



Singapore: Green Building

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Summary:

The Government of Singapore (GOS) has gone into high gear to encourage the local construction industry to adopt green features in their projects. The GOS has committed approximately \$47 million worth of incentives for creating a green built environment. These incentives, together with the commitment by the government to adopt Building and Construction Authority (BCA) Green Mark certification for new public buildings, are part of the overall Green Building Masterplan that BCA had developed to drive the promotion and demand for green buildings in Singapore. Separately, the Singapore Economic Development Board is committing US\$234 million for the green energy push. Singapore is a signatory to the Kyoto Protocol, through which the island city-state is committed to cutting 5.0% of greenhouse gas emissions by 2012.

The market potential in Singapore for technologies, systems and equipment used in the construction of environmentally sustainable buildings (green buildings) is becoming stronger. This covers all types of systems and products to improve energy and water efficiency of a building, technologies and equipment that improve indoor air quality, construction systems that reduce noise and air pollution, as well as recyclable building materials.

Construction demand in 2008 is estimated to have reached a record high of \$23.1 billion due to strong demand for private residential and commercial developments as well as public residential and civil engineering works. With public sector projects leading new construction works in 2009, the total construction demand is projected to reach between \$14.7 billion and \$18.7 billion. Based on these projections, there are many opportunities to supply green construction technologies and materials to the local construction industry. The Government of Singapore's strong encouragement of local industry to adopt green technologies is providing an added boost in line with its commitment to reduce greenhouse gas emissions under the Kyoto Protocol.

Market Demand:

This market assessment is based upon the private and public construction sector demand and its impact on the green building market.

Prospects for Construction Demand in 2009:

According to the Building & Construction Authority (BCA), 2009 will be another good year for Singapore's construction industry. BCA's preliminary forecast indicates the total construction demand will reach between US\$14.7 billion and US\$18.7 billion in 2009.

Public Sector Demand:

Public sector construction demand this year is anticipated to increase to between \$11.3 billion and \$12.7 billion, largely fuelled by infrastructure projects such as the MRT projects (Downtown Line, the North-South Line Extension and Jurong East Connection) and major road projects. Other major public sector projects to be awarded will include public housing, redevelopment of the Singapore General Hospital Pathology Education Research Building and National Heart Center, as well as the new International Cruise Terminal.

Private Sector Demand:

Private sector demand is projected to moderate significantly to between \$3.3 billion and \$6.0 billion in 2009 on account of the weakened economic outlook. Nevertheless, higher demand for private institutional and other buildings will provide some support to the overall private sector construction demand.

The ongoing development of two Integrated Resorts and the Marina Bay Financial Center are expected to propel commercial construction demand further. Other major commercial projects in the pipeline include Asian Retail Mall Fund II's shopping mall at Tampines Central, City Developments' marina hotel at Sentosa, and Meritus Mandarin hotel refurbishment at Orchard Road.

Institutional and other building construction taking place include the construction of the Sports Hub and recreational facilities like the NTUC's beach club at Palawan Beach at Sentosa and Singapore Island Country Club's new recreation clubhouse.

Prospects for Construction Demand in Medium Term:

According to the BCA, the average annual construction demand forecast for the next two years, 2010 and 2011, has been projected to range between \$13.3 billion and \$18 billion. The bulk of the new construction demand will primarily come from infrastructure developments, new public housing and institutional projects driven by the public sector.

Green Building Technologies and Sustainable Construction in Singapore:

With growing global concerns on the sustainability of the built environment, there is increasing pressure for the Singapore construction industry to consider the environmental impact of their projects. In view of unpredictability of energy costs, there is also an increased interest in energy efficiency and the benefits of environmentally-friendly green buildings in Singapore. This is especially so given that Singapore is a signatory to the Kyoto Protocol, through which the island city-state is committed to cutting 5.0% of greenhouse gas emissions by 2012.

The Government of Singapore (GOS) has gone into high gear to encourage the local construction industry to adopt green features in their projects. The GOS through the auspices of the Building & Construction Authority (BCA) has committed approximately \$47 million worth of incentives for creating a green built environment. These incentives, together with the commitment by the government to adopt BCA Green Mark certification for new public buildings, are part of the overall Green Building Masterplan that BCA had developed to drive the promotion and demand for green buildings in Singapore.

The GOS has set aside about US\$13 million over the next three years for the Green Mark Incentive Program. This program will offer cash incentives to private developers and building owners that make an effort to achieve at least a BCA Green Mark Gold rating, or higher, for new or retrofitted buildings with a Gross Floor Area of more than 5,000 square meters.

The other US\$34 million has been set-aside to be used within the next five years for a new Research Fund for the Built Environment. This Fund aims to intensify research and development efforts in green building technologies and energy efficiency. Separately, the Singapore Economic Development Board is committing US\$234 million for the green energy push. As part of this push, Singapore hopes to be a testing ground for new technology such as the latest solar panels or fuel cell engines.

The GOS has mandated that from April 2007, all new and retrofitted public sector buildings are required to be BCA Green Mark certified. The Housing & Development Board (HDB) has already set in motion to obtain certification for all new public housing since January 2007. The BCA continues to work closely with the relevant agencies and the private sector to encourage the adoption of a green built environment.

The HDB unveiled its first 'green' housing project with the launch of [Treetops@Punggol](#). This green project will comprise 712 units in seven 16-story blocks, and it is expected to be completed in 2011. This is the culmination of efforts to make public housing here more in sync with nature. Among the eco-friendly features at the [Treetops@Punggol](#) include:

- Trees planted in the basement car park that emerge onto a garden on the roof, which itself will be covered with lush greenery. This will reduce outdoor temperatures by as much as 4 degrees Celsius.
- 'Cool' walls – made of concrete and foam – which lower temperatures inside apartments and reduce the need for air-conditioning, and reducing power bills.
- An 'integrated wash basin' which channels used water into the toilet cistern for the next flush.
- A centralized chute for recyclable materials on every floor.

Despite initial reservations over the premium prices and its remote location, the first eco-precinct through [Treetops@Punggol](#) has received an enthusiastic response during its launch. According to the HDB, a whopping 3,356 applications were submitted for the 712 units at [Treetops@Punggol](#). This clearly demonstrates the acceptance of Singaporeans' desire for a green built environment.

Private sector projects seeking the Green Mark have increased almost ten-fold, from 13 in 2005 to 129 in 2007. Another 200 projects are currently awaiting Green Mark assessment. City Developments is leading the private sector charge with 12 buildings already boasting the Green Mark. It is developing eight of the 17 upcoming private green buildings, such as City Square Mall, The Oceanfront at Sentosa Cove and One Shenton. CapitalLand also has four green buildings: Varsity Park Condominium, Capital Tower, One George Street and Plaza Singapura under its belt. Another developer, Frasers Centerpoint is building green homes including the ones at The Azure at Sentosa Cove and The Infiniti. These residences feature energy-saving installations such as solar-powered light-emitting tiles outdoors and solar-powered water heaters at the clubhouse plus; water-saving installations including dual-flush systems in the bathrooms. Rainwater is harvested and treated for non-potable use as well. Sun pipes bring natural light to basement car parks, while green roof shade block direct sunlight and lower the temperature of the building facade. Other features such as the pneumatic refuse collection systems improve hygiene and environmental quality.

The Marina Bay (Singapore Sands) Integrated Resort is in talks to obtain the green mark. Singapore's newest hospital, Alexandra Hospital, is also shooting for the Green Mark accolade when it is completed in mid-2009. The hospital will feature roof gardens, energy-efficient lighting and air-conditioning systems, rainwater harvesting technology and solar panels. Also in the pipeline are more "green" HDB housing blocks for which the HDB is in active discussions with various town councils to install green features in existing estates.

These developments certainly augur well for the prospects of companies providing eco-friendly products and services. For instance, Singapore firm Etam Holdings, which manufactures and sells compost units that convert foodwaste into fertilizers, is looking forward to higher sales. Its Managing Director said: "There is definitely a big demand, but it is still going to take a bit more time to change local mentality of investing in green products."

Nevertheless, the push for a greener built environment is an important priority for the GOS, and they are undoubtedly moving ahead. The BCA's Green Mark program (an equivalent of the U.S. LEED program) will serve as a catalyst to award cash incentives to green buildings that fit its criteria. The award of various grades, ranging from certification to Platinum, also helps homebuyers confidently identify green homes in the market. Since 2005, 34 projects have been certified green. BCA is now processing 50 more applications and is targeting to have 500 certified 'green' buildings each year by 2015. More information on green buildings can be obtained at <http://www.greenmark.sg>.

Besides public sector initiatives in the form of regulations, incentives and funding, other measures will be introduced to help steer the real estate and construction sectors toward higher standards of sustainability. For

example, the GOS is considering amending the Building Control Act to impose minimum requirements on environmental sustainability that are equivalent to the Green Mark certified standards for new buildings and existing ones that undergo major retrofitting. Such strong legislative policies and incentive programs are a good start to encourage the Singapore construction industry to go green. Using the [Treetop@Punggol](#) experience as a guide, there is no doubt that the general public is becoming more aware of the benefits derived from green buildings which will arguably lead to an eventual acceptance of green homes.

Market Data:

Due to the infancy stage of 'green' development in the Singapore construction industry, no statistical data are available to meaningfully reflect the market size. However, as one of the key pillars of Singapore's economic development, the combined water and clean-energy industries alone are estimated by the Singapore Economic Development Board to contribute about US\$2.3 billion to Singapore's GDP and are expected to provide 18,000 jobs by 2015. Therefore, there is great potential for U.S. firms to take advantage of these opportunities to supply 'green' solutions for commercial applications in Singapore.

The local market generally prefers technologies or systems that have been used elsewhere and that are successfully proven as a reliable product. In this sense, American technologies are generally looked upon as a source of proven technologies, consequently U.S. firms tend to have an advantage selling to the Singapore marketplace.

Although U.S. products are known for their high quality and efficiency, there is room for improvement in the after-sales service.

Best Prospects:

According to trade sources, there are good sales opportunities for the following 'green' technologies and equipment:

- One area with particular potential is the building-integrated photovoltaic (BIPV) system, which integrates solar panels into the facades of buildings.
- Low emissivity double-glazed window to reduce heat gain.
- Indoor environment quality systems/technology such as the low-VOC (Volatile organic compound) and environmentally-friendly interior paints and finishes that improve the overall indoor air quality of the home.
- Smart controls such as programmable time-clock settings, integral equipment controls, lighting photocells, and occupancy sensors for proper operation to minimize the use of energy.
- Recyclable building materials and self-cleaning external façade.
- Rooftop and vertical greenery to lower temperature and heat gain on building surfaces.
- Water saving technology such as stormwater harvesting systems to collect rainwater for non-potable use.

Key Suppliers:

With limited indigenous manufacturing of 'green' technologies and no duties on these imports, the Singapore market is open. As such, a number of foreign companies' products are already established here, and pricing is competitive.

The market for green technology in Singapore is characterized by a large number of manufacturers competing in a small market. There are two major suppliers SolarWorld (Germany) and European based Coenergy. The Japanese are also moving aggressively into Singapore. Japanese suppliers are penetrating the market by competitively pricing their products and adopting aggressive marketing policies. The present market practice among competitors is to offer a competitive price and favorable financing terms, which the Japanese suppliers have successfully adopted.

Many Singapore developers and distributors are eager to source American products. They are particularly interested in hearing from U.S. suppliers of all types of green technologies and equipment. American technologies and equipment enjoy a good reputation in terms of quality, but many feel the products are priced too high. Another complaint is that American suppliers do not take Singapore seriously, meaning they do not employ effective product marketing strategies and do not make the commitment to provide sufficient after sales service support to their customers and local agents/distributors.

In sum, Singapore is a lucrative and competitive market. U.S. suppliers must be committed in following up with good after-sales service in order to successfully maintain their customer base and retain market share in the long term.

Prospective Buyers:

The principal users of 'green' technologies and equipment can be classified into three groups:

(A) Government Agencies:

The primary government agency involved in the provision of public housing is the Housing & Development Board. The public industrial construction provider is the JTC Corporation.

(B) Private Developers:

There are over 150 property developers in Singapore. The key developers are members of the Real Estate Developers' Association of Singapore (REDAS).

(C) Construction companies:

There are approximately 200 contractors operating in Singapore. The majority of these contractors are also members of the Singapore Contractors Association, and can be presumed to represent the principal contractors in the industry.

Market Entry:

Many American exporters use agents or distributors to serve the Singapore and other markets in Southeast Asia. Finding prospective partners presents no problem. Singapore firms are aggressive when it comes to representing new products and usually respond enthusiastically to new opportunities. In addition, most Singaporean companies are open to joint venture proposals, and many are interested in manufacturing under license.

Price, quality and service are the main selling factors in Singapore. Prospective exporters to Singapore should be aware that competition is strong and that buyers expect good after-sales service. Selling techniques vary

according to industry or the product involved but they are comparable to the techniques used in any other sophisticated market. It is also important for U.S. firms to visit their representatives and maintain a good relationship with them.

Appointment of Distributor/Agents: there is no special legislation in Singapore covering agency agreements. In the absence of this, the Singapore's Common Law of Practice applies.

Methods of Operation for American Companies: the principal methods of operations for American companies in the Singapore market are through:

- A branch of the American firm or an associated company incorporated as a full subsidiary based in Singapore.
- A representative sent out from the United States and stationed permanently in the area. He or she may not be directly responsible for obtaining orders and making sales, but supervises local distributors and/or agents.
- An agent appointed in Singapore. Local firms which act as agents range from small trading companies, working on a small project basis to large engineering installers representing a number of manufacturers in several categories of construction related products. Such organizations handle a large share of the construction related products business and generally have branches throughout the area.
- Direct sales on an open market basis. This method is only successful if the U.S. suppliers have already developed well-established connections.

In view of the competitive nature of the local business environment, it is recommended that any new-to-market American company appoint a local representative. Once business has matured, the establishment of a representative office might then be desirable to serve as a launching pad into the region.

Trade promotion and advertising: There are specialized trade magazines in Singapore and many trade fairs (<http://www.sgmeetings.com>) that could serve as venues to promote U.S. construction related products and technologies. The major English language daily newspapers are the Straits Times and the Business Times and are available at <http://www.asiaone.com>. The business magazine that has the relevant features on construction themes is "Southeast Asia Construction" published by Trade Link Media Pte Ltd (<http://www.tradelinkmedia.com.sg>). The major Chinese daily is Lianhe Zaobao (<http://www.zaobao.com>). E-Commerce websites can be found at <http://www.ida.gov.sg> and at <http://www.sg>. Leads for local advertising and promotional service agencies are located at <http://www.yellowpages.com.sg>.

Financial: Shipments to Singapore are generally made under letters of credit and sight drafts, depending on the exporter's preference and the extent of past dealings with the purchaser. Standard credit terms are 30 to 90 days. The foreign departments of most major banks are well equipped to provide service and advice on matters of foreign trading and credit.

Quotations should be on a C&F basis whenever possible. The prices given may be either in Singapore or U.S. dollars. Exporters making quotations in Singapore dollars should consult their banks for the prevailing exchange rate. Singapore uses the metric system, so it is often beneficial for price/quantity quotations to be prepared accordingly.

Market Issues & Obstacles:

There are excellent opportunities for U.S. firms to sell green technologies and equipment into the Singapore market as the country is virtually a free port. There are no duties, taxes or tariffs on imports to Singapore of all types of construction related equipment and materials from the U.S. and elsewhere in the world. The challenge is in competing with all the other suppliers from the world since it is such an open economy.

All imported goods meant for local consumption are taxable under the Goods and Services Tax (GST), which is levied at 7.0%. Goods kept in the Free Trade Zone are not subject to GST, however GST will be charged if they are later released for local consumption.

Technical Requirements and Standards: The electrical power supply specifications in Singapore are 230 volts, 50 cycles, single phase and 415 volts, 50 cycles, 3-phase. American equipment for use in Singapore must conform to these electrical requirements.

The Singapore Standard (SS) 530, which governs energy efficiency for building services and equipment, now includes key revisions to improve the minimum energy efficiency standards of air-conditioning equipment and electric motors. The SS530 standards took effect from July 1, 2007, when all new building plans submitted to the BCA can use it. Internationally recognized standards, such as the American National Standards Institute, are fully acceptable. SPRING Singapore (the Standards, Productivity & Innovation Board) is the government organization that oversees the formulation of industrial standards for almost every industry sector. Any queries relating to industrial standards should be directed to SPRING Singapore at 2 Bukit Merah Central, Singapore 159835; Tel: (65) 6279-1847, Fax: (65) 6272-1937, Contact: Ms. Susan Chong, Director, Standardization Division, email: suchong@spring.gov.sg.

Intellectual Property Rights: A legal framework that specifically provides for copyright protection of Intellectual Property has been put in place under the Copyright Act. A bilateral agreement between Singapore and the United States on the protection of Intellectual Property Rights has since been in force. However, American owners must also register their copyrights in Singapore before they are enforced locally. Infringement of copyrights should be referred to the U.S. Embassy for advice and guidance.

Trade Event:

The following forum in Singapore is appropriate for the promotion of all aspects of Green Buildings:

Name of Event: International Green Building Conference (IGBC)

Show Website: <http://www.bex-asia.com/en/About-IGBC-International-Green-Building-Conference/>

Show organizer: Building & Construction Authority (Singapore)

5 Maxwell Road

#17-00 Tower Block MND Complex

Singapore 069110

Tel: (65) 6325-7720

Fax: (65) 6325-4800

Contact: Mr. TAN Tian Chong, Director, Technology Development Division

Email: tan_tian_chong@bca.gov.sg

Date of Event: October 28-30, 2009

Venue: Suntec Singapore

Profile: The IGBC will focus on green issues concerning the industry with more emphasis on green building technologies and green building designs. The highlight of the conference is the Green Mark eco-friendly tour specially arranged for conference participants to witness and experience green buildings in operations. The IGBC will be held in conjunction with BEX Asia (<http://www.bex-asia.com/en/About-BEX-Asia/>)

References & Key Contacts:

(A) Government and Statutory Agencies:

I. Building & Construction Authority

5 Maxwell Road #16-00

Tower Block, MND Complex

Singapore 069112

Tel: (65) 6325-7720

Fax: (65) 6325-4800

Website: <http://www.bca.gov.sg>

Contact: Mr. TAN Tian Chong, Director, Technology Development Division

Email: tan_tian_chong@bca.gov.sg

II. SPRING Singapore

2 Bukit Merah Central

Singapore 159835

Tel: (65) 6279-1830

Fax: (65) 6278-6990

Website: <http://www.spring.gov.sg>

Contact: Ms. Susan CHONG, Director, Standardization Division

Email: suchong@spring.gov.sg

III. Singapore Economic Development Board

250 North Bridge Road

#28-00 Raffles City Tower

Singapore 179101

Tel: (65) 6832-6832

Fax: (65) 6832-6562

Website: <http://www.sedb.com>

Contact: Mr. Kenneth TAN, Executive Director

Email: kenneth@edb.gov.sg

IV. Housing & Development Board

HDB Hub

480 Lorong 6 Toa Payoh

Singapore 310480

Tel: (65) 6490-2583

Fax: (65) 6490-2501

Website: <http://www.hdb.gov.sg>

Contact: Mr. YAP Tiem Yew, Director, Building Technology Department

Email: yty1@hdb.gov.sg

V. JTC Corporation

The JTC Summit

8 Jurong Town Hall Road

Singapore 609434

Tel: (65) 6560-0056

Fax: (65) 6565-5301

Website: <http://www.jtc.gov.sg>

Contact: Mr. PNG Giok Hua, Director, Engineering Planning Group

Email: giokhua@jtc.gov.sg

(B) Trade Associations:

I. Real Estate Developers' Association of Singapore (REDAS)

190 Clemenceau Avenue
#07-01 Singapore Shopping Center
Singapore 239924
Tel: (65) 6336-6655
Fax: (65) 6337-2217
Web Site: <http://www.redas.com>
Contact: Mr. CHIA Hock Jin, Executive Director
Email: hockjin@redas.com

II. Singapore Contractors Association, The

1 Bukit Merah Lane 2
Construction House
Singapore 159760
Tel: (65) 6278-9577
Fax: (65) 6273-3977
Web Site: <http://www.scal.com.sg>
Contact: Mr. Simon LEE, Executive Director
Email: enquiry@scal.com.sg

For More Information

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