



# Engineering

## TEN STRATEGIES FOR SUCCESS WITHIN THE CARICOM SINGLE MARKET & ECONOMY (CSME)

November 2008

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**2008**

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## Engineering: TEN Strategies for Success Within CSME

### 1. Find Yourself within the Global Marketplace

Engineering is the discipline and profession of applying technical and scientific knowledge and utilizing natural laws and physical resources in order to design and implement materials, structures, machines, devices, systems, and processes that realize a desired objective and meet specified criteria.<sup>1</sup>

Engineering, much like science, is a broad discipline which is often broken down into several sub-disciplines. These disciplines concern themselves with differing areas of engineering work. Although initially an engineer will be trained in a specific discipline, throughout an engineer's career the engineer may become multi-disciplined, having worked in several of the outlined areas. Historically the main Branches of Engineering are categorized as follows:

- Aerospace Engineering – The design of aircraft, spacecraft and related topics
- Chemical Engineering – The conversion of raw materials into usable commodities
- Civil Engineering – The design and construction of public and private works, such as infrastructure, bridges and buildings
- Electrical Engineering – The design of electrical systems, such as transformers, as well as electronic goods
- Mechanical Engineering – The design of physical or mechanical systems, such as engines, power-trains, kinematic chains and vibration isolation equipment

### Market Size

The world market for construction-related, knowledge-based services, principally architecture and engineering, is estimated to be worth around US\$600 billion. One-half of this revenue, US\$300 billion, is generated by the internal divisions of construction companies or by firms whose principal business is not consulting engineering. This suggests that a world market worth around US\$300 billion is attributable to specialist architectural and consulting engineering firms. A high proportion of this market is made up of engineering services.<sup>2</sup>

### Trends & Drivers

The supply of engineering services remains predominantly domestic because practicing as a consulting engineer in most countries requires engineers to have a local presence and be registered with a locally

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<sup>1</sup> [Wikipedia – Engineering](#)

<sup>2</sup> Strategic Marketing Plan for the Promotion of Professional Services Exports – Trinidad. Emerging Market Economics, January 2007, page 97.

accepted professional association. Nevertheless, international trade in consulting engineering services is increasing. The factors driving the growth of the international market are<sup>3</sup>:

- The increasing globalisation of the construction industry itself as a result of cost differentials and increasing specialisation. As the construction industry becomes globalised it, in turn, causes consulting engineers to become global to serve their clients
- The growing importance of large, complex, prestige projects that can only be serviced by large, international firms of civil engineers that have the necessary expertise, experience and scale
- The shortage of engineers in some countries (e.g. the UK) and the large differentials in earnings between engineers based in the richer, developed countries, and those from central and eastern Europe, or low cost Asian countries
- The small, but rapidly growing market for outsourcing engineering services, either in-house between the offices of international firms, or externally to firms based in cheaper locations

With the rapid advancement of Technology many new fields are gaining prominence and new branches are developing such as Computer Engineering, Software Engineering, Nanotechnology, Molecular engineering, Mechatronics etc. These new specialties sometimes combine with the traditional fields and form new branches such as Mechanical Engineering and Mechatronics and Electrical and Computer Engineering.

## 2. Position Yourself within the CSME

Like their global partners, most firms within the Caribbean Single Market and Economy (CSME) serve local markets. However, the larger firms are becoming pan-Caribbean, opening offices in other countries, thereby driving the growth of trade in engineering services within the region. In addition, specialisation is increasing within the industry, spurring the use of firms based in other CSME member countries. Tenders launched for large commercial projects and donor agencies are open to firms internationally, allowing firms to work across the region. Outsourcing within the region is limited to the larger firms passing on work to their network of offices and the sub-contracting of specialists from other islands.

### Market Size

In the Caribbean, because of the small size of the market, the numbers of firms of consulting engineers is limited in each country. Barbados, Trinidad and Tobago and Jamaica have the three largest consulting engineering industries. The largest industry association, the Barbados Association of Professional Engineers, has 180 corporate members. Of its corporate members, some 40 percent actually work for companies whose main business is not engineering consultancy. The Association of Consulting Engineers of Trinidad and Tobago (ACETT), which represents the special interests of firms and individuals in private

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<sup>3</sup> Ibid.

consulting practice, has 45 members. Dominica and St. Lucia have very small industries consisting of a handful of firms, most of which are small.<sup>4</sup>

## Trends & Drivers

As the CSME becomes a reality, the trade in engineering services within the region will increase. The free movement of professionals, mutual recognition of qualifications and better ICT links will enable trade in engineering services to increase using all of the relevant modes of trade. This will enable greater specialisation to occur which should lead to a more efficient industry. However, overall, the growth of the consulting engineering industry will continue to be limited by low levels of gross fixed capital formation in the region. Achieving high rates of growth will depend upon the industry being able to export its services to larger markets such as the USA and the UK.

The Caribbean industry should be able to compete on price in these markets. In the UK, the average salary of a draughtsman is US\$55,000. And the UK is short of engineers. There are also pockets of excellence in the Caribbean, such as environmental management and disaster mitigation in Barbados and services to the oil industry in Trinidad and Tobago, which could form the basis of competitiveness in international markets. The key issues will be the extent to which the larger Caribbean firms have the ambition to invest in developing international markets and can overcome the challenges of managing businesses with international customers.<sup>5</sup>

## 3. Identify Your Service Offering

### Knowing Your CPC Codes

The Services Sectoral Classification List (WTO Document W/120), which is based largely on the provisional United Nations Central Product Classification (UNCPC), applies to services in the case of the GATS. Under the CSME, services are classified under the Central Product Classification (CPC) codes. CPC Codes associated with engineering services includes the application of physical laws and principles in the design, development, and utilization of machines, materials, instruments, structures, processes, and systems. The services included in this group include the provision of designs, plans, and studies related to engineering projects. Table 1 provides a sampling of CPC Codes related to Engineering Services sub-sectors, as well as the requirements for most CSME member states.<sup>6</sup>

**Table 1: Engineering Services CPC Codes**

SECTOR/SUB-SECTOR	CPC	REQUIREMENTS
Engineering advisory services	8331	Engineers Act

<sup>4</sup> Ibid.

<sup>5</sup> Strategic Marketing Plan for the Promotion of Professional Services Exports – Trinidad. Emerging Market Economics, January 2007, page 99.

<sup>6</sup> [United Nations Central Product Classification codes](#)

Engineering services for specific projects	8332	Board Examinations
Project management services for construction projects	8333	Unbound – subject to existing national laws
Civil Engineering Works	5332	Licences Required

## Modes of Supply

There is a mix of modes employed in delivering engineering services within the CSME. When working on projects abroad, a high proportion of trade is cross border (mode 1), as the home office of large firms will provide much of the service. Commercial presence (mode 3), in the form of local offices or representation, is playing a greater role. The larger firms, particularly consulting engineers, are beginning to establish global networks of offices whilst medium to large firms are appointing representatives. Almost all projects will involve some travel of persons abroad (mode 4) for client meetings and site inspection.<sup>7</sup> Table 2 compares the modes of supply across the engineering sector.

**Table 2: Modes of Supply**

Forms of Trade	Modes of Trade in Engineering	Examples in Engineering
Cross-border Supply (Mode 1)	Trade across borders through mail and electronic media	Business advisory research and diagnostic services transmitted via telecommunications or mail
Consumption Abroad (Mode 2)	Engineering consulting services for foreign clients	Specialized consultation for foreign clients seeking to conduct business in the region
Commercial Presence (Mode 3)	Establishment of foreign companies, subsidiaries, or foreign investment for the management or provision of engineering services	Domestic subsidiaries of foreign consultancies
Presence of Natural Persons (Mode 4)	Temporary movement of engineers to provide services abroad	Migration of engineering consultants to the UK
	Short-term engineering assignments	Professional services provided through international agencies, such as IADB, World Bank, ECLAC

<sup>7</sup> Strategic Marketing Plan for the Promotion of Professional Services Exports – Trinidad. Emerging Market Economics, January 2007, page 97.

## 4. Identify Your Target Market

The true value of identifying your company's target market is that it must clearly identify the current and prospective buyers of your company's services. Your goal in identifying the target market is to demonstrate that you clearly understand who your customers are and how your services directly meet the needs of the market place. Properly identifying your potential customer base also helps to drive your company's overall marketing and sales strategies. Business owners often under-estimate the importance of identifying their target market because their services may meet the needs of a large constituency of potential customers. However, the purpose of identifying the target market is to define your customer base as specifically as possible.

The CSME target market is comprised of (13) countries; 6 million consumers – 50 percent women; median age (40); life expectancy (65 years); literacy rate (90 percent); population 70 percent African – 20 percent Indian – 10 percent white – 25 percent less than 15 years of age; 10 percent greater than 65 years of age; with an average income of US\$6,000.00. The engineering consultant primarily targets opportunities within the public sector, although there are a few opportunities within the private sector. Having identified your target market, you should be able to answer the following questions:

- Who is buying your service?
- Which services are they buying?
- When are they buying the services?
- Where do they normally get those services from?
- Why do they buy the services?
- How much are they willing to pay for the services?

## 5. Prepare to Overcome Potential Barriers

### Access to Finance

The financial problems for engineering and other construction-related services revolves around the cost of bonds, insurances and other financial preliminaries, liquidated damages and provisions for fluctuations in the costs of inputs. The risk issue is also complicated, and cannot simply be dealt with by insurance. The financial services sector in the region needs to be much more creative in dealing with the special needs of the construction industry.<sup>8</sup>

CARICOM Heads of Government have agreed to establish a CARICOM Development Fund (CDF) to provide financial or technical assistance to disadvantaged countries, regions and sectors; as called for by Chapter 7 of the Revised Treaty of Chaguaramas. The fund was launched with an initial sum of US \$60 million towards its target of US\$250 million, an event of signal importance towards achieving the objectives of equitable distribution of the benefits of the CSME. It will provide both loans and grants to

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<sup>8</sup> Lewis, Timothy Michael, et.al., Report On the CARICOM Construction & Installation Services Sector: Elements For Competitive Strategies, page 5. February 2002.



eligible recipients, and possibly interest subsidies on loans from other institutions. Eligibility criteria for CDF assistance are set out in the Revised Treaty of Chaguaramas.<sup>9</sup>

## Professional Fees

Professional fees for engineering associations throughout the region vary in cost structures. Below are the annual fees for each grade of membership for the Barbados Association of Professional Engineers. The association in each country would determine its own fee structure.

Barbados		Trinidad & Tobago	
Grade	Fee	Grade	Fee
Graduate (G)	\$150.00	Graduate (G)	
Corporate (M)	\$300.00	Corporate (M)	
Affiliate (A)	\$225.00	Affiliate (A)	
Student (S)	\$ 25.00	Student (S)	
Honorary (H)	\$ 0.00	Honorary (H)	
Retired Members	\$100.00	Retired Members	
Fellow (F)	\$275.00	Fellow (F)	

## Regulations

Local presence and compulsory membership of a professional association are commonly required by law for an engineer to practice in a country. As such, Caribbean trained engineers lack the requisite certifications needed to practice outside the region. Barriers to practicing internationally are, however, progressively being removed, as indicated by the following<sup>10</sup>:

- Recognition of foreign qualifications is more advanced in engineering. In a number of countries, foreign professionals do not need local licences if they have a licence to practice from their home country. For example, there is a mutual recognition agreement between North American Free Trade Agreement (NAFTA) member countries for temporary and permanent licencing of engineers.
- The Washington Accord's nine signatories – Australia, Canada, Hong Kong, Ireland, Japan, New Zealand, South Africa, the UK and the US – recognise the substantial equivalency or comparability of engineering education courses that have been accredited in any of the signatory countries (the "Accredited Engineering Degree Courses"). The Accord does not, however, address the mutual recognition of professional credentials, such as the professional engineer, or chartered engineer.

<sup>9</sup> Girvan, Norman, "Towards A Single Development Vision and the Role of the Single Economy", University of the West Indies, 2007, p. 54.

<sup>10</sup> Strategic Marketing Plan for the Promotion of Professional Services Exports – Trinidad. Emerging Market Economics, January 2007, page 97.

## Quality Standards

Engineering professionals throughout the region are held to a Code of Ethics, which includes that, a Professional Engineer:

- Owes certain duties to the public, to his employers, to other members of his profession and to himself, and shall act at all times with: (a) fidelity to public needs; (b) fairness and loyalty to his associates, employers, clients, subordinates and employees; (c) devotion to high ideals of personal honour and professional integrity.<sup>11</sup>
- Shall not maliciously or recklessly injure or attempt to injure, whether directly or indirectly, the professional reputation, prospects, or business of anyone.<sup>12</sup>
- Shall sign and/or seal only those plans, specifications and reports actually prepared by him or under his direct professional supervision.<sup>13</sup>
- Shall endeavour to extend public understanding of engineering and its place in society.<sup>14</sup>

## 6. Know What Your Competitors Are Doing

### Regional Perspective

#### *Trinidad and Tobago*

The engineering sector in Trinidad and Tobago is the largest in the CSME and of very high quality. The Board of Engineering oversees registration of professionals in accordance with local legislation and there are 835 registered engineers on its rolls. As in many other industries in the country, many of the private firms are small practices. However, Trinidad and Tobago is unique in the CSME in that the local industry has 10-20 large firms (over 50 professionals). While the smaller firms will likely only be able to export within the region, these larger firms have the ability to export outside the CSME.

The country boasts strong capabilities in a range of disciplines, including civil, structural, mechanical and electrical engineering, and has a particularly high level of expertise in petroleum and energy engineering. In the energy sector, Trinidad and Tobago has a particular capability in drilling and gas processing. Within these areas, petroleum and electrical engineering capabilities are strong.

#### *Barbados*

In terms of both size and quality, the engineering sector in Barbados is among the best in the region. There are 180 corporate members of the Barbados Association of Professional Engineers (BAPE) and estimates put the number of chartered engineers in the country at around 40. Although there are a few large and medium-sized firms in the country, the industry is mostly made up of micro and small enterprises. The fact that there are 213 individual members of the BAPE against 180 corporate members

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<sup>11</sup> [Jamaica Institution of Engineers – Code of Ethics](#)

<sup>12</sup> [Guyana Association of Professional Engineers – Code of Ethics](#)

<sup>13</sup> [Association of Professional Engineers of Belize – Code of Ethics](#)

<sup>14</sup> [Barbados Association of Professional Engineers – Code of Ethics](#)

provides an indication of how prevalent small firms are. One or two person firms face difficulty in exporting, even to the region, and may need to partner with each other to overcome these difficulties.

A particularly strong capability in civil and structural engineering exists in Barbados and several of the larger exporting firms specialise in this area. Services that are common to all of these firms include planning, design, construction supervision and project management. Other areas of expertise include hydrology, environmental engineering and disaster mitigation.<sup>15</sup>

## Global Perspective

Internationally, there are two main bodies that are important for the consulting engineering industry.

- The International Federation of Consulting Engineers (FIDIC) is the largest professional association globally. FIDIC membership today numbers 74 member associations representing some one million professionals. Many national associations, including those in Barbados and Trinidad and Tobago, are not members of FIDIC. FIDIC membership does not confer advantages in terms of mutual recognition of professional qualifications or licences to practice.
- The London based Institution of Civil Engineers (ICE), is a global membership organisation that promotes and advances civil engineering around the world. ICE now has nearly 80,000 members in 150 countries. Currently there are 196 members recorded as living in the West Indies. Again, membership of ICE does not confer advantages in terms of licences to practice.

At present, given the restrictions on practicing in other countries, only those Caribbean engineers that have obtained a licence by living in the US and UK are likely to be able to supply these markets through mode 4. However, providing services on an outsourced basis to firms of consulting engineers located in these countries should be open to all.

The draft Economic Partnership Agreement with the EU, when formalised, should help to reduce barriers to providing engineering services from the Caribbean. It would enable Caribbean engineers to travel to the EU to work temporarily without economic needs tests. It also provides the basis for mutual recognition of qualifications but how these are to be implemented remains to be determined.<sup>16</sup>

## 7. Differentiate Yourself from the Competition

The establishment of the CSME provides, as one of its main objectives, the free movement of goods, services and people and will inevitably foster economic growth. Yet, each business owner must take a strategic approach to differentiating themselves from their competition.

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<sup>15</sup> Strategic Marketing Plan for the Promotion of Professional Services Exports – Trinidad. Emerging Market Economics, January 2007, page 97.

<sup>16</sup> Strategic Marketing Plan for the Promotion of Professional Services Exports – Trinidad. Emerging Market Economics, January 2007, page 97.

## Accreditation

One who practices engineering is called an engineer, and those licensed to do so may have more formal designations such as Professional Engineer, Chartered Engineer, or Incorporated Engineer.<sup>17</sup>

- Professional Engineer (P.E.) is the term for registered or licensed engineers in some countries who are permitted to offer their professional services directly to the public. The term Professional Engineer and the actual practice of professional engineering is legally defined and protected by a government body. In some jurisdictions only registered or licensed Professional Engineers are permitted to use the title, or to practice Professional Engineering. The earmark that distinguishes a licensed/registered Professional Engineer is the authority to sign and seal or "stamp" engineering documents (reports, drawings, and calculations) for a study, estimate, design or analysis, thus taking legal responsibility for it.
- In the United Kingdom, a Chartered Engineer is a professional engineer registered with Engineering Council UK (the British regulatory body for engineers). Chartered Engineers are usually degree-qualified and have gained professional competences through training and experience. The title Chartered Engineer is protected by civil law. With over 180,000 registrants, it is one of the most recognizable international engineering qualifications with registrants in many countries.
- Incorporated engineer is a professional qualification in engineering (obtained after an Engineer's degree) offered through professional associations that act as subsidiary instruments of the Engineering Council (UK). The Engineering Council (UK) is the regulatory authority for professional registration of engineers in the United Kingdom.

The University of West Indies, St. Augustine campus, offers internationally accredited engineering degrees under the [UK STANDARD FOR PROFESSIONAL ENGINEERING COMPETENCE](#) in the following disciplines:

- Chemical and Process Engineering
- Petroleum and Geoscience
- Civil and Environmental Engineering
- Electrical and Computer Engineering
- Mechanical Engineering
- Manufacturing Engineering
- Industrial Engineering
- Surveying and Land Information

## Exemplify Service Excellence

The application of service excellence is an issue that the Council of Caribbean Engineering Organisations (CCEO) and the Council on Human and Social Development (COHSOD) are addressing, but it is clear that there needs to be a clearer definition of where gaps in expertise exist and where development needs to be focused.

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<sup>17</sup> [Wikipedia – Engineering](#)

Making service excellence the principle business strategy is a sensible approach to your firm's operations considering the fact that it costs 13 times more to find a new customer than to retain an existing client. The problem most business owners have is in defining service excellence. Strong's Supreme Service, a management consulting firm based in Barbados promotes the following definition:

***“Each encounter must be so satisfying that the customer looks forward to repeating the experience and is inspired to recommend it to others.”***

Utilise service excellence to differentiate your company from the competition.

## **8. Align Your Company's Goals with Strategic Opportunities**

### **Economic Partnership Agreement (EPA)**

The EPA, as a trade agreement with development components, is designed to open up and enhance trade between Europe and CARIFORUM by removing the barriers to trade between them and by improving CARIFORUM's capacity to trade competitively. Industries in which SMEs have a strong potential include agro-industry, tourism and hotel services, furniture, food services, printing and packaging, and a wide range of services including accounting, engineering consultancy, information services and information technology.<sup>18</sup> Human resource development in the Caribbean is another focus of the provisions in tourism which provides for assistance and training to service suppliers and support for training institutions.

### **Caribbean Single Market and Economy (CSME)**

The CSME is comprised of 13 member states<sup>19</sup>. Engineering practitioners can reap immediate benefits from the progression towards a single market and economy. Three elements in particular, national treatment, market access and mutual recognition enable business owners to construct realistic strategies for regional expansion.

#### **National Treatment**

The right to full national treatment means that you are to be treated equal or better than a national of the receiving member state, in terms of administrative requirements, e.g. fees and licensing procedures.

#### **Market Access**

The right to full market access means that you are allowed to operate in all sectors of the business activity in the receiving member state.

#### **Mutual Recognition**

Article 35 of CARICOM's Revised Treaty (2001) provides for the establishment of common standards and measures for accreditation or when necessary for the mutual recognition of diplomas, certificates and other evidence of qualifications of nationals of the Member States in order to facilitate access to, and engagement in, employment and non-wage-earning activities in the Community.

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<sup>18</sup> Girvan, Norman, "Towards A Single Development Vision and the Role of the Single Economy", University of the West Indies, 2007, p. 44.

<sup>19</sup> [CSME Member States](#)

## Industry Incentives

As in other service sub-sectors, there is a need to develop export incentives that are tailored to the construction-related services sub-sector. This will make exporting more profitable, which will be important as the CSME opens up the local market.

It is widely believed that foreign governments provide their engineering firms with financial support, subsidies and incentives that affect the competitiveness of the industry. The advantages that foreign firms receive help to enable them to win construction projects in the CARICOM region and other parts of the world where the local governments are unable or unwilling to give their firms the same levels of support. Given this firm belief, there is a need to examine the various concessions, in terms of support, subsidies and incentives that are available both in the home countries of the large international firms and locally that may work against the competitiveness of the local firms, especially as many of these subsidies are 'hidden'. These are effectively market distortions that work against the free market concept.<sup>20</sup>

## Foreign Direct Investment

Intra-regional foreign direct investment (FDI) and formation of trans-Caribbean firms (TCCs) are now important features of the CARICOM landscape. In recent years intra-regional investment FDI has averaged 10 percent of total FDI inflows to Member States. Intra-regional investment has been led by firms in the financial sector (banking and insurance), followed by firms in tourism, distribution and manufacturing; including several conglomerates.<sup>21</sup> The recently formed Caribbean Association of Investment Promotion Agencies (CAIPA) is an umbrella organisation established to facilitate the collaboration of regional investment promotion agencies (IPAs) in order to attract greater foreign direct investment to the region.

# 9. Pursue Opportunities to Partner

## Joint Ventures

Engineering firms within the CSME have not in general addressed their shortcomings in size by entering into long-term joint ventures or partnership agreements with other firms. A significant number of partnerships and joint ventures are entered into on a project-by-project basis, particularly when the necessary technical skills are not available in-house. Mechanisms for strengthening these relationships must be implemented through trade and professional organisations, the attendant information technology and appropriate legal measures.

The creation of a Regional Joint Bidding Mechanism (RJBM) is a proposal suggested by concerned CARICOM Contractors, Suppliers and Consultants as solutions to the disadvantage, which they suffer in their attempts to compete against non-Regional firms. The primary contributor to the region's inability

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<sup>20</sup> Lewis, Timothy Michael, et.al., Report On the CARICOM Construction & Installation Services Sector: Elements For Competitive Strategies, page 6. February 2002.

<sup>21</sup> Girvan, Norman, "Towards A Single Development Vision and the Role of the Single Economy", University of the West Indies, 2007, p. 30.

to compete with non-regional firms is the relatively small size of CARICOM firms. Regional firms must actively seek opportunities such as joint ventures with non-regional firms in an effort to prepare themselves for the onslaught of non-regional competition.<sup>22</sup>

Trinidad and Tobago, which represents an exception to the norm, is utilizing its particular capability within the energy sector in drilling and gas processing where petroleum and electrical engineering capabilities are strong. As a result, many big international energy service companies such as Schlumberger and Halliburton are present, but there are some locally-owned companies as well and joint ventures between the two are common.

## Right of Establishment

The CSME, in the wider context of globalisation, will create new opportunities for SMEs to grow through the building of regional production networks based on productivity and cultural adaptation, niche marketing and electronic commerce.<sup>23</sup> Under the [SINGLE MARKET](#) component of the CSME, CARICOM Nationals have the right to establish companies or other legal entities such as partnerships. Countries such as Trinidad and Tobago and Barbados who have strong capabilities in engineering and a history of exporting in the region should find the CSME market is the primary opportunity for increased exports.

## 10. Employ a Promotion Strategy

Engineering practitioners can promote both their firms and the region through the [LATIN AMERICAN AND CARIBBEAN CONSORTIUM OF ENGINEERING INSTITUTIONS \(LACCEI\)](#). LACCEI is the leading organization of Latin American and Caribbean engineering institutions, whose mission is to bring innovations in engineering education and research, and emerge as a major force in this hemisphere to foster partnerships among academia, industry, government and private organizations for the benefit of the society and the nations.

The Council of Caribbean Engineering Organisations (CCEO) is the regional secretariat for the following engineering associations:

- Antigua Association of Professional Engineers
- Association of Professional Engineers of Saint Lucia
- [Association of Professional Engineers of Trinidad & Tobago](#)
- [Barbados Association of Professional Engineers](#)
- [Belize Association of Technical Professionals](#)
- Dominica Association of Technical Professionals
- Grenada Institution of Professional Engineers
- [Guyana Association of Professional Engineers](#)
- [Jamaica Institution of Engineers](#)

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<sup>22</sup> Taylor, Garth, "Proposals For A Regional Joint Bidding Mechanism And Joint Bonding Facility", CRNM, 2003.

<sup>23</sup> Girvan, Norman, "Towards A Single Development Vision and the Role of the Single Economy", University of the West Indies, 2007, p. 44.

- St. Vincent Association of Professional Engineers
- St. Kitts-Nevis Association of Professional Engineers

## Publications

[WEST INDIAN JOURNAL OF ENGINEERING \(WIJE\)](#) is an international journal which has a focus on the Caribbean region. Since its inception in 1961, it is published twice yearly by the Faculty of Engineering at The University of the West Indies and the Council of Caribbean Engineering Organisations in Trinidad and Tobago.

## ANNEX

### Engineering Services Reference Guide

[BARBADOS ASSOCIATION OF PROFESSIONAL ENGINEERS \(BAPE\)](#) is a voluntary non-profit organization, established to: (1) Safeguard the professional interest of its members; (2) Represent the interest of the general public in matters relating to public safety where the practice of engineering is involved; and (3) Advance the engineering profession in Barbados.

[ASSOCIATION OF PROFESSIONAL ENGINEERS OF TRINIDAD AND TOBAGO \(APETT\)](#) is a learned society of professional engineers dedicated to the development of engineers and the engineering profession. The association promotes the highest standards of professional practice and stimulates awareness of technology and the role of the engineer in society.

[BELIZE ASSOCIATION OF TECHNICAL PROFESSIONALS](#) exists to promote, in an increasingly globalized and changing world, the advancement of the engineering professions, and to ensure the provision of professional engineering services of the highest technical and ethical standards, for the benefit,

protection and development of the Belizean Society.

[GUYANA ASSOCIATION OF PROFESSIONAL ENGINEERS](#) exists to (1) To promote and advance the science and profession of engineering; (2) To safeguard the interest of the public by ensuring the proper practice of engineering; (3) To foster good relations among members of the engineering profession and to promote the observance of high ethical standards of conduct; (4) To facilitate the exchange of information and ideas among members; and (5) To protect and advance the interests of members.

[JAMAICA INSTITUTION OF ENGINEERS](#) exists to promote and encourage the general advancement of the Engineering profession and the practice and science of Engineering, and to facilitate the exchange of information and ideas among the members of the Institution and its public.

### Business Support Organisations

[CARIBBEAN EXPORT DEVELOPMENT AGENCY](#) is a regional trade and investment development and promotion organisation of the fifteen (15) CARIFORUM Member States



[CARIBBEAN BUSINESS SUPPORT NETWORK](#) (CARIBISNET) the mechanism for ongoing collaboration and information sharing among business support organisations.

[THE BUSINESS DEVELOPMENT COMPANY LIMITED](#) is recognised in the Caribbean as the leader in promoting business development.

[CARIBBEAN BUSINESS SERVICES LIMITED](#) (CBSL) arranges managerial and technical assistance for small and medium sized businesses.

[CARIBBEAN FINANCIAL SERVICES CORPORATION \(CFSC\)](#) is a leading regional financial services company established in 1984 to provide

financing to the private sector in the form of medium/long term loans and equity and also to offer a broad range of financial services.

[CARIBBEAN SME DEVELOPMENT FINANCE LIMITED](#) operates as a small, private sector development bank.

[BARBADOS COALITION OF SERVICE INDUSTRIES](#)

The BCSI encourages the promotion of Barbados Service Providers through Trade Shows, Trade Missions, strategic advertising via the website, directories and other advertisements.