourage healthy, high-performing buildings. These range the spectrum from financial and market incentives to direct government leadership. Example of policies that drive LEED are: grants, tax incentives, expedited permitting, density bonuses, loan guarantees, revolving loan funds, priority language, benchmarking and disclosure, green building codes and government procurement policies, to name a few.

ENTITIES WITH LEED-SPECIFIC POLICIES:

Federal Agencies/Departments: **14**

States with LEED-specific policies: **30+**

Localities with LEED-specific policies: **400+**

¹ NRDC: Review of U.S. Policies on Building Energy Efficiency, Distributed Renewable Energy and Green Building p.55

² LEED Adopters: Public Procurement and Private Certification (Simcoe, and Toffel): http://www-management.wharton.upenn.edu/henisz/msbe/2011/4_1_Simcoe_Toffel.pdf p.4

³ <http://www.usgbc.org/articles/accelerating-our-green-building-efforts>

⁴ LEED Adopters: Public Procurement and Private Certification (Simcoe, and Toffel): http://www-management.wharton.upenn.edu/henisz/msbe/2011/4_1_Simcoe_Toffel.pdf p.2

⁵ <http://www.usgbc.org/sites/default/files/2012%20State%20Activity%20Report%20-%20Advancing%20Green%20Building%20Policy%20in%20the%20States.pdf>

POLICIES THAT DRIVE LEED: DEFINITIONS

Green building codes: One of the most straightforward ways for a local government to activate green building practices is to integrate programs like LEED into their municipal building codes. In an ideal world, “The mandatory minimum code for new construction should be coupled with policies designed to encourage leadership above and beyond the code minimums in all buildings. These policies should be tied to a third party verified, green building rating system like LEED and should include incentives of the type that will generate the most demand in the industry and match the budget available, for new and existing buildings.”⁶

Benchmarking and disclosure: “Building Energy Rating and Disclosure (BER&D) policies require owners to disclose the energy performance of their buildings to a variety of market actors, as a tool to motivate voluntary energy efficiency upgrades.”⁷ While BER&D policies may not directly discuss LEED, they ultimately accelerate the success of voluntary leadership programs, like LEED, by increasing transparency for those participating and the market broadly.

INTERNATIONAL ADVOCACY EFFORTS

International policy plays an important role in advancing USGBC’s mission. USGBC monitors the development and uptake of green building policies around the world at all levels of government. Understanding both market opportunities and barriers allows the organization to better serve its members and communities of LEED professionals. With years of policy development and advocacy experience in the United States, USGBC works closely with its fellow green building councils in more than 90 countries around the globe to share policy examples and best practices, including through the World Green Building Council’s Policy Task Force. Public policy and advocacy is a crucial vehicle for market transformation; and, to this end, USGBC aims to support the adoption of green building, sustainable city and urban resilience policies in every country in the next five years.

USGBC works with the United Nations, the World Bank and other multilateral organizations to position green buildings as an integral facet of sustainable development. One example of this advocacy in action: USGBC participates in the United Nations climate negotiations each year, highlighting the pivotal role buildings play in addressing climate change mitigation and adaptation through events and resources in collaboration with partner organizations and companies.

POLICIES IN ACTION

BALTIMORE COUNTY, MARYLAND

The County Council passed a bill offering incentives for both residential and commercial buildings that earn a minimum of LEED Silver certification via tax credits. Projects earning LEED Silver will earn a 40% property tax credit, 60% for LEED Gold and 100% for LEED Platinum. The tax credits will be in effect for three years or up to \$1 million in total incentives.⁸

HUNTINGTON, NEW YORK

In 2008, the Town of Huntington adopted Green Building Commercial Standards (Chapter 197 of the Town Code) requiring commercial new construction projects 4,000 sq. ft. or greater to achieve a minimum of LEED Certified status.⁹

DALLAS, TEXAS

The City of Dallas adopted a green building ordinance requiring energy and water efficiency improvements for new residential and commercial buildings. Starting in October of 2009 and prior to 2011, new residential construction must submit a residential green building checklist and new commercial construction greater than 50,000 sq. ft. must attempt a number of priority LEED credits. Expedited permitting is available for all covered projects.”^{10, 11}

⁶ NRDC: Review of U.S. Policies on Building Energy Efficiency, Distributed Renewable Energy and Green Building p. 66

⁷ Building Energy Rating (neep.org): <http://www.neep.org/public-policy/energy-efficient-buildings/building-energy-rating/index>

⁸ Approved Bills – 2008 Session (Baltimore County, Maryland): <http://www.baltimorecountymd.gov/countycouncil/legislation/archived/08bills.html>

⁹ Green Commercial Building Standards (Town of Huntington, NY): <http://ecode360.com/12185304>

¹⁰ Green Building Ordinance (City of Dallas): <http://www.usgbc.org/Docs/Archive/General/Docs4046.pdf>

¹¹ NRDC: Review of U.S. Policies on Building Energy Efficiency, Distributed Renewable Energy and Green Building p. 62

USGBC’s international policy-focused efforts are centered on partnerships, including the GLOBE Alliance, SCI and RIGUR.

SCI: The World Green Building Council’s Sustainable Cities Initiative (SCI) is a task force enabling direct assistance from GBCs to cities around the world. The aim is to create partnerships that rapidly accelerate the uptake of green building globally in urban centers. RIGUR works to create solutions by focusing on urban geographies, identifying the synergies between city governments, non-governmental organizations, financial institutions, and different business sectors. worldgbc.org/activities/sustainable-cities-initiative

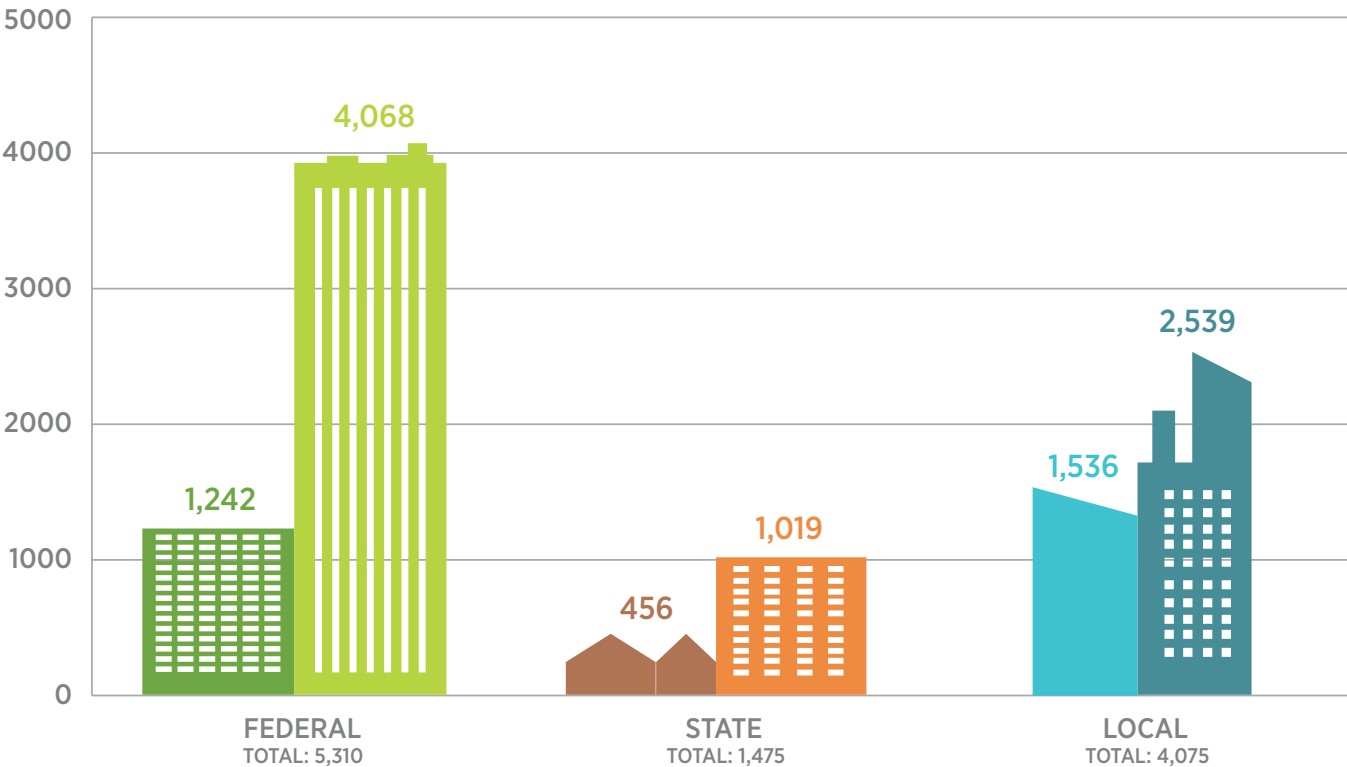
RIGUR: USGBC launched the Global Initiative on Urban Resilience (now the “Resilience Initiative on Global Urban Readiness” - RIGUR) with six organizations: C40 Cities Climate Leadership Group, ICLEI International,

the World Bank, the Environment Agency Abu Dhabi, the Johns Hopkins University School of Advanced International Studies Program on Energy, Resources and the Environment and the Earth Council Alliance Brazil. rigur.org

GLOBE Alliance: GLOBE Alliance (Global Leadership in Our Built Environment) is a broad-based international action network of environmental, business, industry, financial, faith-based, academic and community organizations around the world who share a commitment to advocating for sustainable building practices as a key strategy for combating climate change. The GLOBE Alliance works to educate, raise awareness and generate support from global policymakers, financial institutions, and U.N. bodies for cost-effective investment in sustainable building practices for emissions abatement and climate adaptation. globealliance.org

GOVERNMENT PROJECTS:

LEED-certified and LEED-registered (Federal, State, Local)



*The Tribal sector has one LEED-certified project and two LEED-registered projects



LEED POLICY SPOTLIGHT

New Mexico Sustainable Building Tax Credit (SBTC)

Policy type: Financial incentive

What is it?

Adopted in 2007, the SBTC was designed to encourage private sector construction of efficient and sustainable commercial and residential buildings.

How does it work?

The value of the tax credit is based on the amount of occupied square-footage and the rating achieved by the building. Under the provisions of the SBTC, commercial buildings are required to be certified to LEED. Commercial projects that have been certified LEED Silver or higher for the LEED for new construction, existing buildings, core and shell, or commercial interiors rating systems are eligible for the tax credit. Based on the national average for similar buildings, the commercial projects must have an energy reduction of 60%.

Residential projects must achieve a Home Energy Rating System (HERS) index of 60 or lower. Single-family and multi-family homes certified as LEED for Homes Silver or higher are eligible for the credit. According to the Environmental Protection Agency's ENERGY STAR Qualified Manufactured Homes Program, all manufactured housing must be ENERGY STAR certified.

Outcomes by the Numbers

- Contributed \$107.5 million to New Mexico's economy in new construction in the year 2012
- In the City of Albuquerque alone, 386 full-time jobs were generated as a result of the credit in the year 2012
- Since the date of enactment, the SBTC has created an average of 761 full-time jobs annually
- Created approximately \$1.08 million in disposable income from utility bill savings in a year and is projected to save \$32.3 million over a 30-year period
- In the City of Albuquerque, it was estimated that 19.5% more homes were built in the year 2012 compared to 2011, 72% of which directly benefitted from the SBTC

INTERNATIONAL LEED POLICY SPOTLIGHT

Building Standards: City of North Vancouver

Policy type: Green building commitment

What is it?

The city of North Vancouver, Canada set a sustainability commitment for all public buildings in 2007 using the LEED Canada rating system.

How does it work?

The city established LEED Gold certification as the goal for all newly constructed public buildings larger than 10,000 square feet. Additionally, it requires LEED Silver as the minimum level of certification for all newly constructed (larger than 10,000) or “major renovation” projects in the City Capital Plan.



ADDITIONAL INFORMATION:

Page 7: WHERE THEY ARE: Top 10 U.S. States with LEED-Certified Buildings*

STATES	# OF LEED-CERTIFIED BUILDINGS
CA	2,456
TX	1,016
NY	887
FL	805
IL	777
WA	666
PA	655
VA	633
CO	530
MA	528
OH	518
GA	487
NC	486
MD	477
MI	399
DC	397
OR	388
AZ	315
NJ	272
WI	271
MN	243
MO	228
TN	201
SC	180
IN	175
NM	174
IA	171
CT	167

STATES	# OF LEED-CERTIFIED BUILDINGS
UT	132
NV	114
AR	101
KS	97
KY	91
ME	90
AL	89
HI	85
VT	66
NH	65
OK	64
ID	61
NE	57
LA	54
MS	54
RI	52
MT	49
SD	42
AK	42
WY	36
DE	32
ND	29
WV	23
PR	20
Null	4
GU	7
VI	1
TOTAL	16,060

*including territories

Page 7: Top 10 U.S. States With the Most LEED-certified Projects Per Capita*

POPULATION DENSITY (FROM HIGHEST TO LOWEST)	U.S. STATES (INCLUDING THE DISTRICT OF COLUMBIA)	LEED-CERTIFIED PROJECTS
1	DC	397
2	NJ	272
3	RI	52
4	MA	528
5	CT	167
6	MD	477
7	DE	32
8	NY	887
9	FL	805
10	PA	655
11	CA	2,456
12	OH	518
13	IL	777
14	HI	85
15	VA	633
16	NC	486
17	IN	175
18	MI	399
19	GA	487
20	SC	180
21	TN	201
22	NH	65
23	KY	91
24	WI	271
25	LA	54
26	WA	666
27	TX	1,016

POPULATION DENSITY (FROM HIGHEST TO LOWEST)	U.S. STATES (INCLUDING THE DISTRICT OF COLUMBIA)	LEED-CERTIFIED PROJECTS
28	AL	89
29	MO	228
30	WV	23
31	VT	66
32	MN	243
33	MS	54
34	AZ	315
35	AR	101
36	OK	64
37	IA	171
38	CO	530
39	ME	90
40	OR	388
41	KS	97
42	UT	132
43	NV	114
44	NE	57
45	ID	61
46	NM	174
47	SD	42
48	ND	29
49	MT	49
50	WY	36
51	AK	42
TOTAL		16,027

*not including territories

Page 8: Top 10 U.S. States With the Most LEED for Homes Certified Units

STATES	LEED CERTIFIED UNITS
CA	7,257
TX	5,966
NJ	2,134
NY	2,037
FL	1,777
MA	1,596
OH	1,558
GA	1,466
NC	1,416
WA	1,185
CO	1,118
NM	1,110
PA	1,050
OR	949
LA	947
MS	767
AZ	712
VA	665
MI	654
SC	586
DC	574
TN	518
HI	452
NH	417
IN	398
MD	377

STATES	LEED CERTIFIED UNITS
ID	340
MN	240
SD	193
ME	184
VT	181
UT	157
CT	148
AL	135
AK	129
AR	129
NV	121
OK	121
MT	120
WY	103
IL	79
MO	71
WI	70
RI	65
KY	55
ND	54
KS	29
DE	11
WV	4
IA	3
NE	3
TOTAL	40,431

Page 13: Where They Are: Top 10 Countries with LEED-Certified and LEED-Registered Projects

COUNTRIES AND TERRITORIES	TOTAL LEED PROJECTS	COUNTRIES AND TERRITORIES	TOTAL LEED PROJECTS	COUNTRIES AND TERRITORIES	TOTAL LEED PROJECTS	COUNTRIES AND TERRITORIES	TOTAL LEED PROJECTS
United States of America (including Territories)	45,539	Bangladesh	36	Norway	6	Afghanistan	1
Canada	4,375	Australia	33	Bermuda	5	Andorra	1
India	1,586	Viet Nam	33	Haiti	5	Armenia	1
China	1,282	Lebanon	32	Macau	5	Barbados	1
United Arab Emirates	816	Romania	32	Malta	5	Benin	1
Brazil	717	French Southern Territories	28	Ukraine	5	Bhutan	1
Mexico	356	Switzerland	28	Venezuela	5	Bosnia and Herzegovina	1
Germany	324	Netherlands	26	Virgin Islands	5	Botswana	1
Turkey	237	Austria	25	Cambodia	4	Burkina Faso	1
Chile	203	Egypt	24	Croatia	4	Burundi	1
Italy	198	Belgium	19	Ethiopia	4	Congo	1
Republic of Korea	198	Oman	19	Netherlands Antilles	4	Cyprus	1
Qatar	179	Denmark	18	Brunei Darussalam	3	Equatorial Guinea	1
Spain	172	Jordan	17	Cuba	3	Falkland Islands	1
Saudi Arabia	154	Portugal	17	Estonia	3	Fiji	1
Hong Kong	149	Indonesia	16	Mauritius	3	Ghana	1
United Kingdom	147	Kuwait	16	Tanzania	3	Iran	1
Finland	132	Serbia	16	Yemen	3	Kyrgyzstan	1
Colombia	111	Bahrain	15	Angola	2	Laos	1
Sweden	111	Bulgaria	14	British Indian Ocean Territory	2	Latvia	1
Poland	107	Pakistan	14	French Polynesia	2	Liberia	1
Argentina	94	Uruguay	14	Gabon	2	Luxembourg	1
Japan	93	Guatemala	13	Guyana	2	Madagascar	1
Phillippines	89	Morocco	13	Iceland	2	Maldives	1
Taiwan	90	South Africa	12	Iraq	2	Mozambique	1
Singapore	79	Nigeria	11	Jamaica	2	Pitcairn Islands	1
Thailand	78	Djibouti	10	Libyan Arab Jamahiriya	2	Rwanda	1
Peru	77	Slovakia	10	New Zealand	2	Saint Lucia	1
Malaysia	75	Nepal	10	Papua New Guinea	2	Senegal	1
France	66	Ecuador	9	Paraguay	2	Serbia and Montenegro Federal Republic	1
Costa Rica	51	Greece	8	Slovenia	2	Sudan	1
Norfolk Island	48	Bahamas	7	Suriname	2	Swaziland	1
Czech Republic	48	El Salvador	7	Syrian Arab Republic	2	Tunisia	1
Panama	45	Kazakhstan	7	Trinidad and Tobago	2	Turkmenistan	1
Russia Federation	41	Cayman Islands	6	Zambia	2	TOTAL	58,922
Israel	41	Dominican Republic	6				
Hungary	38	Honduras	6				
		Kenya	6				

ACKNOWLEDGMENTS

Thank you to Boston Mayor Menino for providing a wonderful foreword to this report, and for his continued efforts to advance green building.

Working at USGBC is a point of pride for all of our employees, and we're excited to share the results of our data collection with you through the LEED in Motion report series. Beyond the numbers, it's the qualitative stories of our community, some of which are captured in this report, that truly capture the spirit of the green building movement. We are immensely grateful to our members, chapters and volunteers who carry the mission and "LEED on" everyday. Thank you!

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