

SUSTAINABLE BUILDING PRACTICES: LEGISLATIVE AND ECONOMIC INCENTIVES

J. MARK TAYLOR, Ph.D., JD

Auburn University
Auburn, Alabama USA
taylojt@auburn.edu

Abstract

Sustainable building has become the buzz word of commercial construction in the U.S. during the past decade. While sustainable building practices and energy efficiencies have been on the building industries radar screen for a number of years, the media intensity and owner interest seems to ebb and flow with the cost of energy. However since the LEED system has gained such popularity in the commercial construction arena, more and more owners are demanding that their project be LEED certified; or the owner's are at least having serious talks with their architect and builders regarding sustainability and the LEED certification process.

A natural outgrowth of public awareness of energy efficiencies in the building process is governmental pressure to achieve certain prescribed outcomes. Is the government leading the charge, following a surge or acting as an impediment to the use of sustainable building practices? State and local building practices will be examined to determine if there is a trend towards either of the scenarios. While this research will primarily focus on U.S. building practices, along with federal, state and local laws that have an impact on the built environment; a cursory look at the efforts of other countries and their energy practices will be performed to provide some insight into the worldwide efforts towards sustainable building.

Keywords: Sustainable Building, Law, LEED, BREEAM, HQE

INTRODUCTION

It could be argued that sustainable building practices have always been an issue of concern with building owners. One only has to look at some residential construction practices from centuries ago to see that this is true to some extent. Owners had little choice but to build with local materials according to local or regional customs, constructing the building in such a way that a certain level of comfort was assured with the minimum use of additional resources for heating and cooling. An example of this approach is the adobe structures of the American southwest. Houses were constructed of thick adobe walls providing insulation from the extreme temperatures along with openings designed to promote a free flow of air. Unfortunately, if one moves to more temperate climates, especially in areas where abundant natural resources are available, residential owners had little reason to build in a sustainable manner. They simply built along local and regional customs, often with economy as a major objective.

If one looks at larger buildings from days gone by, sustainable building was not necessarily at the forefront of the decision making process as far as design and construction were concerned. The earliest large, non-residential buildings were religious in nature. These large

structures were built with religious custom as the primary concern. While using local materials to a large degree, the design and construction of the structure had more to do with promoting the tenets of the faith than building in a sustainable manner. A look at early English cathedrals easily demonstrates this point. Often placed on a high point to insure visibility from afar, the cathedrals tended to be large, imposing structures with soaring interior spaces but with poor natural light and ventilation. As the structures were built for a transient occupant, indoor environmental concerns were not nearly as important as with residential structures.

Changes in our design and construction processes evolve quiet slowly and reflect changes in technologies and customs. However, some changes can be promulgated at a more rapid rate if nudged along by some trend or concept. Mechanisms that have sped up the process of change and resulted in different ways of addressing our sustainable building needs can be categorized into four fairly broad groups; 1) governmental statutes, 2) building codes, 3) associations or NGOs, and 4) the marketplace through economic incentives.

While changes in these areas have occurred over the past centuries as it relates to the built environment, many of our sustainable features have come about in the past forty years or less. A significant milestone that, to some extent, marks the beginning of the environmental movement that preceded modern sustainable building efforts was Earth Day; first celebrated on April 22, 1970. This was organized by United States Senator (Wisconsin) Gaylord Nelson as a means of bringing awareness of and appreciation for our natural environment. Earth Day remained a U.S. event until 1990 when it was organized by the Earth Day Network to become a world-wide event. Now close to 200 countries celebrate Earth Day each year and millions of individuals participate in activities promoted by the Earth Day Network (Earth Day Network 2011).

A further development towards sustainable building practices is evidenced by the United Nations Millennium Development Goals (MDG). First promoted in the year 2000, the goals consist of eight international development goals aimed at improving living conditions of the world. All 192 United Nations member states and at least 23 international organizations have agreed that these should be achieved by the year 2015. They include eradicating extreme poverty, reducing child mortality rates, fighting disease epidemics such as AIDS, and developing a global partnership for development (United Nations 2011).

At the 2010 United Nations conference it was reported that some of the goals are having their desired effect, but many countries are lagging behind in their campaign of achieving the goals and will, in all likelihood, not be reached by the target year. While most of the goals are very broad based initiatives as seen in the previous paragraph, one goal – Goal 7A is titled: “Integrate the principles of sustainable development into country policies and programs; reverse loss of environmental resources”. Goal 7A is aimed squarely at those involved with the built environment, calling for governmental pressures to influence the behaviour of designers and builders involved in the development process (United Nations 2011). Although many argue that the UN MDGs are, to some extent, symbolic in nature it is clearly an indication that sustainable building practices are on the minds of many more people now than they were 40 years ago (United Nations 2011).

RESEARCH QUESTION AND METHODOLOGY

The purpose of this research is to determine whether governmental initiatives or the private marketplace is driving sustainable design and building practices? If governmental initiatives are the driving force, sustainable practices will be much more stable and long lasting. On the other hand, if it is the marketplace that is the driving force, sustainable practices will again shift with the inevitable change in the price of oil.

This study looked at various sustainable initiatives used in the commercial construction industry, to determine what drivers were behind each. As the data required by this study is public information, data was gathered through internet searches in order to gain a broad perspective on the issue using a qualitative research approach. Qualitative research can be defined as subjective, and is often structured into two categories of research: exploratory and attitudinal (Coles & Naoum 1998). The purpose of exploratory research, as used in this study, is to understand a situation, look for alternatives, and to propose new ideas (Zikmund 1997).

GOVERNMENTAL STATUTES

A statute is a formal written enactment of a legislative authority that governs a country or some subdivision of the country such as a state, province, county, city or other form of municipality (Black, H. C. 2009). Typically, statutes command or prohibit something, or declare policy. The word "statute" is often used to distinguish law made by legislative bodies from case law decided by courts, and regulations issued by government agencies. Statutes are sometimes referred to as legislation or "black letter law". As a source of law, statutes are considered primary, or the highest, authority.

Much of our legal system in the U.S. and in Western Europe has evolved from the legal system of ancient Rome, primarily the legal developments which occurred before the seventh century AD when the Roman-Byzantine state adopted Greek as the official language of the government. Following the definitional premise that statutes are laws that are written, the first legal text is derived from the Law of the Twelve Tables, dating from mid-fifth century BC. The plebeian tribune proposed that the law should be written, in order to prevent magistrates from applying the law arbitrarily. After eight years of political struggle, the plebeian social class convinced the patricians to send a delegation to Athens to copy the Laws of Solon. Around 450 BC, ten tablets were produced with laws aimed at controlling civil matters of the Roman citizenry. These proved to be unsatisfactory by the plebeians and two additional tablets were added the next year. The new Law of the Twelve Tables was approved by the people's assembly (Kreis, S. 2001).

While the Law of the Twelve Tablets is ancient in time, it provided for provisions of private law and civil procedures that survive to the present day. Primary in this regard is that the focus of rule making should fall to the local group (or, as stated in 450 BC the *genos* or clan); e.g., the rights of the central government are limited in their scope (Kreis, S. 2001). The U.S. Constitution, U.S. Congress and U.K. Parliament have followed this tenet as it relates to sustainable building. While there are certain central laws regarding this issue is not debated; but rather the purpose of these laws are primarily focused on providing local or regional governmental entities with avenues in which to approach sustainability.

For example, in the U.S. such seminal environmental laws as the Clean Air Act (CAA) and the Clean Water Act (CWA) demonstrate that the law can be, and has been, utilized as an important tool to address environmental challenges (Sussman, E., et al 2010). However, these laws passed in the early 1970's have not been followed by similar legislation as it relates to sustainable building. Sustainable building regulations have been much more fragmented in their approach. But as Sussman goes on to say, “[L]aws and regulations, at all levels of government, can similarly be used to promote adaptation to climate change” (Sussman, E., et al 2010).

Another governmental reaction came about due to the energy crisis of the 1970s. The soaring costs of energy and a growing concern about pollution and natural resource conservation caused the U.S. Congress to pass the Energy Policy and Conservation Act of 1978 (EPCA) that would require states receiving federal funds to initiate energy conservation standards for new buildings (Kraska, J. C. 2006). However, a telling feature between the EPCA and the earlier CAA and CWA that should not go unnoticed is evidenced from the titles of the legislation. Where the CAA and CWA are “acts” with definable requirements and outcomes the EPCA consists primarily of “policy” issues. This is not to say that the EPCA is not an important piece of legislation, because it is. However, as energy prices became lower in the 1980s and 1990s less importance was placed on the possible rigors and enforcement of the EPCA.

BUILDING CODES

A building code is a set of rules that specify the minimum acceptable level of safety for constructed objects such as buildings and civil structures. The main purpose of the building code is to protect public health, safety and general welfare as they relate to the construction, occupancy or use of the building or structure (Black, H. C. 2009). Model building codes are promoted by a group or association; and the code becomes law of a particular jurisdiction when formally enacted or adopted by the appropriate authority.

The idea of a building code is more than 3,000 years old. Even the earliest civilizations recognized that predictable and consistent minimum standards had to apply to construction materials and practice in order to provide practical and adequate protection of human life, safety and the welfare of the community at large. The Code of Hammurabi is often pointed to as the first formal, written building code. This code outlined the responsibilities of builders for the safe construction of buildings and laid out harsh punishment for those who failed to comply. Subsequent advances in building codes are often tied to some catastrophic event as it relates to public buildings or places.

For example, the burning of Rome in 64 A.D. led to improved building practices and code requirements in the area of fire safety. Likewise the great fire of London in 1666 gave rise to another early set of fire safety regulations. Sir Edwin Chadwick published a “Report on the Sanitary Condition of the Labouring Population of Great Britain” in 1842 that, for the first time, placed environmental conditions as a safety concern for the public as related to buildings and neighborhoods. And finally, the San Francisco earthquake of 1906 led to the popularity of the first National Building Code. The severity of the quake highlighted a pressing need for minimum safety standards to protect building occupants and the community

from structural hazards and in areas with seismic activity from the devastating threat of earthquakes (USGBC 2006).

As building codes advanced in the U.S., three major groups promoted their model codes and, for the most part, code usage became regionalized. The U.S. building industry recognized that one national building code, based on engineering, material science and human safety and less dependent on geographic and cultural differences was good for building safety and good for focusing participation in one national model code effort. In 1994 the three regional code organizations came together to establish what would become the International Code Council (ICC). The ICC was charged with developing a single set of comprehensive and coordinated national model codes for building and fire safety, what has come to be known as the International Codes, or the I-Codes (USGBC 2006).

From a sustainability standpoint, the I-Codes did little to promote the concept of sustainable building. However, the ICC has addressed this issue with its International Green Construction Code (IGCC) that is currently in the review process. Version 2 was published in November, 2010 and according to the ICC schedule should be finalized and adopted in March, 2012 (International Code Council, Inc. 2010). While building codes have been slow to address the importance of energy efficiency and sustainable building, they currently are in the process of doing so. It will be a few years at least before one can measure the impact that the IGCC, or other likeminded codes, have on the building industry. It will be up to local governmental entities to officially adopt the code requirements before any discernable impacts can be reported.

Already there is some movement for federal agencies and state and local governmental entities to adopt some sort of sustainable practice or code. Led by the U.S. Green Building Council (USGBC) and its LEED system (discussed more fully later), various sustainable initiatives including legislation, executive orders, resolutions, ordinances, policies, and incentives are found in 45 states, 442 localities (384 cities/towns and 58 counties), 35 state governments, 14 federal agencies or departments, and numerous public school jurisdictions and institutions of higher education across the United States (USGBC 2006).

In addition, states such as California are leading by example in adopting sustainable standards. In December 2004, Governor Schwarzenegger established green building as a priority for his administration with Executive Order S-20-04. Schwarzenegger's Green Building Executive Order (GBEO) requires state-owned facilities to be designed, constructed, operated, and renovated as "LEED Silver", or higher, certified buildings (Sussman, E., et al 2010).

California renewed its efforts in 2010 with the much-anticipated launch of its Green Building Standards Code. This mandatory code will affect all new buildings in the state. As earlier initiatives only applied to governmental buildings, this new code is a remarkable step forward. Now all new buildings in California must meet certain sustainable requirements which address a more holistic set of risks to human and environmental health. In New York City, the Urban Green Council (USGBC's local affiliate) released arguably the most comprehensive analysis and set of recommendations for the incremental greening of any building code. The work of NYC's Green Codes Task force, established by Mayor Michael Bloomberg and the New York City Council, mirrors a national trend of communities taking

action to address today's pressing economic, environmental and community health issues (USGBC 2006, International Code Council, Inc. 2010).

In some jurisdictions, model green building codes may still be several years from adoption, and even further off for enforcement. Nevertheless, the USGBC is developing a template for code compliance that can be adapted for any alternative green building method or material to overcome real or perceived barriers to building green.

ASSOCIATIONS / ORGANIZATIONS

While governmental entities have provided a broad framework of initiatives and goals aimed at sustainable building practices and building codes have responded by developing initial drafts of codes that require sustainable building practices, by far the largest contributor to sustainable building practices to date has been through non-governmental organizations or NGOs. Various associations and organizations have been formed around the world to promote sustainable building. While all have some common elements, they differ in some respects based upon their origin.

Common elements seen in the different sustainable initiatives (taken from the French model) include; 1) harmonious relationship between buildings and their immediate environment, 2) integrated choice of products, systems and construction processes, 3) low-impact worksites, 4) energy management, 5) water management, 6) industrial waste management, 7) maintenance and facility repair management, 8) temperature and humidity comfort, 9) acoustic comfort, 10) visual comfort, 11) olfactory comfort, 12) healthy living spaces, 13) healthy air, and 14) healthy water (HQE - GT International 2008).

Illustrative examples of the sustainable initiatives that have received a favorable following and show promise of adoption by a governmental entity or incorporated into the framework of a building code include BREEAM, HQE, and LEED. These three will be discussed briefly in alphabetical sequence in order to avoid the appearance of favoritism towards one over another. The list is not intended to be comprehensive, only illustrative of initiatives taking place around the world.

BREEAM System

One of the driving forces behind the European energy efficient design standards is the European Unions' 2002 Energy Performance of Building Directive (EPBD). Each of the member states of the European Union (EU) is responsible for individual implementation of the EPBD through national laws. The main focus of European sustainable building design at this time is on reducing energy use directly and carbon emission indirectly. The EPBD has five main themes; 1) certificates, 2) inspection, 3) experts, 4) calculations, and 5) minimum energy performance requirements (Yudelson, J. 2009).

Driving the EPBD is the heightened concern in Europe over the role of building energy and materials use in global carbon dioxide production, constraints on energy supplies, and the potential for catastrophic changes in the global climate as a result of increased carbon dioxide concentrations in the atmosphere. European national governments have been far more willing to accept the conclusions of climate science than American or Canadian governments and have been willing to take that science and develop practical public policies for reversing

the growth of carbon emissions. These policies include the use of subsidies and the passage of laws in order to regulate and implement these policies.

The United Kingdom has been a leader in implementing the EPBD. The government has introduced requirements for Energy Performance Certificates (EPCs) for new buildings and a Display Energy Certificate (DEC) for existing building. Each building is graded from A (best) to G (worst). Public buildings, and those occupied by public authorities, that have a total useful area greater than 1,000m² and provide a public service to a large number of people (i.e. schools, hospitals, government or local authority buildings) are required to post their EPC or DEC. The current average building energy use lies between D and E (BRE Global Ltd. 2011).

The Building Research Establishment (BRE) was founded in 1990 and has become the leading authority on sustainable design in the United Kingdom. Privatized in recent years, it developed the BRE Environmental Assessment Method (BREEAM), which has certified more than 1,200 commercial buildings and more than 110,000 housing units. More than 800,000 buildings are currently registered and pursuing a rating (Yudelson, J. 2009, Eichholtz, P., et al 2010).

BREEAM rates building according to the nine major categories in order to receive a single score, similar to the LEED system. The scores translate into five rating categories; 1) pass, 2) good, 3) very good, 4) excellent and 5) outstanding. The BRE is also actively involved in the areas of education. As the BREEAM system is based upon a third party certification, BRE is actively involved in training assessors to verify applications and accredited professionals (BREEAM AP) to assist those seeking certification (BRE Global Ltd. 2011).

The BRE has begun promoting BREEAM International and has successfully exported its system to a half dozen other countries which now have certified buildings. In addition, BREEAM Gulf is being developed for mid-eastern countries. In 2008, the International Council of Shopping Centers adopted BREEAM as a standard for rating shopping centers throughout Europe, and the Dutch Green Building Council also adopted BREEAM as its standard (BRE Global Ltd. 2011).

Another interesting aspect of the BREEAM system is its “bespoke” rating system for building types that don’t fall within a previously defined category. The bespoke system allows for the modification of the rating scheme to meet the particular needs of unusual buildings. The LEED international system, while becoming a bit more flexible, provides for a more rigid set of standards to follow. BREEAM is likely to be the dominant rating system in many European countries. It provides a green rating system that actually works because it’s in tune with the marketplace yet retains a sense of higher purpose (Yudelson, J. 2009).

HQE System

Over the past few years, sustainable development has become one of French society's great concerns. Ministries, local authorities and all corporate segments have been making this topic central to their strategic decisions. The initiatives undertaken to ensure a "greener" world have spanned all directions, and it can now be stated that France (following years of lip service) is indeed aware of the stakes involved, as evidenced by the adoption of increasingly stringent environmental protection measures, in association with an ambitious set of objectives (HQE - GT International 2008).

The construction and housing sectors have been lumped into this dynamic. In response to these new demands, all participants in the built environment (real estate developers, social landlords, housing corporations, investors, architects, construction companies or local authorities) must comply with certain sustainable practices and production models. Regulatory changes in terms of urban planning and the application of new building standards now require all participants in the development process to more closely scrutinize the means employed to assess project impacts on the environment (HQE - GT International 2008).

Discussions held on the topic of sustainable development have mainly focused on two schools of thought. The first approaches the context from its economic and social vantage point in addition to incorporating an environmental perspective. This school expands emphasis to the architectural and use attributes of the project, introducing non-polluting materials, pursuing social goals, respecting biodiversity and addressing life cycle issues, to cite a few indicators. The second is referred to as the "energy" school and tends to group sustainable development concepts towards issues directly related to energy usage and specific objectives to reduce greenhouse gas emission. A draft law written subsequent to the Grenelle Environment Roundtable seems to indicate that the construction industry and the "energy" school of thought is moving into position as the dominant model (HQE - GT International 2008).

In terms of benchmarks, France tends to prefer associating qualitative and quantitative indicators. A French approach entitled "High Quality Environment" (HQE) begins by laying out a global conceptual matrix that differs markedly from the American LEED or English BREEAM systems, both of which are aimed at achieving a set of quantifiable objectives. The "French style" model is perceived by some as a more holistic model than its competitors. The difference with the French approach also lies in the organizational pattern among participants. HQE was originally developed in 1992 as a voluntary set of standards featuring fourteen sustainable elements divided into four major groups; 1) eco-construction, 2) eco-management, 3) indoor environment, and 4) health. Since 2004, the French have also utilized HQE as an eco-building rating system (Yudelson, J. 2009).

The current driver of French sustainable development and green building programs is the Grenelle Environmental Policy adopted in October 2007, which created a plan for promoting sustainable development, establishing renewable energy and green building construction as national priorities. In terms of specific goals, the policy calls for all new building to use less than 50 kilowatt-hours per square meter per year by 2012 and to be carbon neutral by 2020. Within the next 5 years, the policy is expected to reduce commercial energy consumption by 20% and residential energy use by 12% (Yudelson, J. 2009).

HQE's overall goal is to generate 30% energy savings, to reduce overall national greenhouse gas emissions by 40% and to produce 16% water savings. HQE began certifying individual projects in 2005 and to date there are about 200 HQE certified buildings with an additional 500 projects in the process of becoming certified (Yudelson, J. 2009).

LEED System

In the U.S., green building initiatives began to come together more formally in the 1990s. A few early milestones in the U.S. include: 1) American Institute of Architects (AIA) formed the Committee on the Environment in 1989, 2) Environmental Resource Guide was published

by the AIA in 1992, 3) EPA and the U.S. Department of Energy launched the ENERGY STAR program in 1992, 4) the U.S. Green Building Council (USGBC) was founded in 1993, and 5) the USGBC launched its Leadership in Energy and Environmental Design (LEED) program in 1998 (Kaplow, S.D. 2009).

The sustainable initiatives to first gain traction in the U.S. were those promoted by the residential sector. These included Energy Star, Earth Craft House, Built Green – Colorado, NAHB Green Home Building Guidelines, and finally LEED for Homes. Interestingly enough, the first four each have strong regional followings with LEED for Homes playing “catch-up” at the present time. On the other hand, the LEED system is the only one that has truly made an impact in the area of commercial construction.

LEED is an internationally recognized green building certification system, providing third-party verification that a building or community was designed and built using strategies aimed at improving performance across metrics considered the most important: 1) energy savings, 2) water efficiency, 3) CO₂ emissions reduction, 4) improved indoor environmental quality, and 5) stewardship of resources and sensitivity to their impacts (USGBC 2006).

Developed by the U.S. Green Building Council (USGBC), LEED provides building owners and operators with a concise framework for identifying and implementing practical and measurable green building design, construction, operations and maintenance solutions. The LEED system evaluates the building upon completion and awards it a certain level based upon the number of points achieved. The building is rated as Certified, Silver, Gold or Platinum. Most involved with the process now say that one can achieve LEED “Certified” at little or no additional cost, except for the administrative fees associated with the LEED process. Many schools or agencies that have adopted the LEED system as a means of meeting their sustainability goals often use LEED “Silver” as the minimum level of acceptability. Since its inception, approximately 7,500 commercial buildings have been LEED “certified” or officially granted the LEED seal at one of the four levels. However an indication of its increased popularity is the fact that about 30,000 commercial buildings are currently “registered” (USGBC 2011a). A building is registered with the USGBC when a registration fee is paid with the aim to achieve LEED certification. Upon registering a building, the project team has access to the LEED resources needed to achieve certification.

In addition to the LEED certification process, the USGBC is actively involved in educating the public and promoting sustainable building initiatives. There are approximately 80 local chapters at the present time and about 300,000 individual members of the USGBC. In addition, approximately 160,000 individuals have taken and passed the LEED AP (accredited professional) exam (USGBC 2011a).

The LEED model has received some level of international recognition and is expanding an international initiative. The LEED International Program is promoted as a rating system representing global consistency, a regional approach, and local outreach and support. Countries that have a Green Building Councils include Argentina, Brazil, Canada, Chile, Colombia, India, Italy, Jordan, Mexico, Norway, Poland, Romania, Russia, Spain, Sweden, Turkey and the UAE (USGBC 2011a).

MARKETPLACE / ECONOMIC INCENTIVES

Energy certification for a project involves several different types of costs, regardless of the certifying agency. The most direct cost is also the smallest: the fees paid to the certifying organization to register and then to certify the project. The next cost is the time and effort put into compiling and submitting the documentation required and generally managing the compliance process. This cost could be for an outside consultant hired for that task or someone on the staff of the design firm, the contractor, or the owner. This is a significant project for someone doing it for the first time, and not such a big deal for someone who does it regularly and has figured out the process and created or purchased effective tracking systems (USGBC 2011b).

Another cost consideration is the additional time and effort the high-performing building team spends on a range of scenarios to determine how the competing systems will perform and prepare cost estimates to price them out. They also have to investigate alternative products and materials and explore the feasibility of new technologies. In addition, high-performance buildings require additional commissioning that comes at a premium (Building Green, LLC 2010, USGBC 2011b).

While building owners are generally willing to pay the additional cost for certification if they can be shown the advantages, there often are other incentives to consider. One of the most effective and more popular strategies to encourage green building is to incentivize the market through financial or structural incentives. Rewarding developers or homeowners who practice green building techniques spurs innovation and demand for green building technologies (USGBC 2011c).

Structural incentives work by encouraging developers to practice green building through rewards such as additional density bonuses or expedited permitting processes. At low or no cost to the municipality, building green can be made a more attractive option to developers. Review and permitting processes vary widely in length from one jurisdiction to another, in some municipalities these processes can take up to 18 months. Allowing developers to significantly reduce the duration of this process, in exchange for committing to specific green building standards, can result in significant cost savings for the developer. This allows a municipality to offer a significant incentive with little or no financial investment, since it only requires a shift in permitting priority. Like expedited permitting processes, density bonuses require little or no financial investment by the municipality. Many municipalities allow for percentage increases in Floor Area Ratio or other measures of density contingent upon certification or proof of green building practices (USGBC 2011c).

Direct financial incentives in the form of tax credits or grants to developers who propose or build green buildings are offered in some municipalities. However, many of these programs do not directly impact a municipality's finances since the proposed developments will often increase the assessed property value in the city and which allows the city to offer financial incentives without any threat of reduced revenues. Many municipalities already offer tax credits as a means of advancing specific policy agenda (i.e., offering tax credits for a developer to build a tax generating facility). These same principles can be applied to homes or developments that achieve certain green building goals. Some municipalities that charge fees for permit review or other permitting processes have begun offering reductions or

waivers for developers following green building standards. Many times this incentive can be paired with a structural incentive such as expedited permitting (USGBC 2011c).

Unlike the other incentive programs discussed above grants will require a financial investment by the city. These programs can often be funded by one of the revenue generating strategies discussed earlier. Grants can be given to homeowners or developers to go towards certification or other costs associated with green building (USGBC 2011c).

Revolving loan funds are another approach whereby a large fund is established that can be used for low interest loans to those seeking to build or renovate to green building standards. These loans are then repaid to the fund at a rate lower than the operational cost savings from the improvements in order to lower the up-front costs associated with some green building practices and encourage home owners and developers to build green. The fund is continuously replenished by the repayments so that it can be used for additional loans.

Many municipalities are also offering free planning or certification training and assistance. This assistance may allow for a developer who is unfamiliar with green building practices to build green. Another important benefit gained from certifying a project under a formal third party certification banner is the ability to use this as a marketing tool. Some municipalities have begun to offer free marketing assistance via signage, awards, websites, press releases, and other means as an incentive for developers to build to green standards (Building Green, LLC 2010).

CONCLUSION

While governmental entities have approached sustainable building initiatives for a number of years, the marketplace has had the greatest impact. Laws or statutes often omit mechanisms of enforcement and become more of policy statements than tools requiring specific action on the part of the owner. Building codes have historically been used to protect the safety and health of the public. However, safety and health have not, until recently, encompassed factors that are considered a part of the sustainable building initiative.

However, left to our own devices, great strides are being made in sustainable building. These have materialized primarily as market reactors. Sustainable initiatives began as idealized concepts, became a reaction to increasing fuel prices, were left to associations to develop and have, in recent years, caught the attention of the public at large. And finally, sustainable initiatives are beginning to creep into governmental legislation with prescriptive requirements.

Worldwide initiatives are being embraced that will have lasting impacts on the built environment. Just a few years ago, utilizing sustainable ideas and principles came with an economic price tag. However, as sustainable building products are becoming more mainstream and sustainable design and building practices are becoming commonplace, we're seeing that we can build to a moderate level of sustainability with little additional costs. Now a number of certification schemes are being promoted that reflect the building owner's commitment and provide public awareness through the level of certification.

It must also be noted that the topics discussed in this paper are elements of the industrialized world. A significant percentage of the world's population reside in developing countries. Developing countries have yet to embrace the concepts and possibilities of sustainable building. It also must be kept in mind that we truly are in the infancy stage as far as sustainable development is concerned – and this applies to the industrialized countries. Great opportunities exist for associations and individuals involved in sustainable construction and sustainable development in the years to come.

REFERENCES

Black, H. C., *Black's Law Dictionary, Ninth Edition*, West Publishing Company, Eagan, MN, 2009.

BRE Global Ltd., *BREEAM: the Environmental Assessment Method for Buildings around the World*, <http://www.breeam.org/>, 2011.

Building Green, LLC, *The Cost of LEED: A Report on Cost Expectations to Meet LEED-NC*, BuildingGreen.Com, Brattleboro, VT, 2010.

Coles, D.H. & Naoum, S.G., *Dissertation Research and Writing for Construction Students*, Butterworth – Heinemann, Oxford, 1998.

Dator, M.S., *Green Building Regulations: Extending Mandates to the Residential Sector*, 37 Boston College Environmental Affairs Law Review 393, 2010.

Earth Day Network, *About Earth Day Network*, <http://www.earthday.org/>, 2011.

Eichholtz, P., et al, *The Economics of BREEAM*, RICS Research report, 2010.

HQE - GT International, *Sustainable Building in France: A Progress Report*, Prepared for the SB08 Conference, Melbourne, Australia, 2008.

International Code Council, Inc., *International Green Construction Code*, Public Version 2.0, Country Club Hills, IL, 2010.

Kaplow, S.D., *LEEDing the Way: Policy and Legal Issues with Green Building and Design*, 38 University of Baltimore Law Review 375, 2009.

Kraska, J.C., *Global and Going Nowhere: Sustainable Development, Global Governance & Liberal Democracy*, 34 Denver Journal of International Law & Policy 247, 2006.

Kreis, S., *The History Guide: The Laws of the Twelve Tables, c.450 B.C.*, <http://www.historyguide.org/ancient/12tables.html>, 2001.

Sussman, E., et al, *Climate Change Adaptation: Fostering Progress through Law and Regulation*, 18 New York University Environmental Law Journal 55, 2010.

USGBC, *Greening the Codes: Building Codes Begin to Broaden their Charge to Include Human and Environmental Impacts of Buildings into their Health and Safety Mission*, US Green Building Council, Washington, DC, 2006.

USGBC, *Welcome to the USGBC*, <http://www.usgbc.org/>, US Green Building Council, Washington, DC, 2011a.

USGBC, *Financing and Encouraging Green Building in Your Community*, US Green Building Council, Washington, DC, 2011b.

USGBC, *Green Building Incentive Strategies*, US Green Building Council, Washington, DC, 2011c.

United Nations, *UN Millennium Development Goals*, <http://www.un.org/millenniumgoals/>, United Nations, New York, NY, 2011.

Yudelson, J., *Green Building Trends: Europe*, Island Press, Washington, DC, 2009.

Zikmund, W., *Business Research Methods*, Dryden Press, London, 1997.