

Health and Wellness: The Next Disruption in Sustainable Building Design

By Greg Powell



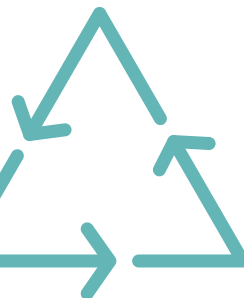
Every year we see increasing attention paid to sustainable building design—and with good reason. Defined as something that has staying power, sustainability has become a popular buzzword across all industries. The E&C industry continues to play a central role as this trend gains momentum due to economic, environmental and consumer influences.

As we pointed out in our article, sustainability continues to become the “new normal.” Building stakeholders are increasingly looking beyond basic green certifications and striving for an improved Built Environment that prioritizes the human experience.

The rise of wellness in design is, in part, due to increasingly vocal discussions on macro issues like climate change. The Built Environment is a major contributor to the climate change problem, so designers, building owners and tenants all understandably want to be part of the solution. Consumer demand is another catalyst for growth in wellness standards. Employees are prioritizing the health of their working environment, and are choosing to work for companies that share those same priorities.

Good, old-fashioned capitalism is also a powerful force behind the growing adoption of wellness standards. Healthier building environments tend to be more energy-efficient—and more cost-effective. Healthier work environments are a competitive advantage in attracting talent. A healthier workforce benefits a company’s operating profit. And companies will admit that, even with the most altruistic intentions, becoming known for promoting a healthy environment makes for great PR.

Wellness certification remains a relatively small subset of the overall sustainability market, but it has continued to expand in the two years since we wrote this article. As basic LEED certification becomes “table stakes,” savvy and aware developers, owners, employers and employees want to take the sustainability of the Built Environment to the next level. Wellness standards are a key piece of this evolution in sustainable design. Those design, engineering and construction firms best equipped to meet this market demand for health and wellness standards in sustainable design stand to benefit greatly from this evolution.



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How companies can effectively transform environmental- and health-related disruption into true opportunities now and in the future.

In today's global economy, building owners and employers are looking for ways to compete for talent, reduce operating costs and benefit the environment. While Leadership in Energy and Environmental Design (LEED) certification continues to be the leader in U.S. commercial real estate sustainability certification market share, trends in the market are causing building owners and employers to consider new aspects of sustainability, new certification systems and new technologies.

Millennials have now surpassed Generation X to become the largest generation in the American workforce.¹ This group's preferences for sustainability, wellness and business transparency are expected to be major influences on building design. This trend creates significant opportunities for architecture, engineering and construction (A/E/C) firms well-positioned to meet this generation's demand for all things green, healthy and innovative.

LEED Reigns in A/E/C

The most prevalent green building rating system in the world, LEED is used in over 165 countries and territories.² Expanded to serve practically all building, community and home project types, this certification addresses both human and environmental health, primarily by rating various components of a building's design and construction. However, there are varying tradeoffs with LEED's holistic human and environmental strategy. Among them is the inherent challenge that comes with engineering a building to bring in more outside air for improved human health without compromising energy efficiency goals.

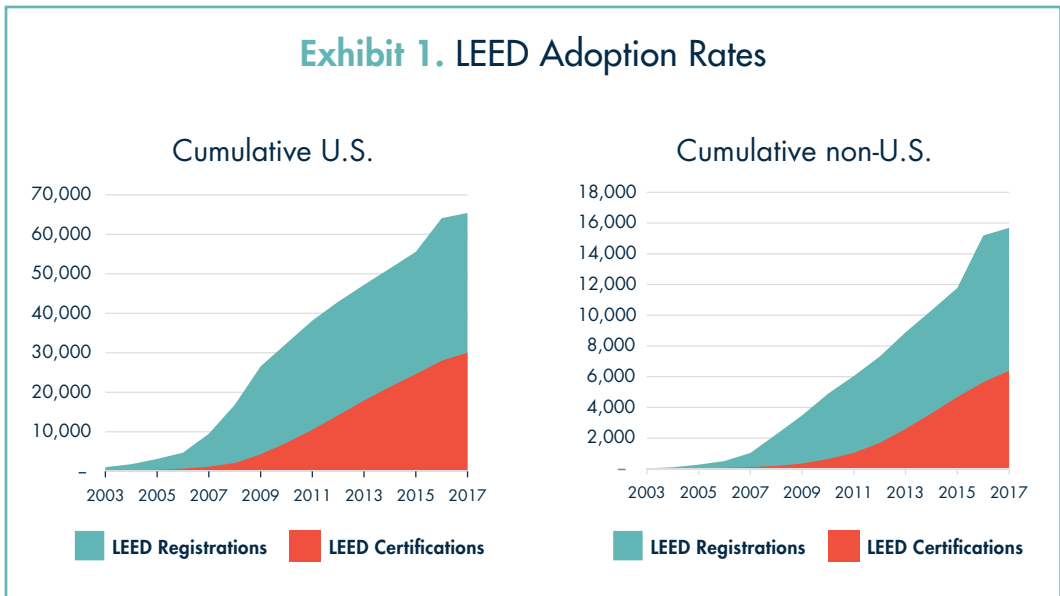
LEED continues to dominate the green building certification market and appears to have as many as 65,000 projects in the pipeline for the next few years. As shown in **Exhibit 1**, LEED adoption rates³ have

¹ Feeney, N., "Millennials Now Largest Generation in the U.S. Workforce", Time, May 11, 2015.

² LEED, <https://new.usgbc.org/leed>, November 2017.

³ LEED, "Country Market Brief", <https://www.usgbc.org/advocacy/country-market-brief>, November 2017.

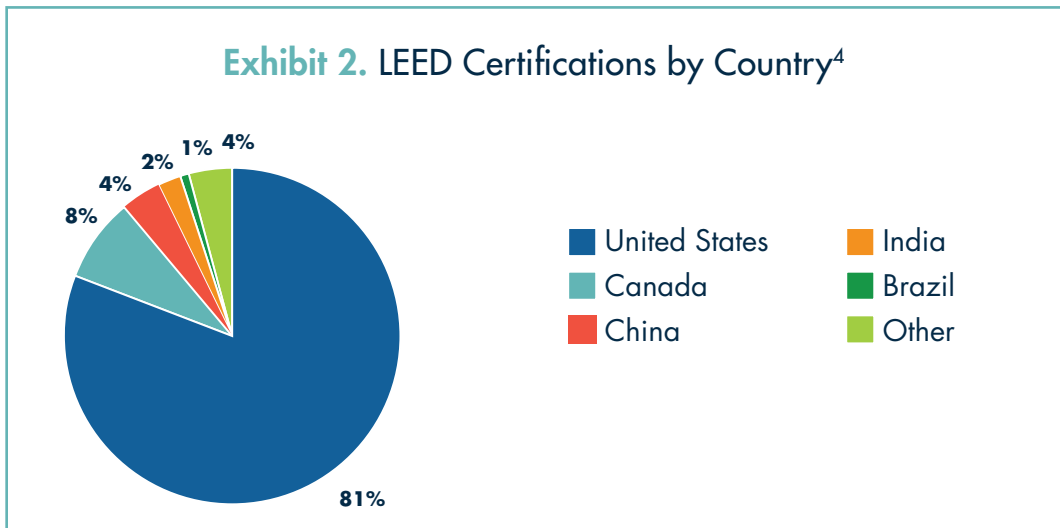
Exhibit 1. LEED Adoption Rates



grown consistently over the last 15 years; as of July 2017, there were 90,900 total commercial LEED certifications. The larger number of LEED registrations serves as a proxy for anticipated future growth in LEED certification and sustainable design.

While the U.S. is by far the most active country in the world for LEED certifications, it's by no means the only supporter of green building. Many global markets are pursuing widespread measures to reduce carbon footprints and maximize energy efficiency. China, Canada and India, for example, are all increasing adoption of green building standards (**Exhibit 2, LEED Certifications by Country**⁴).

Exhibit 2. LEED Certifications by Country⁴



⁴ LEED, "Country Market Brief", <https://www.usgbc.org/advocacy/country-market-brief>, November 2017.

Growing Diversification in Sustainability Measurements

LEED has responded to the trends in transparency, wellness and technology with the addition of a new Performance Path to LEED certification using Arc, which allows building owners or consultants to collect energy, water, waste, air quality, occupant satisfaction and transportation data to benchmark themselves against other projects. This level of benchmarking helps to improve overall building performance.⁵ Arc can be used both to recertify LEED certified buildings and to certify non-LEED buildings. The program uses data from occupant satisfaction and other key performance indicators to influence a daily or monthly dynamic LEED score.

Over the past two decades, many new green building certification programs have emerged with and without LEED alignment. Some are geographically focused, such as BREEAM, which dominates the U.K. market. Others are focused on a sector or issue that LEED does not specifically address, such as Living Building/Zero Energy Certification, Passive House and Green Globes, all of which have shown rapid adoption rates, but still with far fewer certifications in place compared to LEED.

The Next Phase in the Evolution of Sustainable Design

We're now witnessing the increased **convergence of green and wellness**. While green certifications such as LEED focus more on the environmental impact of a building, wellness rating systems emphasize the health and well-being of the building's occupants. According to Leigh Stringer, EYP, workplace

strategist and author of "The Healthy Workplace," "Many of the strategies for creating a healthy and productive physical work environment stem from the efforts to make buildings greener or more environmentally friendly."

This progression is driven by, in part, a growing focus among employers on health costs as U.S. health care expenses spiral out of control. Studies have shown that the building environments affect human physiological systems. Americans spend more than 90% of their time indoors, on average, yet indoor air is generally two to five times more toxic than outside air due to poor ventilation and off-gassing of toxic chemicals from a host of products, from carpeting to furniture.⁶ The Harvard T.H. Chan School of Public Health identified these nine foundations of a healthy building: air quality, thermal health, moisture, dust and pests, safety and security, water quality, noise, lighting and views, and ventilation.⁷

The benefits of "healthy buildings" have been documented in numerous studies and include reduced illness and absenteeism among workers, higher worker productivity, higher test scores among students and greater workplace satisfaction.⁸ One such

⁶ National Geographic, "5 Surprising Ways Buildings Can Improve Our Health", <http://www.nationalgeographic.com/environment/urban-expeditions/green-buildings/surprising-ways-green-buildings-improve-health-sustainability/>, February 2017.

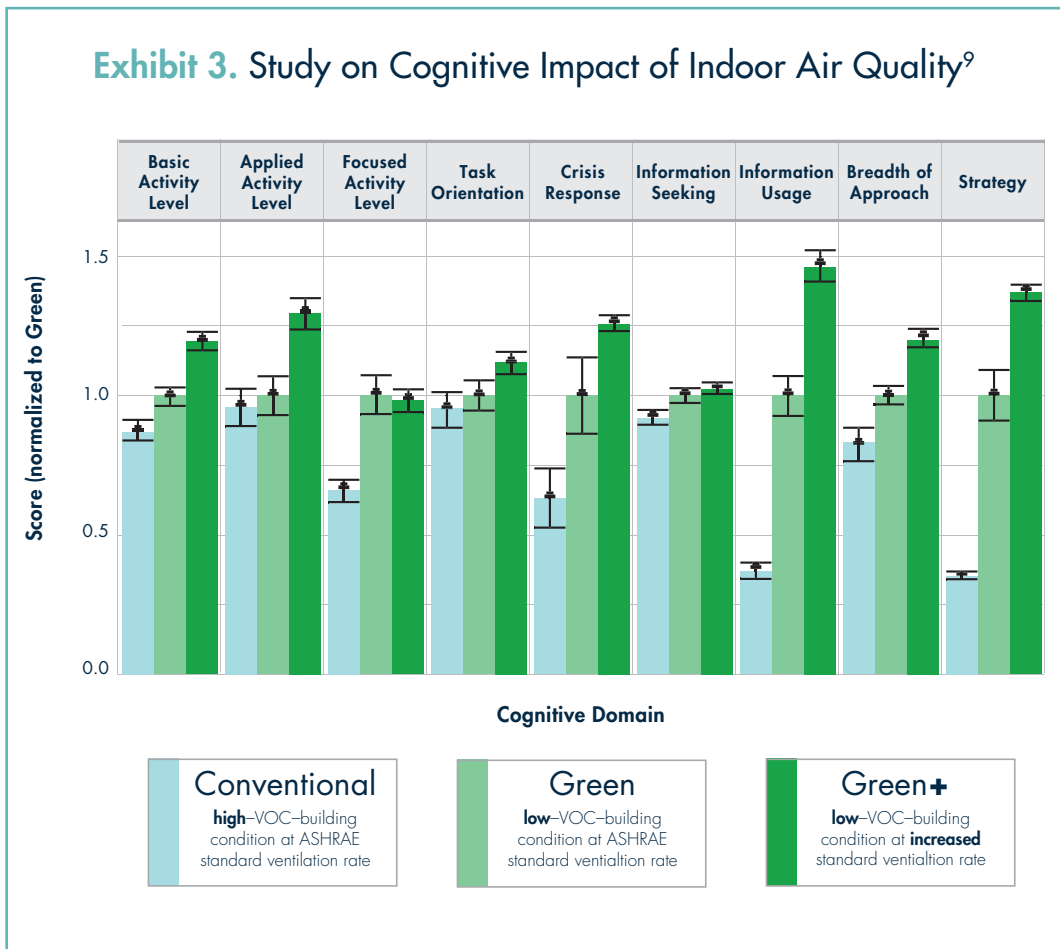
⁷ Harvard T.H. Chan School of Public Health, "The 9 Foundations of a Healthy Building 2017", <http://www.forhealth.org>, November 2017.

⁸ Allen., J, MacNaughton, P., Satish, U., Santanam, S., Vallarino, J., & Spengler, J., "Associations of Cognitive Function Scores with Carbon Dioxide, Ventilation, and Volatile Organic Compound Exposures in Office Workers: A Controlled Exposure Study of Green and Conventional Office Environments", <https://ehp.niehs.nih.gov/15-10037/>, Volume 124, 2016.

⁵ ARC, <http://arcskoru.com>, November 2017.

study directly quantified the impact of indoor environmental quality on cognitive functions. By changing levels of air ventilation, carbon dioxide and volatile organic compounds, the study measured how the indoor environment in which we work and live affects our health and productivity. The results show a clear correlation between improved indoor air quality and cognitive performance (Exhibit 3, Study on Cognitive Impact of Indoor Air Quality⁹).

These cognitive benefits translate into documented monetary cost savings for building owners and employers. In turn, building certification standards are evolving to hold designers and contractors accountable to deliver these cost-reducing and revenue-boosting benefits. However, a survey conducted by Virgin HealthMiles Inc. illustrates some of the challenges with wellness initiatives: 89% of employees reported a company's health benefits as



⁹ Allen, J, MacNaughton, P., Satish, U., Santanam, S., Vallarino, J., & Spengler, J., "Associations of Cognitive Function Scores with Carbon Dioxide, Ventilation, and Volatile Organic Compound Exposures in Office Workers: A Controlled Exposure Study of Green and Conventional Office Environments", <https://ehp.niehs.nih.gov/15-10037/>, Volume 124, 2016.

significant to their choice of employer, but only 36% of employers reported having the information needed to be able to make actionable decisions about an employee health strategy.

Partly in response to the financial potential in addressing occupant health in the built environment, industry stakeholders developed the WELL Building Standard, which integrates health, design and management.¹⁰ According to the International WELL Building Institute, 90% of the costs associated with the life cycle of a commercial building come from the people inside (salaries and benefits), while only 10% come from operating the building itself. Wellness certifications have emerged to improve returns on the 90% invested in human assets.

As Rachel Gutter, senior vice president of the WELL Building Institute, explained to FMI, “Our indoor environments have a profound effect on our health and wellness, impacting everything from our stress levels to alertness to productivity. The WELL Building Standard was developed with this relationship in mind. Designed to be as interactive as possible and to work in harmony with other building certifications like LEED, WELL encompasses over 100 features addressing seven core concepts of building performance that have been scientifically proven to impact the occupant experience.”

It’s important to note that WELL certification is not the only certification gaining a significant amount of attention in the market. “A new wellness program, the Facility Innovations Toward Wellness Environment Leadership (Fitwel) certification program, was developed by the Center for Disease

Control (CDC) and was piloted on General Services Administration buildings, an organization also known for its early adoption of LEED certification,” Stringer explains. “Many of my clients are adopting Fitwel as a certification tool because the strategies have been vetted by CDC’s research team and are intentionally low-cost and fairly easy to implement, even in existing buildings.”

Wellness Implications

Wellness standards have yet to achieve broad market adoption, with 28 WELL certified buildings and 159 Fitwel buildings currently operating in the U.S. However, it’s clear that human health and wellness in the workplace are both high priorities for millennials, and more certifications are on the way. In the U.S. alone, there are currently 224 registered projects. Worldwide, 522 projects are registered for WELL certification. Studies show that millennials are increasingly emphasizing a healthy work environment when making employment decisions.¹¹ Rising demand for human wellness-focused work environments among this most influential component of our workforce is leading more companies to respond by considering wellness certifications in both new and existing buildings. Architects are beginning to witness this uptick in building owner and employer interest in wellness. Maria Papiez, sustainability leader at design firm EwingCole, notes “There is now a critical mass for wellness in the marketplace as big brands compete for talent.”

¹⁰ International Well Building Institute, <https://www.wellcertified.com/>, November 2017.

¹¹ Rigoni, B., and Nelson, B., “Millennials Want Jobs That Promote Their Well-Being”, <http://news.gallup.com/businessjournal/196985/millennials-jobs-promote.aspx?version=print>, November 2016.

One such brand is technology leader Lenovo. “To attract today’s top talent, Lenovo committed to both LEED Platinum and WELL certification for its new building at the North American Lenovo headquarters,” explained Erin Bolduc, Lenovo technical project manager. “We pursued WELL late in the design process as we recognized a significant amount of overlap between the two rating systems while pursuing LEED v4. Where LEED and WELL did not overlap, Lenovo corporate policies made it obvious that, with our benefits and the site characteristics, we would be able to achieve WELL certification.”

In addition, the demand for wellness and “healthy buildings” has driven—and continues to drive—advancement in building innovation and technologies that monitor and enhance health benefits for building occupants, as illustrated in **Exhibit 4**. Technological innovation has a rapidly growing influence on the broader design and

construction industry, and its role in fostering healthy building environments is growing in equal measure.








In time, buildings that achieve wellness certifications may earn health insurance incentives, as insurance providers continue to explore ways to reduce risk. Companies pursuing less formal employee health and wellness initiatives—such as lifestyle and disease management programs—have accrued similar benefits.

Impact on the Design Industry Moving Forward

When sustainability became the new normal, designers adapted to the demand for LEED and similar capabilities. Building stakeholders are now broadening this environmental focus toward the human experience, and the industry must once again adapt.

Exhibit 4. Building Technologies Targeting Wellness



-  Cloud-integrated sensors and apps
-  VOC sensor-controlled ventilation in laboratories
-  Sunlight-sensitive smart lighting
-  Stress relief via appliance-manipulated occupancy sensors
-  Programmable indoor air quality sensors
-  Acoustics and sound-altering emitters
-  Smart water detection and filtration systems

As the convergence of green and wellness continues to gain momentum, the design industry will be facing new demands. To deal with these shifts, firms will need to address the various wellness programs gaining in prominence; navigate new and emerging building technologies; and cater to shifting priorities among building owners, employers and employees. As these demands grow, design firms will also need the right balance of talent and capabilities to compete and thrive in this evolving environment.



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