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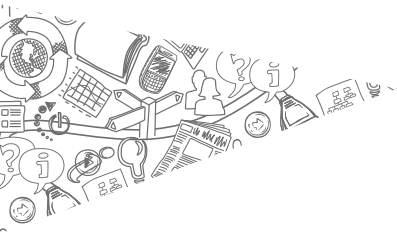
TM Rio 2016

Sustainable Buildings in Brazil



Introduction

Sustainable construction in Brazil

The sustainable construction industry has been growing in leaps and bounds in Brazil. The movement began in 2007 with the first Leadership in Energy and Environmental Design (LEED) certification of a building in South America and the arrival of leading NGOs in Brazil, such as the Green Building Council Brasil (GBC). GBC has relied on heavy investment in education, partnerships with universities to create MBA programs in sustainable construction, dissemination of LEED sustainable certification practices and a solid relationship with the government.

LEED is an international certification and environmental guidance system, used in 143 countries, that ensures that a building is environmentally sound.

The first building to receive LEED certification in Brazil was an ABN Amro bank branch, in June 2007. Next, with the acquisition of the institution by the bank Santander, the sustainable construction practices were adopted by all of the bank branches of the Spanish group. After this pioneering effort, the transformation of the sector has accelerated.

In 2007, there were as many as 48 buildings certified or awaiting certification in Brazil. Since then, this number has only grown.

In 2010, it rose to 235. In 2011, to 433. And finally, in 2012, it jumped to 652. Among the 140 countries that have LEED certified buildings, Brazil has already moved up to fourth place with 2,089,195.20 m² certified, trailing only the United States, the United Arab Emirates and China.

The highest concentration of certified projects (either registered or awaiting certification) is in São Paulo and Rio de Janeiro. In 2012, for example, there were 32 projects certified and 103 awaiting certification in São Paulo. In Rio de Janeiro, there were six that earned the LEED seal and another 52 awaiting certification.

The following original research was produced by EY and Green Building Council Brasil.

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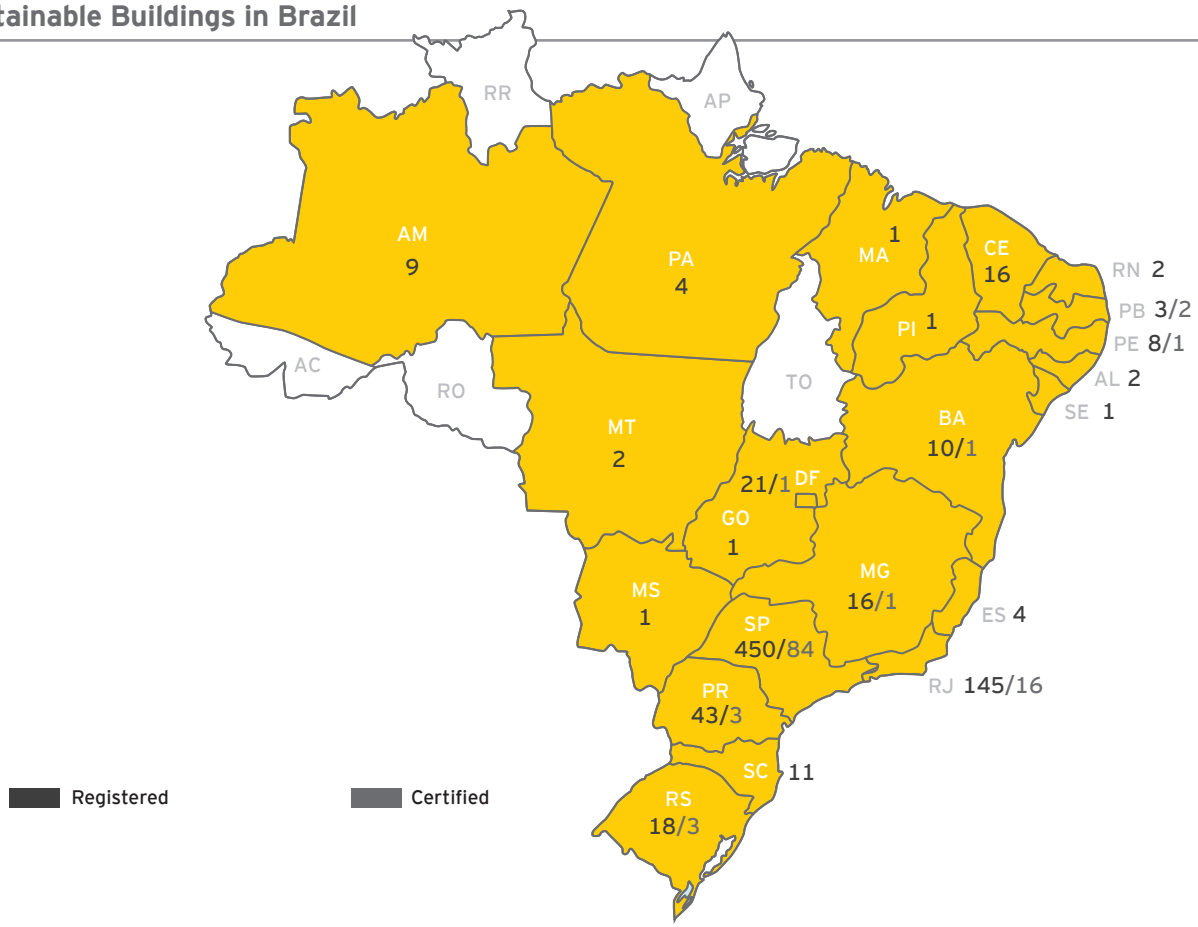
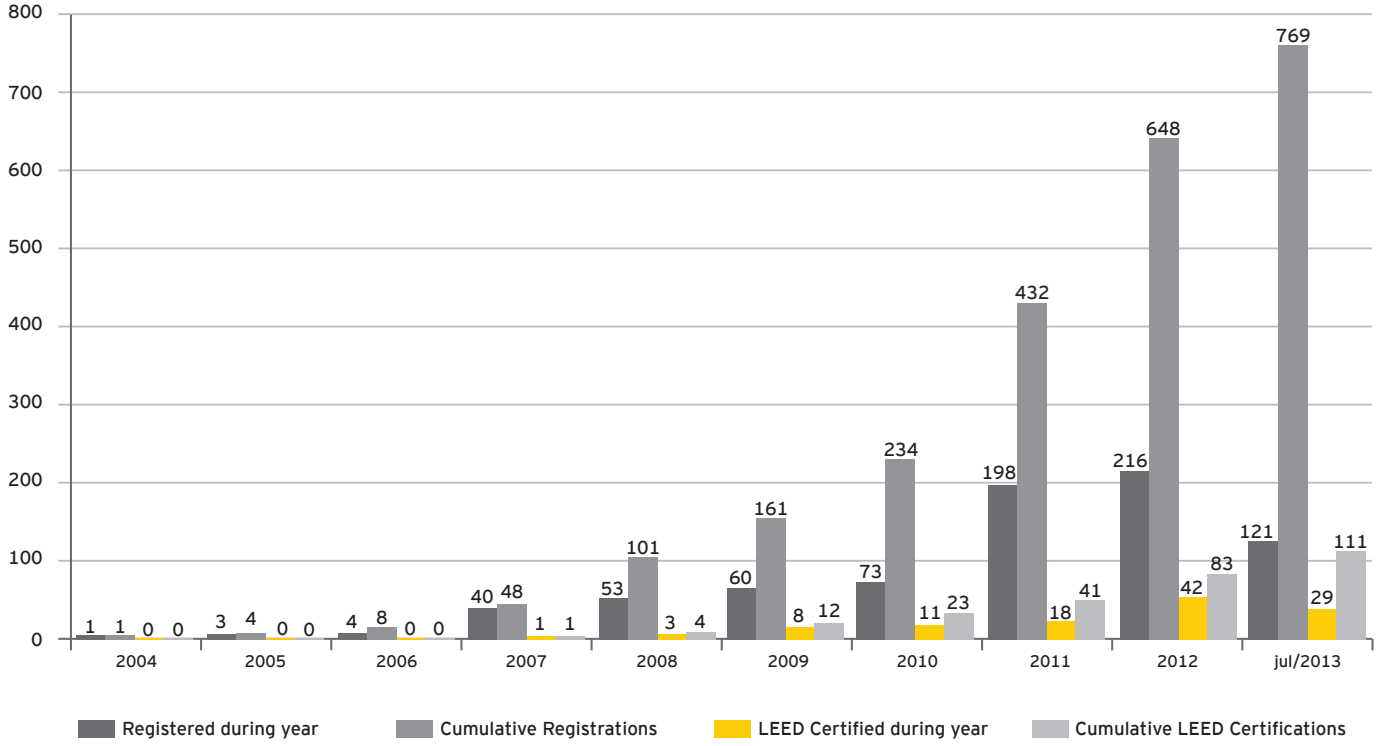


According to data from the GBC, although the highest concentration of certified or registered projects are located in Brazil's two largest metropolises, there are LEED certified projects in practically all regions of Brazil.

The outlook for 2013 is that the upward trend will continue. In July 2013, the number of projects registered totaled 769 (over 33 million m² undergoing certification), with 109 certified. GBC Brasil projects that by the end of 2013 there will be 900 projects registered with 120 certified, and that Brazil will move up a notch to third in the world ranking.

LEED Registrations and Certifications in Brazil



Advantages

The advantages

Although it is not the only certification system, LEED is the one with the widest international recognition and the most popular in Brazil. The organization certifies commercial and residential buildings, industrial plants, laboratories, supermarkets, restaurants, hotels, stadiums and multi-sport arenas, public buildings, data centers, logistics facilities, distribution centers and even museums and schools.

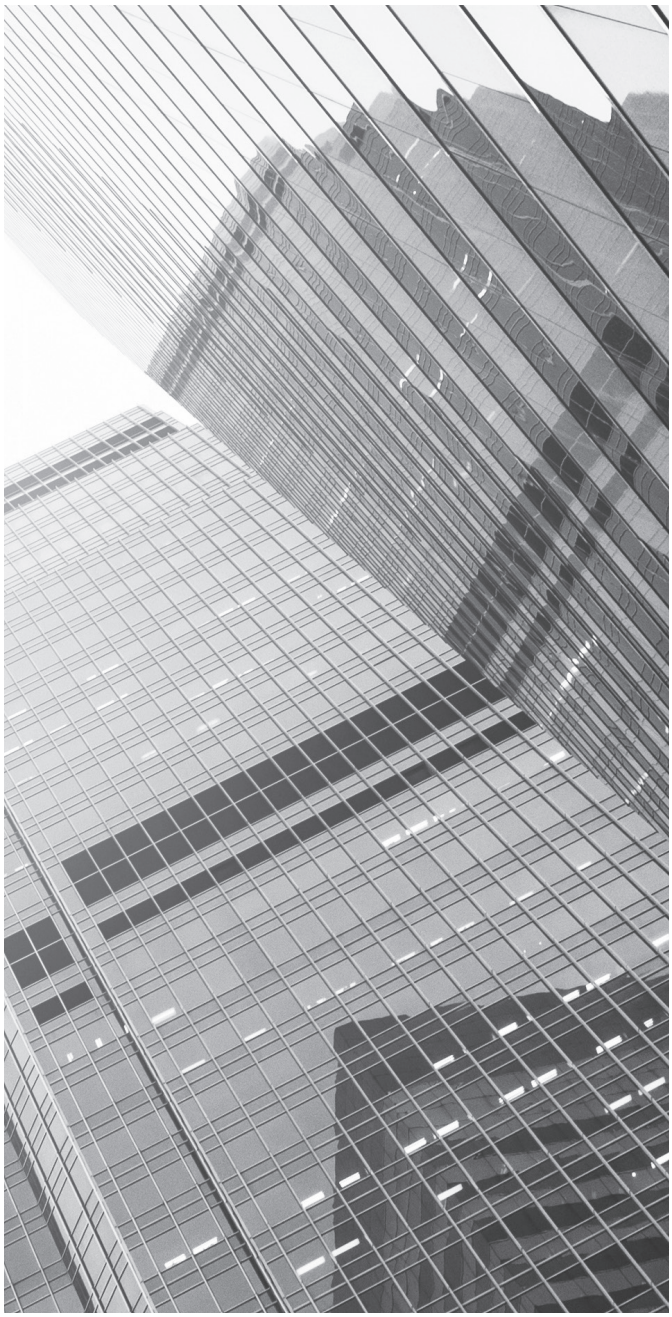
The advantages of sustainable construction are evident and can be categorized in terms of economic, environmental and social benefits. Economically speaking, investors, tenants and builders strive to cut operational costs, reduce regulatory risk, add value to an asset, make property appreciate for resale or leasing, and extend a building's service life.

The cost of constructing of a green building is on average 1% to 7% higher than a comparable traditional building. Offsetting this difference, the return on investment is 9.9% higher for new construction and 19.2% for existing buildings. Moreover, investment in sustainable construction can reduce condominium expenses by as much as 10% over the entire service life of a building—50 to 60 years—calculated based on savings from energy, water and operational costs, such as maintenance and renovation.

Sustainable buildings have become more popular since 2007 because the market has recognized that "green construction" adds value. One of the reasons is that the additional expense of incorporating sustainability is absorbed over time. There is also the perception that sustainable buildings attract buyers and that environmental responsibility influences the purchasing decision, allowing developments to be sold faster. For the investor, there is a growing sense that adding socioenvironmental initiatives to a brand brings greater returns in terms of image.

With regard to construction costs, it is important to stress that excellence in planning and design, the builder's experience in mitigating socioenvironmental impacts and construction site efficiency can result in certified buildings that cost no more than traditional buildings.

The benefits to the environment arise from the efficient use of natural resources, lower emissions of greenhouse gases, reduced impacts from climate change, use of construction materials with low environmental impact and treatment and reuse of materials used in construction. A study by GBC of certified buildings around the world shows that certified buildings spend up to 30% less on energy, release 35% less C02—the greatest contributor to the greenhouse effect—cut water consumption by 30% to 50% and waste by up to 60%.

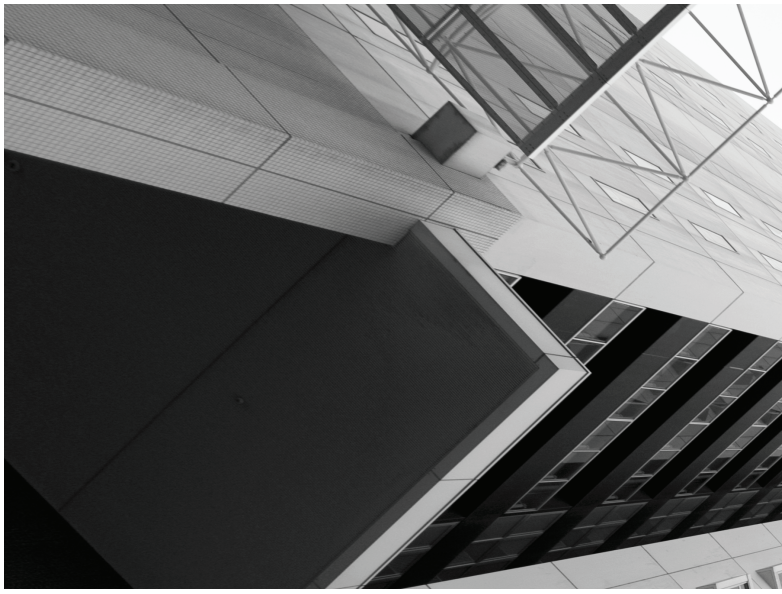


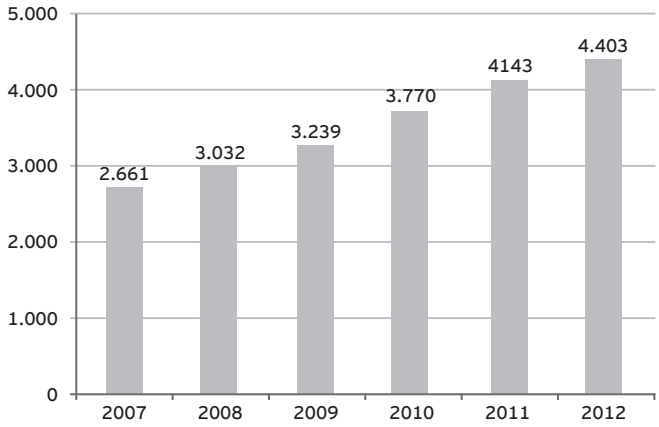
Economics and GDP of construction sector in Brazil

It is important to determine the role of "Green GDP," and how its growth is related to that of the Brazilian economy as a whole and the construction sector in particular.

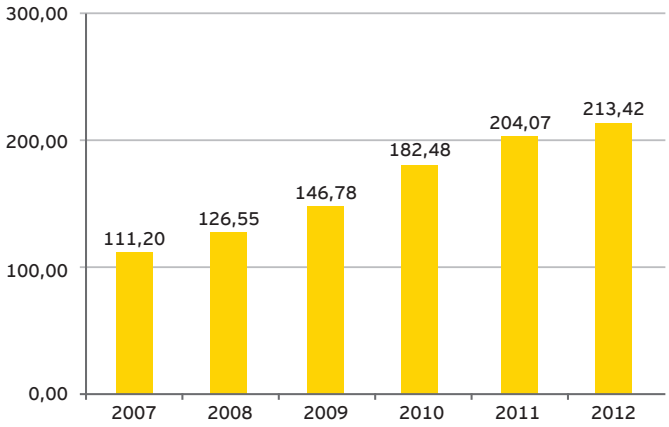
After two consecutive years of outstanding gains in Brazilian GDP—with a peak of 7.5%, in 2010—the Brazilian economy slowed in 2012, posting growth of just 0.9%, much lower than initially projected and the worst result for GDP since 2009.

While the final figures for Brazilian GDP for 2012 remained weak, the construction sector ended the year with growth of 4%. Although somewhat slower than the 4.8% recorded for 2011, the sector celebrated the creation of jobs. The employment rate rose by 5.8% compared to the previous year, which means that there are currently 3.415 million legally registered workers employed in construction projects throughout the country.





Brazilian GDP in current BRL
Source: IBGE



GDP of Construction Industry in current BRL
Source: IBGE

The outlook for the coming years is for an accelerated rate of growth in construction. Although the rate of expansion will tend to be slower than that experienced between 2006 and 2010, the construction chain should continue to drive growth in Brazilian GDP, marking progress in both the real estate market and infrastructure.

Even with the uncertainties surrounding the performance of the global economy in 2013 and 2014, still affected by the slow rate of recuperation of the US economy, recession in the euro zone and slowing production and external demand for China, the outlook points to a resumption of stronger growth in Brazilian GDP. The government maintains its projection of 3% growth this year.

And the construction chain will be one of the springboards for growth in Brazilian GDP.

Growth in the construction sector is not expected to be as high as seen between 2006 and 2010, but progress in the infrastructure segment is expected from initiatives such as the federal growth acceleration program (PAC) and from new concessions for ports, airports and highways, as well as the property segment.

In current amounts, the output of the construction industry in Brazil rose from R$ 111.20 billion, in 2007, to R$ 182.48 billion, in 2010. Last year, it was worth R$ 213.42 billion, according to the Brazilian Institute of Geography and Statistics (IBGE).

The share of construction in GDP

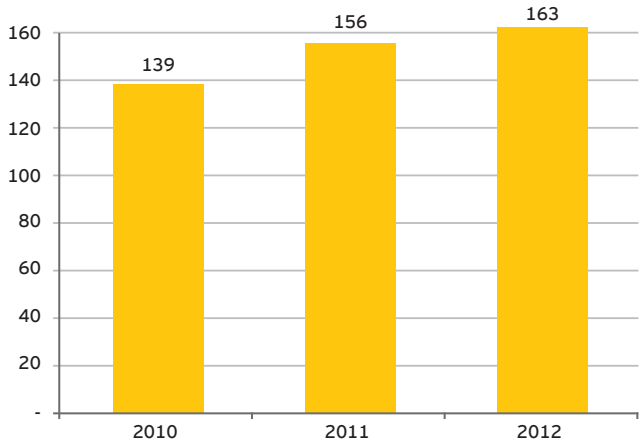
The construction industry plays an important role in investments made in Brazil, including investment in the construction of infrastructure—highways, airports, sewer systems, schools, hospitals, houses, residential and

commercial buildings and industrial facilities, as well as their maintenance and renovation.

It is clear from the following graphs that the largest share comes from privately managed developments, private construction and construction companies that carry out projects or stages of engineering projects.

All of the construction segments show high rates of growth for the years 2007 to 2010, driven both by increased public investment and increased investment from private companies.

However, starting in 2010 a moderate (though continuous) expansion was observed in the growth of the total number of buildings constructed which use LEED certification, driven both by the demand for residences and commercial buildings and by demand for other types of buildings (such as industrial facilities, hospitals, schools and stadiums).



Brazilian GDP in current BRL
Source: IBGE

The GDP of green construction in Brazil and the boom in certification

Even with the erratic performance of the domestic economy over the last six years, all segments of the construction sector presented high rates of growth for the years 2007 to 2010. The segment of buildings was one of the highlights, with output rising from R$ 139 billion, in 2010, to R$ 163 billion, last year.

Since 2010 this growth has been accompanied by a moderate (though continuous) increase in the number of new buildings that use LEED certification, driven both by the demand for residences and commercial buildings and by demand for other types of buildings. The higher demand for sustainable developments is reflected by the growing importance of these buildings in construction's share of Brazilian GDP. In 2010, "green buildings" made up no more than 3% of the total, a percentage that doubled the following year and topped 9% in 2012. It is important to remember that the percentages calculated are based on the number of buildings undergoing certification and their projected market value per square meter (m²).

According to information from the Green Building Council (BGC) the highest volume of certifications using the LEED methodology comes from high-end commercial developments, which are primarily aimed at meeting the needs of investors and large corporations. The southeast region concentrates the highest number of these developments, but the concept is taking hold in other regions. There are many examples of construction projects for the 2014 World Cup and the 2016 Olympics with this in mind.

The 12 stadiums that will host the 2014 World Cup are currently pursuing LEED certification, in addition to other

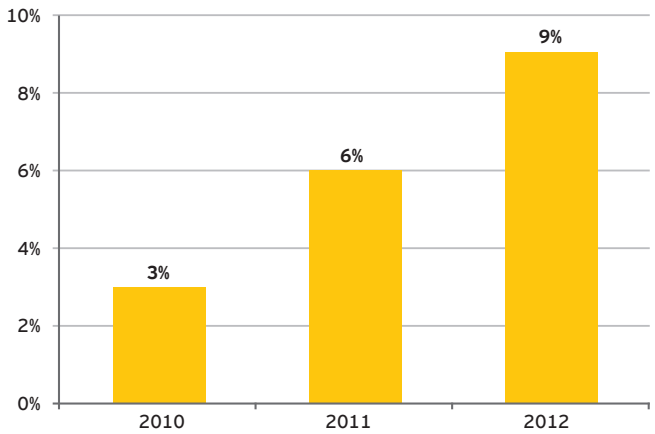
arenas that are not part of the World Cup, such as the Palmeiras Arena, in São Paulo, and Grêmio's, in Porto Alegre. In Brasília, the recently inaugurated Mané Garrincha Stadium has a photovoltaic system that is designed to produce 2.5 MW of energy, which is enough to light the entire area surrounding the sports arena. In addition, the technologies for the harvesting, treatment and reuse of rainwater will make it possible to reduce water consumption by 80% as compared to conventional stadiums.

The Corinthians Arena, which is slated for completion in December 2013, will also have photovoltaic panels to generate electricity, a modern system for rainwater collection, use wood from certified forests and a lighting system that uses LED bulbs, which are 80% more economical than fluorescent bulbs and have a longer service life.

The Olympic Park in Rio de Janeiro and the revitalization of the port zone, the Maravilha Port, are also examples of projects that are being built based on the principles of sustainability and some of these buildings are also pursuing certification. Rio de Janeiro also has plans to set aside an area for research companies, and the construction will follow the principles of international certifications.

In the same area, located on Bom Jesus Island (popularly known as Fundão), the city is investing in recycled asphalt and a more efficient public lighting system. The design of the Petrobras Research Center, the largest of its kind in Latin America, involved the work of over 200 professionals from different fields who discussed every possible detail in an effort to minimize the impact of the new buildings on the environment, such as the use of natural light and ventilation, rainwater collection and subsequent treatment and release to help clean Guanabara Bay.

This evidence is supported by a substantial increase in the share sustainable buildings contribute to GDP.



Percentage of Buildings in GDP employing sustainable construction
Source: IBGE/GBC Brasil
**The percentages were obtained based on the number of building undergoing certification and their projected market value per square meter.*

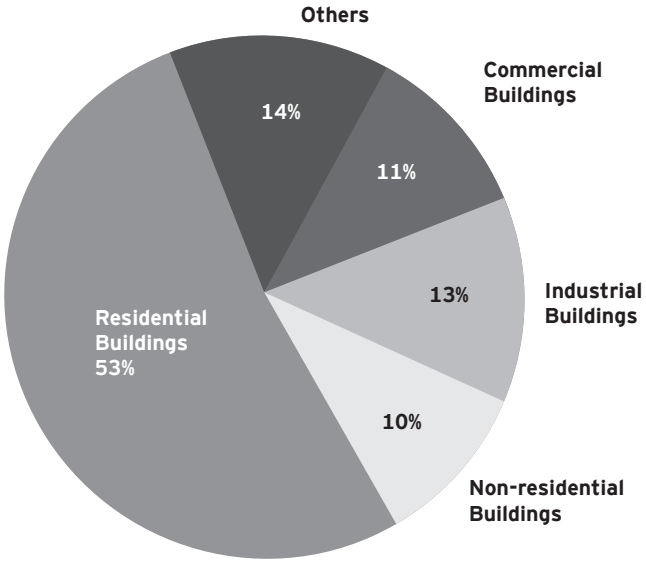
GDP of Sustainable Buildings

According to the Annual Survey of the Construction Industry (PAIC) conducted in 2010, around 20% of the buildings are commercial (shopping centers, supermarkets, stores, etc.) or nonresidential buildings not specified previously (hospitals, schools, hotels, parking garages, stadiums, etc.). Of this total, roughly 65% are office buildings.

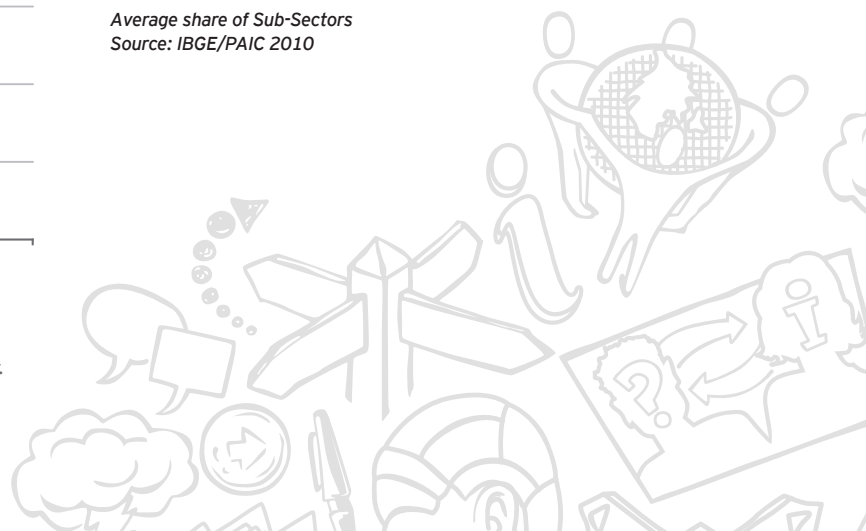
Construction output is the result of the activities of established companies and households, which carry out their own construction or contract others to build or carry out renovation and maintenance on their residences.

Estimates for the amounts regarding the companies were taken from the Annual Survey of the Construction Industry (PAIC). Estimates for households were based on data from the National Household Sample Survey (Pnad) and the Urban Informal Economy (Ecinf, 2003), all from the IBGE.

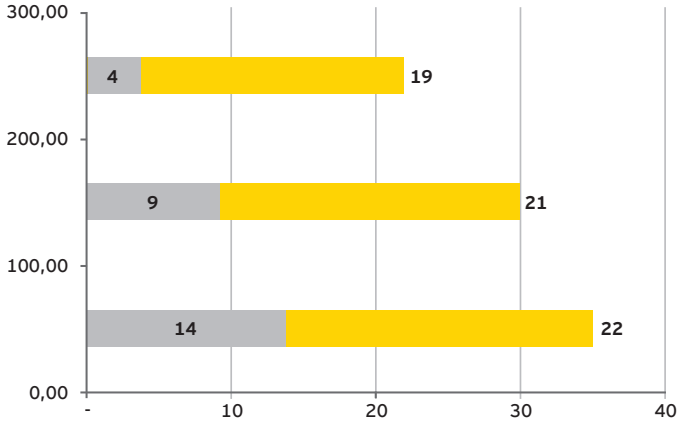
PAIC is the most comprehensive survey of the structural characteristics of the Brazilian construction industry. It is based on a series of economic information collected from construction companies throughout Brazil.



Average share of Sub-Sectors
Source: IBGE/PAIC 2010



Considering the representativeness of noncommercial buildings, including offices, and the number of square meters certified and registered by LEED, we can see that its share of the market has increased considerably over the last three years.



In billion BRL
Share of buildings, Non-commercial – Offices in GDP

How the government can help

Despite the growth—and because it is already responsible for 9% of Brazilian GDP for buildings—the sustainable construction industry still has a long way to go.

And faster growth will depend on specific federal government policies, since 19% of Brazilian GDP is dependent upon public spending. The response in terms of incentives for the so-called "green economy" has been positive up until now. The theme was part of the Brazilian agenda in discussions at Rio + 20, held in July 2012.

An example is the publication of Presidential Executive Order 7.746/2012, created to clear up any confusion regarding Law 8.666/93. The law says that when government auctions are being prepared for the purchase of goods and merchandise and contracts for construction, public administrations must consider sustainability as one of the main items in the technical criteria for awarding contracts. The call for bids must also stipulate the use of construction materials containing recycled components that are non-toxic and biodegradable, along with other sustainable criteria.

The projects must be carried out in a way that provides lower maintenance and operational costs, efficient use of energy and water, and technologies and practices that reduce environmental impacts.

Another recent change is that public officials can now use certifications to guide their decisions and as an assurance that a product has a low impact on the environment.

The federal government makes it clear that the best choice for a public administration is not necessarily the one with the lowest construction cost, but rather the one with the lowest cost in terms of operation, maintenance and socioenvironmental aspects.

Two years before, the Ministry of Planning issued the norm 001/2010, regulating the use of sustainable criteria for the public purchase of products and for construction contracts. Public officials therefore need to be alert to certain regulations governing the auction processes, such as:

- Use of natural ventilation and air conditioning systems only in areas where natural ventilation cannot provide satisfactory results;
- Automated lighting systems, and exclusive use of fluorescent bulbs;
- Use of solar panels or other clean technology for water heating;
- Individual meters for water and electricity;
- Water reuse and treatment;
- Collection and reuse of rainwater;
- Use of recycled and biodegradable materials;
- Use of legal or certified wood;
- Use of local labor, technology and materials;
- Program for loss management.

Cities on the front line

At the municipal level, there are policies to foster sustainable construction through tax incentives. In most cases, these come in the form of discounts on property tax (IPTU) when the owner employs sustainable construction practices in accordance with the incentive. There is also a noteworthy increase in calls for changes to municipal building codes and for changes to master plans, which focus discussions on sustainable urban planning.

According to the GBC, the tremendous growth seen in sustainable construction in the private sector, when associated with public incentives and sporting event initiatives, will foster the creation of a broad channel to disseminate concepts, practices and technologies that will culminate in a rapid expansion of this movement and a representative share of residential buildings in Brazil.

The technical standards in the construction industry will also continue to rise, where solutions that stand out for their innovation, efficiency and ability to mitigate socioenvironmental impacts will play an important role and help to drive the market forward.

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In 2012, EY Brazil became an Official Supporter for the Rio 2016TM Olympic Games and an exclusive provider of Advisory services for the Organizing Committee. The alignment of the Olympic Movement's and EY's values was critical for this initiative.

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