Improving Competitiveness and Increasing Economic Diversification in the Caribbean: The Role of ICT

Executive Summary

April 2005

This report was commissioned by infoDev and prepared by OTF Group, USA

The complete report is available online at www.infodev.org
FOREWORD

In recent years, developing countries and their partners in the international development community have devoted considerable attention to the role that information and communication technologies (ICT) might play in promoting economic growth, combating poverty, and strengthening their participation and competitiveness in the global economy. Spurred by the example of developing countries, such as India, that seem to be “riding the ICT wave” successfully, many developing countries are looking to emulate these successes and reap the benefits of ICT-led growth for their own economies.

However, in an increasingly open global economy, the ability of developing countries to promote domestic growth, increase the global competitiveness of their firms and economic sectors, and provide new products and services both to their own people and to global markets, depends on a variety of factors, and ICT provide no shortcuts or simple solutions. Nor does the promotion of ICT-enabled businesses suffice to address the fundamental challenges facing developing countries in adapting the structure of their domestic economy to a global market while promoting sustainable, broad-based growth at home, even those that leverage the attractive wage/skill mix of developing countries such as business process outsourcing, call centers and software development.

Developing countries, therefore, need to think about the challenges and opportunities of ICT-enabled growth and poverty reduction within the larger context of reforming the structure, and increasing the flexibility and diversity, of their economy. To this end, infoDev is pursuing a multi-country research program which takes a sober look at the role of ICT in improving competitiveness and overcoming the fundamental impediments to innovation, new business creation and sustainable private sector development in developing countries. Our research program starts from the premise that ICT can be an invaluable tool if used strategically and appropriately based on sound, practical applications that leverage a country's comparative advantage within the global economy.

This study on “Improving Competitiveness and Increasing Economic Diversification in the Caribbean: The Role of ICT” is our first output of this program. In the coming months, we will undertake similar studies in other countries, beginning with Tanzania, to develop a broader framework for the international development community on how ICT can be a key enabler of economic growth, poverty reduction and global competitiveness.

I would like to commend the OTF Group, particularly Marcela Escobari, Camila Rodriguez and David Rabkin, for preparing this comprehensive report and for enriching our understanding of the role of ICT in improving competitiveness and promoting sustainable economic development.

Mostafa Terrab
infoDev Program Manager

About infoDev
infoDev is an international partnership of bilateral and multilateral development agencies and other key partners, facilitated by an expert Secretariat housed at the World Bank. Its mission is to help developing countries and their partners in the international community use information and communication technologies (ICT) effectively and strategically as tools to combat poverty, promote sustainable economic growth, and empower individuals and communities to participate more fully and creatively in their societies and economies. For additional information about this study or more general information on infoDev, please visit www.infodev.org or contact Seth Ayers, infoDev (email: sayers@worldbank.org or tel: +1.202.473.4868).

About OTF Group
A consulting firm that focuses on country competitiveness projects in emerging economies around the world.
Executive Summary

The Development Challenges of the Caribbean

The states and microstates of the Caribbean offer a tantalizing glimpse of development achievements that might have been. For 40 years in many cases, and almost 200 in others, these states have held out the promise of favorable locations, excellent climates, convenient languages, rich natural resources and, recently, large Diaspora communities. With relatively small populations, and increasingly large outside forces offering to help, many of these states were expected to grow rapidly through the end of the 20th century. A very few did, while most have stagnated and some have fallen into increasing poverty.

In reality, the Caribbean economies are faced with distinct challenges on their road to development. Once dependent on agricultural and extractive industries, they have seen protective policies disappear, and their products have commoditized. Their small size and high labor costs make these industries unviable when competing with the scale and low labor costs of giants like India and China – or even high labor but low total cost environments such as the US and Canada. Now these countries face modest growth rates (1.17%)\(^1\), high unemployment rates (15% - 20%) and an overly-responsive government sector trying to maintain social cohesion and acting as an unemployment buffer.\(^2\) Their relative geographical dispersion has also made regional integration and harmonization a slow process.

Small island economies cannot produce in scale quantities, and have additional logistical costs built in. In the case of the Caribbean, telecommunications costs are high and labor productivity (although not necessarily average wages) is low. In all but Trinidad and Tobago, energy costs are high. These structural problems are augmented by the lack of an entrepreneurial class and world class firms.

\(^{1}\) Average growth rate in the region for 2002. World Development Indicators (WDI)

\(^{2}\) Government services account for more than 17% of GDP in countries like St. Kitts and Nevis and Barbados, and up to 8% in countries such as the Dominican Republic. On average in all the Caribbean countries in this study, government services as a percentage of GDP average almost 14%.
Companies in much of the Caribbean have succeeded in the past by managing a few relationships and taking advantage of trade preferences. As these disappear, many firms are inadequately prepared to tackle global competition and serve sophisticated consumers abroad. Under these mounting pressures, the current high standard of living in many of the smaller islands is unsustainable, and the low economic achievements of the majority are getting worse.

Various analysis of the region come to similar conclusions: access to telecommunications and Internet services is improving through liberalization across the Caribbean, but telecoms monopolies and small markets make for exorbitant prices and adoption is lower and less reliable than one would hope, with obvious variations between countries. Outbound calls are still priced higher than inbound calls and Internet services are more costly than in countries with comparable income levels. For instance, the cost of 20 hr dial-up access in St. Lucia is US$ 22.22 compared to US$ 8.42 in Malaysia. High-speed connection is as high as US$ 400 per month in places like Antigua, Barbados and Jamaica, while it costs US$ 40-50 in the US.

As a result of these high prices, Internet density is particularly low in the Dominican Republic, Haiti, Suriname and St Vincent and the Grenadines, at 3.64, 0.96, 4.16 and 5.98 users per 100 inhabitants. Other countries like Jamaica and St Kitts and Nevis have relatively higher usage rates of more than 20 users per 100 inhabitants. These are all substantially lower than in the US, Singapore and New Zealand.

Educational attainment is also an important challenge in the region. A popular misconception is that the skill level in the Caribbean is relatively high. While primary education is universal, with enrollment rates of over 90% in 2002, and secondary schooling is improving, tertiary levels are one of the region’s biggest educational weaknesses. Despite the fact that countries like Barbados, Bahamas and the Dominican Republic have more than 20% of their youth attending university, the Eastern Caribbean

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3 International Inbound and Outbound phone rate graph refers to the following: household, off-peak rates from Cable & Wireless, SingTel and Verizon (Dominican Republic).


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States (ECS) average a meager 2%\(^5\). In the ECS a small group of graduates go abroad to study, which raises tertiary enrolment rates to approximately 12% yet the majority of the local workforce has barely finished primary school.\(^6\) This trend has contributed to the continuing dominance of mostly low skilled sectors in the economy, where Information and Communication Technologies (ICT) usage is less common and where long-term economic growth opportunities are limited.

![School Enrollment Indicators](image)

With these many structural disadvantages, Caribbean economies must focus on premium niche segments, even in tourism. Yet they persist in following low cost strategies, despite the fact that their economies are clearly high cost.

There are a few companies that are successfully taking advantage of niche manufacturing. Gale Force, for example, is a regional company based in Antigua that builds high-end, hurricane resistant windows and doors. Their business proposition is building custom made windows to fit architects’ creativity, as opposed to the majority of international competitors that prefer to work with standardized sizes and shapes. In a fully digitized environment, they are able to provide on-demand price quotes, and price competitive products. They train their own staff and offer competitive wages for factory workers starting at twice the minimum wage.

Likewise, there are increasingly attractive opportunities in niche service sectors. Leisure marine is one sector with high potential for the Caribbean to provide a competitive and differentiated product, both as a niche market of the tourism industry and for complementary services like pleasure boat building and maintenance operations. Offshore financial services, a long tradition in the Caribbean, also have potential but need upgrading. Islands like the Bahamas are migrating from ‘banner like’ companies without a physical presence to “Virtual Headquarters” that require trained staff using sophisticated interfaces to communicate with their client base. To attract these businesses, they have implemented stringent regulations to improve monitoring, such as establishing a financial intelligence unit to oversee

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\(^6\) Overall tertiary enrollment rates correspond to the average enrollment for four ECS countries for which data was available: Grenada (13%), St. Kitts & Nevis (12%), St. Lucia (14%) and St. Vincent & Grenadines (8.3%). In terms of labor force educational attainment, St. Lucia, St. Vincent and Grenada have over 65% of the adult population with only a primary level education.
the offshore sector and banning anonymous accounts and anonymous international business corporations. These types of services provide positive spillovers because of their demand of supporting staff, specialized software applications, and strategic and legal consulting services, among others.

The Vision for the Future

The major opportunity for the future of these island states is in the transition many have started to a service economy, and a push towards niche manufacturing sectors that can supply high paying jobs. While there is a push towards diversification, given the size of these economies, the goal should be towards adding complexity, along with robust business strategies, to promising new and exciting clusters. Instead, the key traditional service industries of tourism and financial services have become commoditized in some Caribbean countries, leading to lower profits for their home economies. As illustrated in the graph below, growth in financial services has deteriorated or stagnated in countries where it represents a sizeable portion of GDP, due to greater scrutiny of their banking practices in the ECS and consolidation in the rest of the Caribbean. Tourism has experienced a similar decline due to September 11, as well as a more commoditized model evolving throughout the Caribbean. Countries like Jamaica and the Dominican Republic have seen spend per day and average length of stay decrease in recent years. Caribbean economies must return to the days when they created new types of tourism and financial services, not the current reality in which they work harder to execute 30-year-old strategies while others all over the globe have innovated beyond them and the best customers have moved on.

The transition to niche manufacturing and high-end services is not easy for economies without the necessary skill level, such as those in the Caribbean. However, there are other small island countries to learn from that have managed this transition successfully. Ireland had a dramatic transformation from a largely low-cost agricultural and manufacturing economy to a service, pharmaceutical and information technology economy that has achieved a three-fold per capita GDP increase since 1970–accelerating from negative growth to the fastest in Europe. Through coordination between the private and public sectors, Ireland targeted and attracted companies in key sectors, and in turn, the government created the necessary infrastructure and investments in education to supply the skill level required in engineering and computer science sectors. Ireland went from the worst schooling record in the European Union to graduating, proportionally, the highest number of scientists and engineers in the EU. The surprisingly low levels of tertiary enrollment in the Caribbean offer an important area of improvement if they aim for a similar transformation.

IMF (2002)
Competitiveness and the Role of ICT in the Caribbean

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Other countries like Indonesia, Singapore and South Korea point to the importance of creating linkages between local firms and those attracted by Free Trade Zones (FTZ) or Cyber Parks, a growing phenomenon in the Caribbean. The necessary “spillover effect” of such foreign firms depends in great part on the absorption capacity of the host countries, the terms of the arrangement negotiated between the country and the firm (e.g. technical training, percentage of management which is required to be local, reinvestment, etc), and the ability of its local firms to offer the skills and reliable quality inputs required by the FTZ companies. Weak local infrastructure of firms and skills tend to be the limiting factors, which these Asian countries have addressed through financial incentives for joint ventures, institutional protection of intellectual property and an upgrade of human capital, but which the Caribbean, in general, has not.

Many countries in the Caribbean and Latin American have tried to duplicate these countries’ experience by competing to attract the same type of companies that Ireland and Singapore did 20 years ago, and thus have faced limited success. However, the Caribbean can take advantage of its location and climate to pursue other new promising clusters. For example, healthcare tourism presents a profitable option- from wellness centers offering rehabilitation facilities for people undergoing surgical procedures or retiree complexes, to cutting edge stem cell research, like the facility recently launched in Barbados. Proximity to North American and European markets, an elaborate tourism industry and well-trained healthcare practitioners make the Caribbean an appealing destination for this market.

**Telemedicine in Action**

To support the Wellness Center Industry, Telemedicine offers an attractive solution for the lack of medical specialists in the Caribbean, and as a source of second opinions and specialized diagnosis. Telemedicine is medicine offered at a distance and that entails the use of audio, video or computer technology to investigate, monitor and manage patients who are geographically separated from a medical specialist. Companies like the Caribbean Medical Imaging Center (CMIC), a privately owned radiology center in St Vincent and the Grenadines, are already using this technology effectively. Using digital cameras and a DSL connection, CMIC can send X-rays, CT scans and ultrasound imaging to specialists around the world to provide more reliable diagnosis. Although the cost of wireless Internet access, and the cost of buying and maintaining equipment has kept CMIC from being a profitable company, the increasing availability and affordability of technology infrastructure and the expansion of wellness centers in the Caribbean posses the right conditions to leverage telemedicine in a more cost-effective manner.

Further regional coordination could also provide competitive and differentiated tourism experiences, such as in the yachting business. There is a growing demand in North America for lower-cost pleasure boat building and service facilities, which can be linked to tourism activities. As a US$ 30 billion industry in the US alone that has doubled in size in the last 10 years, the yachting business offers a good opportunity for the Eastern Caribbean to become the next high-end destination for the leisure marine community. Islands like St. Barts and St. Marteen have been able to exploit this business attracting high-end boats. Of the average expenditure per week of a luxury yacht (US$ 75,000), over 90% goes to food, accommodations, entertainment, etc, which is an indication of the potential tourism revenue that can accrue to an island. With further integration and collaboration, the Eastern Caribbean could become a destination for the leisure marine community, offering unique and varied tourism experiences as well as expert boat building. To create a one stop shop would require upgraded services, logistical coordination amongst the islands to streamline customs and immigration, and an improved tourism offering targeted to these travelers.

Opportunities also exist in niche manufacturing, such as medical devices and niche final consumption goods. While some firms are exploiting the potential of these industries, most firms are still competing on low cost models and exporting primarily to their neighboring Caribbean markets. As companies seek to transform themselves to become more globally competitive, technology and specifically information technologies (ICT) can provide valuable advantages.

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8 Brenzel, Logan, LCSPE (2004). This report offers a review on the opportunities in health services in the Caribbean and examples of current ventures. Competitiveness and the Role of ICT in the Caribbean Copyright infoDev 2005 - www.infodev.org
The Role of ICT in Reaching the Vision

A sober analysis of how Information and Communication Technologies (telephones, mobile devices, the Internet, etc.) can help firms become more globally competitive is missing in the development literature. Instead, ICT have been in recent years held up as holding the promise for unprecedented growth in the Caribbean. This is the promise to “turbo-charge” economic growth in the region, and to “leapfrog” stages of development. After all, information is power, and the seamless, cost-less dissemination of information offered by ICT can be a powerful tool for economic growth. From productivity improvements to global panacea, ICT have been hailed as the “next great thing” for the Caribbean. This view, unfortunately, is inadequate.

ICT Clusters

This exaggerated perception of the power of ICT has led to a lot of energy and money devoted primarily to “ICT Clusters”. Places such as Bangalore and Singapore demonstrate that high technology firms can themselves come together in clusters that have a positive developmental effect on an economy. This has been attempted frequently in the Caribbean, with almost universally poor results. Technology clusters in and of themselves have largely been a mirage, leading to the expenditure of much needed resources and eventual death in the desert. This need not be the case. But technology clusters in and of themselves have had limited potential for the region. There are some good reasons for this, particularly the choice of low wage-centric clusters such as call centers, and the failure to link foreign investment to local skills.

Outsourced Business Processes began in the Caribbean in the 1980s with multinationals looking for low cost markets near shore. While some businesses were originally successful, such as Caribbean Data Services from American Airlines, eventually firms fled to lower cost centers like India and the Philippines. As the services needed became more complex, the Caribbean was not able to upgrade its technological and communication infrastructure or skill level to compete. Instead almost every Caribbean country has experimented with subsidized telemarketing call centers, which in the end compete on low labor costs and low cost connectivity, neither of which the Caribbean can supply.

Demystifying the Call Center Fad

Call Centers Antigua Limited (CCAL) was a joint venture between the Government of Antigua and Barbuda and Caribbean Information Technologies (CIT). The government invested EC $ 3 million for a 40% stake in the call center, with the goal of creating 850 jobs with exposure to IT skills. In the end, the wages offered were not very attractive, at US$110-150 per week compared to manufacturing jobs that paid close to US$200, and high tech jobs in Internet gaming of US$750/ week. At these wage levels and with low upward mobility, the call center became the temporary holding place for those in-between jobs looking for better opportunities. The CCAL call center promised to create more than 800 jobs but only employed close to 200 people, and has since closed.

Jamaica had a similar experience. A fund was created from the proceeds of telecom spectrum sales to encourage the development of international call centers. The funds were lent at highly concessionary rates, and invested with varying results. Most investors experienced frustration with the inadequacy of the skills of the local labor force, local business rules and regulations, and norms of behavior (work ethics, business acumen, etc).

Free trade Zones (FTZ) and Cyber Parks have also been erected throughout the Caribbean in hopes of attracting foreign exchange, providing employment and the desired ‘spillover effects’ in technology innovation. FTZ started focusing primarily in manufacturing such as textiles, where countries competed on cheap labor since financial incentives could be imitated overnight. This ‘maquiladora’ model created thousands of jobs in countries like the Dominican Republic, but offered few positive externalities and most of the foreign companies have since moved on to Asia for lower labor costs. Cyber Parks have also been conceived throughout the Caribbean - some have not gotten off the
ground as in Antigua, while others like the Dominican Republic’s experiment cost US$ 30 million and has failed to live up to expectations due to a lack of political will and mismanagement.

Mature Cyber Parks exist today throughout the developing world in Taiwan, Indonesia, Malaysia and the Philippines. Successful parks have the ambitious goal of developing high-tech industries by integrating technologically modern facilities with technical universities, research centers, business incubators and other support services. These involve a long-term commitment of government to provide the expensive infrastructure, sustained intellectual capital through learning institutions, and skilled management to integrate the many components. The idea of establishing FTZ needs to be a strategic one. Caribbean countries need to first establish a clear vision of where they want to gear their economies, and then the infrastructure and the competencies needed to get there. The more they can build on opportunistic openings as Antigua did with the gaming industry, or base it on comparative advantages such as the production of plastic medical devices from the downstream oil industry in Trinidad, the higher the chances of success.

The software industry is another ICT cluster that has not taken off significantly in the Caribbean. The opportunities do exist in programming in Open Source Software (OSS) for local companies, and could expand to industry specific software. For instance, companies like BP in Trinidad, outsource US$500 million in geological services and software from Houston that they would rather spend in Trinidad if the capability existed. Digisolv, an OSS company, has partnered with its government in St. Lucia and The Open Group9, to organize awareness seminars for the private sector on the benefits of OSS.

ICT enabling productive clusters

Despite the mixed results of ICT clusters, ICT are extremely useful, indeed necessary, tools. These tools play an essential role in economic development, as they are invaluable inputs for competitive firms and for the average citizen to participate more actively in the economy. Technology does not, however, change the fundamental burden on Caribbean economies: to create great companies. With notable exceptions, the economies of the Caribbean contain firms that have persisted through artificial protections, commoditized products, or the exploitation of natural resources. This is a strategy that was never sustainable, and is now no longer even profitable. What ICT can do for these firms is help them become more productive by transforming the way they do business and innovative in the way they engage in the global economy.

The appropriate application of specific technologies to industrial clusters can make a tremendous difference to the firms within that cluster. Firms can learn, market and sell online. At the very least, remaining near the forefront of the technological frontier in one’s industry is a minimum pre-condition for global competition and, hence, economic growth. This is particularly important in the ever-increasing service clusters that are the necessary growing force in much of the Caribbean. Services, especially tourism, are becoming ever more complex and individualized. Technology is essential in creating these experiential packaged service offerings.

However, many government and business people in the Caribbean do not see the practical link between ICT and the development of their economies.

ICT can prove to be indispensable tools in fostering productivity and innovation which in turn can spur growth and prosperity. At their root, these tools allow for increased learning and more customized service. Whether regional firms and governments use them to become smarter – or merely cheaper10 – will determine whether ICT are the key to increasing wealth or simply slowing the decline into poverty. This report highlights and identifies five opportunities brought by ICT that are particularly important for Caribbean economies as they seek to become competitive. Some firms and governments are already taking advantage of these benefits to chart a path for a more prosperous future. The role of

9 The Open Group is an international OSS vendor and technology-neutral consortium. www.opengroup.org
10 ICT can make operations more cost effective through workflow automation, faster and more accurate communications along the value chain and within companies, and reducing transaction costs, such as in e-commerce.
The benefits of ICT in communication are as important in manufacturing, especially of high-end products. Chef Pepper, a start-up in the Dominican Republic that supplies hotels, restaurants and households with imported high quality meat products has seen their sales increase 20% per month since they started an e-mail marketing campaign. Their success is due to the significant Internet penetration rates in the high socioeconomic segments of the Dominican Republic population. Country Traders, a Blue Mountain coffee distributor in Jamaica, also recently experimented using the Internet as a sales channel successfully. Previously selling bulk green beans to overseas buyers who then roasted and branded the beans, it captured very little of the value. By selling branded finished product through a simple online ordering service and using a local courier, the company has found an entirely new market, cut numerous intermediaries and improved their profits for themselves, and by extension for Jamaica. Similar small-scale ventures are sprouting up throughout the region in hot sauces, crafts, etc., which are utilizing ICT to expand their markets, customize their products and to more effectively communicate with their customers.

2. Improve Logistics. ICT can improve efficiency when they are incorporated both inside the organization and used to transact along the value chain, allowing for better times to market, improved coordination of supply and demand and excellent customer service. Given the vast inter-Caribbean business and dispersed nature of the Caribbean islands, this coordination is a priority for regional companies. Companies like insurer Sagicor now can reply to claims from all over the Caribbean in 2 days, instead of 2 weeks, the average timeframe when their offices were not digitally connected. Governments also have much to gain from efficiency gains in the provision of services, particularly in customs and immigration which affects tourism, yachting and
trade in general. In agriculture, where most of the players are small and fragmented, there is an important benefit to eliminating information asymmetries. A recent pilot project sending voice messaging to convey market prices to farmers in Jamaica has been very popular given the ubiquitous nature of mobile phones in the island. A locally based consulting firm is exploring how this service can be launched across the island on a for-profit basis. Gale Force Windows, a manufacturer of hurricane resistance windows in Antigua, is able to provide immediate pricing quotes by analyzing the AUTOCAD drawings sent by architects and developers throughout the Caribbean.

3. Make Distance Irrelevant. Given the dispersed nature of these island economies, ICT can create significant value by allowing the free and instant transport of digitized knowledge and products. Caribbean companies are using ICT to expand their market base and overcome geographic distances, although the rate of deployment and usage varies significantly. The service sector is the most progressive, especially consulting and the offshore financial services industry, which in 2000 represented $10-12 trillion and is foreseen to grow at 15% on average. As these services have commoditized and are little more than tax havens, the next opportunity for the Caribbean is in further developing the “virtual headquarters” coupled with first-rate client services, which requires utilization and deployment of advanced ICT. Among the technologies most demanded are interactive asset management tools and brokerage services, built around sophisticated technical components, secure applications and aggressive investment strategies. However, today’s firms in the offshore sector either have the IT expertise in house, or outsource most of this work to North America. Another industry that competes without borders through ICT is Gaming, which has had positive spillover effect in places like Antigua, at some point providing US$ 25million in government revenue and employing and training engineers, web-designers and customer service representatives at competitive salaries. The gaming industry is completely Internet-based, offering both casino and betting options. For this industry to thrive it needs to be well-regulated, to provide safeguards from money laundering, and transparency to be able to lobby credit card companies to allow online betting. Good regulation, a solid banking system and reliable connectivity has attracted firms to Antigua, despite the high connection fees charged by C&W.

ICT Opening Markets for SMEs

Small and medium size companies, like Erica’s Country-Style in St. Vincent, have been able to benefit from the Internet to open their products to whole new markets. With annual sales of US$ 200,000, Erica’s Country-Style offers pepper sauces and food snacks to the Caribbean and US markets. After the launch of their website, they started receiving orders from the US market, which now account for 10% of revenues. This growth has prompted the use of a US distributor to save on shipping charges.

4. Understand and Improve Their Competitive Positioning. As globalization has eliminated the physical barriers between markets, it has also done the same with competitors. With competition no longer confined to the neighboring plantations, mines and factories, today’s companies need to compete with global firms that can more easily than ever enter existing markets and take away once loyal customers. Previously only the domain of the largest firms with deep pockets, ICT can now help firms of all sizes gather customer and competitor information in real time allowing them to make timely and informed decisions about how and where to compete. Members of the music industry in Jamaica used such access to information and online surveys about international labels to reposition themselves and find customers around the world that would be interested in recording music in Jamaica. A new organization, “Jamaica Signature Beats” is working to remove previous barriers for the development of these services (such as fragmentation, low trust and lack of professionalism in the industry) by doing joint marketing activities and creating certification and

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11 This percentage is likely to be downgraded due to increased scrutiny of offshore operations in the future. While a small percentage of this pie would bring important benefits to Caribbean economies, significant OFCs can make an economy susceptible to international banking crisis.  
12 Carana Corporation (2002)  
13 Please see extended Case Study on Gaming in main report for the trajectory of gaming in Antigua, the spillovers of this industry and government regulation that can both secure and repel this type of investment.
training for professional studios. Similarly in manufacturing, SJ Jaleel - a soft drink company in Trinidad and Tobago, was one of the early innovators that realized it was competing in a global market. Through in-depth research of the global market, it identified the untapped segment of 4-10 year olds, and has built a global brand, “Chubby”, now sold in major retailers like Wal-Mart and Kroger.

5. **Enhance Transparency.** Government can and should be avid users of ICT, both to improve the efficiency and transparency of its services and to set the example for the rest of the society. From broadly available information and downloadable forms to transactional capabilities, government services can become increasingly efficient. Particularly for private sector competitiveness and new business creation, ease of access to pertinent information such as business licensing, customs and tax requirements is critical. Given the size of government intervention, this is especially true for the Caribbean. Despite the need, this is probably the hardest sphere to implement these type of reforms, given the adversity to ‘redundancies’ created by upgrades in technology, and the lack of market incentives. The Antiguan Office of Technology has managed to create a local loop to connect all government buildings, and has already provided every employee with email access. There are vast opportunities in this realm, starting with improving the efficiency and transparency of the customs and port facilities, which currently are behind Central America. The Dominican Republic holds containers on average for 7 days, compared to 4 in Mexico and El Salvador. High connectivity costs and low educational levels are some of the biggest obstacles to further advancements in e-government initiatives in the region.

While other sources of efficiency and innovation exist, the 5 opportunities outlined above are particularly important for firms in emerging economies. They can be put into practice immediately and provide progressive results. The most important challenge for benefits to accrue lie in the necessary mental shift in how technology can improve businesses, and not necessarily in high capital costs. Governments, private sector stakeholders, and civil society must look at the creation or strengthening of firm-level advantages when assessing the impact of a given ICT initiative.

A more competitive approach is required: one that begins from the bottom up as opposed to the top down. Beginning with the business climate and identifying ICT initiatives to improve it will more quickly focus Caribbean players on the highest-yield projects. While wiring every town with broadband connections may yield wide-ranging benefits, it may not deliver the same economic impact as connecting every firm in the tourism industry to a digital marketplace. Ultimately, both are excellent aspirations, but this paper is about prioritization and choice. Fortunately, as the examples above illustrate, when beginning from the ground up, the opportunities are plentiful and, frequently, cost-effective.

**Recommendations**

The benefits described above, however, are hard to measure. Until better metrics develop, the growth and sophistication of businesses, the rise of entrepreneurs taking advantage of technology breakthroughs, and firms paying high and rising salaries are good metrics for governments to assess progress. A myriad of digital products and services are now being traded and exchanged through cyberspace. This arena will become an increasingly important one to know how to compete in, especially for countries with historical geographic disadvantages such as the small scale and dispersed nature of the small island states of the Caribbean.

There is much that governments and multilateral donor organizations can do to improve the business environment for healthy and innovative businesses to develop in the region and to utilize ICT as a tool for improving competitiveness and increasing market opportunities.

**1. Facilitate Access.** Access to technology, as noted earlier, is essential for firms and clusters to compete globally. There has been much written about basic and specialized access, including a variety of metrics to determine how and whether a country has a competitive...
technology platform. They all boil down to one thing: can a businessperson get on the Internet and talk on the telephone with reasonable reliability, and at a cost on par with his/her global competitors? In the Caribbean, the situation is suboptimal in this regard, with some of the highest connectivity prices in the region, and in general, uncompetitive telecommunication markets. For instance, outbound calls are more expensive than inbound calls, Internet density is still substantially lower than in the US, Singapore and New Zealand and the cost of high-speed Internet is exorbitant (See graph below).14

The liberalization of telecom services is taking place in mobile telephony, but the process needs to be sped up particularly for advance services such as broadband and in parallel, new technologies like Wi-Fi or Wi-Max (longer-range wireless technology) need to be encouraged and widely embraced.15 Most countries continue to grapple with the problems of putting in place effective telecommunications regulations and moving forward with the liberalization process (for example, Trinidad and Tobago, Guyana and Belize among others, are facing these delays). Hence, one of the main imperatives is to set clear deadlines for the completion of liberalization in countries that are still pending, and set up statutory bodies to lead and instill continuity in the process of reform. The creation of a Telecommunications Authority is also in an incipient stage in most of these countries and their technical competencies (i.e. standards, competition law, accounting regulation, etc) are still deficient. Further liberalization will largely hinge on the competence, technical capabilities and independence granted to these authorities so that issues such as interconnectivity, rate-setting and investment incentives in telecoms are set to mimic, as closely as possible, a competitive model.

Providers of international connectivity for data and voice as well as fixed lines are in most of the Caribbean de facto monopolies, because there is no alternative submarine cable network. There is also little economic incentive to invest in underground cable as a second comer in the business in small islands like those in the Caribbean. While current high prices might make it

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14 Dial-Up and High Speed Internet graph data refers to the following: Dial-up 56Kbps and 20 hrs access; High Speed: ADSL 1544Kbps, except for Trinidad 128Kbps and unlimited access; household rates, except for Jamaica; installation fee is not included.
15 Refer to Recommendation 4 - Regional harmonization of Key Policy Areas Related to ICT- for a detailed review of what OECS is doing in this realm through the proposed OECS Telecommunications Reform II Project.
appealing, it is not hard for a regional monopoly like Cable & Wireless to drop local prices and drive competitors out of business. Thus so far, all land line connections from fixed telephones to broadband access required for Internet applications, are bound to use the incumbent’s network at their set price.16

Some Internet Service Providers (ISPs) are already providing Wi-Fi access to the Internet, but the rate of adoption and relatively slow speed offered are still hampering this technology’s full potential. As pointed out in a recent study by Eurostrategies, a European-based consulting company, the quality of Wi-Fi service in the Caribbean is still held back by inefficient control of the frequency spectrum and by providers waiting until more competition is in place to increase speed so as to always be just faster than their competitors.17 Governments can create incentives to encourage the entry of more competitors, particularly in Wi-Fi technologies, and help them drive adoption among the population at large.

Pilot projects initially funded by multilateral organizations and the government should be expanded to provide connectivity at greater speeds to the broader community. For instance, Jamaica with the auspices of USAID, has been studying the possibility of adopting the Last Mile Initiative, a global program to expand the access of communications to a wider scale of the population in emerging markets. One of the components of this program is the innovative deployment of low cost technologies such as Wi-Fi and Wi-Max in remote communities and SME firm networks.

These technologies, however, are usually adopted by the larger and more efficient firms first, and then replicated through the economy. Thus, speedy regulation change, incentives for new competitors and technologies and protection from unfair competitor behavior from the incumbent will have the most profound impact.

2. Improve Ability. A key input for improving the region’s competitiveness is the upgrading of knowledge and human capital. In this sphere, the Caribbean considerably lags in relation to any developed country. This should become an immediate priority for governments since it is well known that any investment in upgrading intangible assets requires both practice and patience over the long-term to fully materialize and translate into improved productive capacity of a country. First, the gap in tertiary education is worrisome. While primary and secondary enrollments are in line or in some instances above other developed countries, enrollment rates at the university level are less than 10% in almost every country (except for Dominican Republic, Barbados and Bahamas that have upwards of 20% enrollment). In response to this, governments have created a series of programs and technical schools and have made program accreditation easier and courses more flexible. These are efforts in the right direction; yet, businesspeople still point to difficulties in getting the right local skill set for their businesses. Some highlight deficiencies in general managerial and marketing skills as stated by the CEO of Gale Force Windows in Antigua: “We don’t have a problem recruiting for our factory and providing training, what we need are managers that can open new markets, and interact with our customers to create new opportunities for the business”; others say the skill gap is especially true in more complex direct IT jobs, data processing and software development and maintenance, as noted by the COO of an Internet gaming company: “We are obliged by law to hire locals at a ratio of 3:1, while that is not a challenge given our competitive pay, the real experts in IT and gaming are coming from the UK and Australia.”

In this sphere, there is a clear role for government and private sector organizations to provide targeted support. Governments should support private training schemes by providing well-designed training incentives for firms, through fiscal incentives, matching grants or subsidies as appropriate.18 Furthermore, governments and international donors should support training

16 Eurostrategies (2004)
17 Ibid
18 De Ferranti, et al (2003) and interviews with several company executives included as case studies in this report.
agencies that provide demand-driven programs and prove to have private sector linkages. These linkages can be created through internships and exchanges that bring back relevant market knowledge into the classroom. Private sector organizations and trade associations can also spearhead these efforts by working in conjunction with the government to make training relevant to the labor market and to inform SMEs of the training options available to them. For example, a call center in St. Lucia spent over US$ 10,000 for a specialist to train its staff. This type of training could be organized by trade associations to encompass more players and spread out the costs.

Local universities need to connect to the needs of the private sector, to understand the demands on future employees and to engage in applied research. Currently, most of the successful businesses are led by Caribbean people that have returned after receiving advanced degrees or having job experiences abroad. More partnerships, like the one spearheaded by the Dominican Republic’s government, local universities and NY’s Stevens Institute, need to be replicated to improve the quality and applicability of local degrees. Applied science and technology need to be a more relevant part of tertiary education and vocational training. Government institutions and international donors can help mediate these partnerships and sponsor conferences to share and prize advancements in areas of science and technology.

One of the major challenges in the Caribbean is extending training to smaller and medium sized firms which currently are much less likely to use formal training. Small firms are more constrained by resources, lack of knowledge about training and its benefits, and labor turnover than are larger firms. There is a rationale for the government to subsidize firms that provide on-the-job training for general skills, or to subsidize private training facilities that offer general training. Regional certification boards can also improve and harmonize regional standards in ICT technical degrees to international standards. Companies like Gale Force Windows applied to receive subsidized training from ex-Canadian International Development Agency (CIDA) technical support services in St. Lucia, but were denied for unknown reasons. They wanted to train key personnel on back end IT systems so they could connect their factory to their accounting and sales offices, but could not afford to do so on their own.

Country specific analysis should be performed in order to identify any externalities that may impede effective training (information, financial, labor turnover, etc) to arrive at sound training policy design. However, a general finding of this report is that small and medium sized firms should be the primary targets for incentives to encourage training.

3. Support Services for Firms. The availability of support services and financing for start-ups, particularly in technology-based businesses, is almost non-existent in the region. The failure to deliver funds and technical capabilities to small ventures is the largest impediment for their growth. A conservative banking sector and exorbitant interest rates contribute to the situation. For instance, most SMEs surveyed in this study raise funds through traditional commercial bank loans, where they face upwards of 12% interest rates and in most cases require 100% collateral. This calls for the development of higher-forms of financial intermediation and venture capital to develop: long-term securities, subordinate debt, equity, etc. Although this is a problem faced by the broader developing world, there are some interesting initiatives in the Caribbean worth noting.

Jamaica has begun a business incubator (the Jamaica Technology Innovation Center - TIC) that currently hosts 26 technology businesses, providing marketing and management services and modern communication facilities. Although a business incubator’s core competency is

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19 This was true in most of the case studies of new ventures presented in this report. For instance, entrepreneurial spirit such as the one depicted by Digisolv (St Lucia), Erica’s Pepper Sauce (St Vincent) and the Caribbean Medical Imaging Center (St Vincent) came from Caribbean people that have returned after receiving advanced degrees or work experience abroad.

20 Ibid
not in providing access to finance, they can be a potent mechanism for intermediating venture capital and establishing networks of investors. To this end, the TIC is trying to establish an Angel Investment Network to help start-ups gain access to funds. This growth investment fund will typically consist of high net worth individuals that want to provide seed capital to emerging companies. For instance, Jamaican/Canadian billionaire Michael Lee Chin has recently pledged a US$1 million contribution to be disbursed to the institution over the next five years. This strategy is worth analyzing, given that the Caribbean Diaspora communities both in North America and Europe, could become a potent force for new venture financing in the region.

Furthermore, incubators can help nurture new enterprises in their most vulnerable phase until they “graduate”—that is, they are financially viable and freestanding to leave the incubator. To do so, however, there are some guidelines that should be followed so that they do not constitute the next IT fad in the region. First, although the most common sponsors of business incubators are academic institutions and government agencies, research suggests that the less an incubator relies on subsidies the more successful and viable it is. This calls for a clear strategy of how the incubator will reach financial sustainability both by providing services to in-house start-ups, and training and consulting services to other private and public sector firms. As incubators move towards this path of financial viability, it is typical that their budget moves away from being almost 50% provided by government or multilateral organizations, to almost full reliance on its own revenue-generating activities. Second, incubators should draw a clear line between financial intermediation and providing direct financial assistance to firms. The former is their actual role and they should try to set up networks of potential investors that can help raise start-up capital. Finally, the incubator should have clear and unfailing performance metrics and success criteria for selecting companies, and for them to “graduate.”

Another area for SME support is technical assistance, particularly as it relates to the use of ICT in transforming business processes. Technical assistance is in some cases easier to channel, since financing sometimes lends itself to different pressures and can become concessionary subsidies in some developing countries. Government-funded SME support agencies are rare in the Caribbean and those that exist tend to lack the strategic vision, resources, autonomy and linkages with successful firms to promote private sector development with an ICT edge. For example, Trinidad established three institutions to support the private sector. However, they remain disconnected from the needs of firms and lack the technical capabilities and entrepreneurial expertise that is key to uphold the legitimacy of such institutions. As a case in point, the National Entrepreneurship Development Company Ltd. (NEDCO) is perceived as an instrument of political patronage or as a social development program of income redistribution. On the other hand, organizations like the Centro de Apoyo a la Micro, Pequeña y Mediana Empresa (CAMPE) in the Dominican Republic that provide market information on numerous industries, and legal and financial advice for local businesses, are important in fostering entrepreneurship. For best results, these organizations need to have (i) a clear mandate and strategic vision, (ii) the in-house technical capabilities to execute on that mandate, (iii) private sector involvement and personnel with entrepreneurial expertise to bring forth institutional legitimacy and strategic guidance, and (iv) performance metrics to assess an agency’s successful interventions with the private sector.

Regional trade associations could also help, not only in aggregating supply and stimulating demand (collective marketing, training, market research, etc.), but also in providing knowledge resources on how the sector could improve performance and utilize ICT. Although currently most of these organizations are not active and their use of ICT is predominantly through “static” websites with entry forms, some like the Caribbean Tourism Organization (CTO)
are more dynamic in this regard.\textsuperscript{24} The CTO has a Management Information System for Tourism (MIST) and an Intranet/Extranet that serves as an important catalyst to the advancement of technology platforms within this sector and as powerful market research tools for smaller firms. Cluster-based initiatives funded by donors, governments and the private sector organizations can improve the competitiveness of a sector through collective initiatives that upgrade the clusters' products and services. These initiatives often involve improved technology platforms incorporated by the cluster as a whole, as seen by the Bermuda Escapes project that used a common back-end IT system to track and tailor tourists' experiences.

4. \textbf{Regional harmonization in key policy areas related to ICT:} As more people turn to ICT to do more of their day-to-day operations, it is imperative that legislation is kept attuned to ICT and its use. The more legislation is harmonized in the region and compatible with international standards, the greater the benefit to these economies and their attractiveness to foreign investors.

The legal enforcement of electronic documents, protection of intellectual property and privacy, further liberalization of telecommunication’s market, development of a framework to support electronic transactions, and enforcement of electronic documents and contracts are among the priorities in this realm. Laws on intellectual property as it relates to the Internet-in-code, data, music or other content has important implications for businesses selling into a multi-jurisdictional world. Keeping abreast of these changes and providing up-to-date, enforceable legislation will affect the region’s ability to transact with and attract foreign businesses. Mauritius for example, has been a leader in this realm in Africa and has convinced Microsoft, Hewlett Packard, and IBM to set their regional headquarters in the island.

Ideally, the Caribbean should proceed in these reforms as a regional block. Alternatively, smaller country groups such as the OECS can proceed in tandem if it speeds up the process. To date, the OECS and the Caribbean Single Market and Economy (CSME) have taken important steps in some of these areas. The advantage of this regional alternative is two fold. First, it constitutes an immediate step towards regional harmonization of practices and legislation, which by default, will most likely guarantee international compatibility in e-practices and attempts at replicating best-practices (for instance in telecommunications regulation). Second, it allows individual governments to move more swiftly in the reform process, as each country focuses on facilitation and execution rather than on drafting country-specific legislation. For instance, an OECS Telecommunications Reform II Project is currently being drafted to expand the reach of the first OECS Telecommunications Reform Project and tackle some of the persistent telecom regulatory challenges in the region. Specifically, the new project is expected to build on the reform agenda and set clear guidelines to move forward along two key components:

- Bolstering support for legal and regulatory reforms that are presently underway, such as the establishment of a dispute resolution mechanism for private operators, outlining of policies and procedures for interconnection issues, and capacity building and training to strengthen the Telecommunications Authority and the Spectrum Managing and Monitoring System (SMMS), and;
- Reviewing of the current Universal Access Policy and the establishment of a Universal Access Fund (UAF) to uphold it.

Looking forward, one of the major challenges and, if instituted one of the new project's major accomplishments, would be the design and implementation of regulation for interconnection pricing—physical interconnection and interconnection fees (especially fixed-to-mobile interconnection fees and mobile-to-fixed call termination charges). Interconnection pricing must cope with two problems: the market power of local access carriers in termination

\textsuperscript{24} Bertin (2004)
charges\textsuperscript{25} and the incentive of the incumbent not to offer interconnection to entrants (or to provide technically inferior connection between its facilities and the facilities of a competitor).\textsuperscript{26} Hence, the goal of the new telecom reform project's interconnection pricing scheme is to determine a modern cost methodology and an interconnection regime that diminishes the incumbent’s market power, lowering costs and increasing competition.

In the case of the CSME, model legislation is being drafted in the area of Competition Law, Consumer Protection and Anti-Dumping and Countervailing measures.\textsuperscript{27} But other important issues such as intellectual property and e-enabling legislation (e-commerce regulation, electronic signatures, Internet banking and transactions and Internet crime) have not been tackled on a regional manner. The CSME should extend its reach to these areas, and donors can support these institutions in prompt implementation and regional harmonization in these topics.

As the CSME proceeds as a block, it is also important that regulators be trained in technical aspects and participate in international ICT/Telecommunications workshops to remain informed of the latest trends in international standards, and appropriately customize them to the region’s challenges. This is an area where donors can help, connecting networks on the subjects and encouraging the transfer of knowledge in these fast moving topics.

**Promoting Knowledge Exchange**

Norway has been at the forefront of e-legislation. For instance, the Norwegian government has put in place an initiative to use digital signatures in electronic interaction with and within public administration. Furthermore, Norway is sharing their initial success with developing countries as it relates to e-legislation. The Norwegian Agency for Development (NORAD) in partnership with UNDP has worked in countries like Bosnia to support the development of e-legislation. For example, people from the public and private sector in Bosnia have participated in study trip exchanges to Norway to review best practices in the area of e-legislation and other ICT-related fields.\textsuperscript{28} Such knowledge exchanges can be easily replicated in the Caribbean and hold important potential.

Tapping into developed nations that have implemented model legislation successfully is the best way to proceed. Organizations like ICANN and ITU can provide guidance on the latest standards. As these changes happen, it is important that consumers and the private sector are kept abreast of what this means for their businesses, particularly as it pertains to their legal rights and responsibilities.

5. **Technology Clusters must make business sense.** High technology clusters do offer the potential for positive spillover in the Caribbean. This potential is, however, extremely limited and has to date been heavily over-estimated at significant costs. For instance, as call centers became a fad throughout the Caribbean, investments were often not analyzed in a rigorous manner. Despite the use of basic technologies (telephony), many foreign companies demanded generous concessions from government promising more complex technology spillover effects and employment generation. Perhaps most importantly, the sponsors of basic telemarketing call centers misunderstood the upward cycle they were trying to create. Call centers alone are akin to maquila labor in textiles. The primary attraction is cheap rates (both on financing and especially on labor). An industry, disconnected from a legitimate software or service infrastructure, cannot hope to migrate upward.

\textsuperscript{25} Refers to fees charged by the incumbent for completing connection that make use of the entrant’s facilities, or in the mobile-to-fixed case, fees charged by fixed line providers for calling mobile numbers.

\textsuperscript{26} Engel, E. (2003)


There are some viable opportunities in the call center business if the Caribbean can re-enter at
the high end of customer service for large/well-known US companies, instead of continuing
with the low-cost telemarketing model. The advantage of higher-end customer service
accounts is threefold. First, customer service accounts guarantee longer-term contracts (2
years plus) because the outsourcing company has to make greater commitment in training
and development for the call center employees. Training in this sort of arrangement is more
holistic, not only focusing on customer service skills, but also on company specific products,
policies and procedures, and involves more sophisticated software programs. Second, in these
arrangements the call center employees become part of the outsourcing company, improving
motivation and reducing turnover rates. Finally, large companies and their clients tend to
have more contact with their customer service operations offshore and many often visit call
center premises on a regular basis.

Many Caribbean nations have also experimented with Free Trade Zones (FTZ) and Cyber Parks
as the next policy trend to attract FDI and facilitate technology transfer and other positive
spillover effects. However, as the case of Antigua FTZ and the Dominican Republic’s Cyber Park
indicate, very seldom does the promised effects materialize and in many cases the
international demand for these services to be offered in such locations did not exist. These
failures illustrate that these new investments need to make business sense, be demand-driven
and be guided by a carefully assessed strategic intent. For instance, the longer the
commitment required by the foreign businesses and the greater the need for their close
interaction with the local workforce and businesses (through specialized training, procurement
of inputs and raw materials, etc.) the more the spillover effects can be realized. These spillovers
range from positive externalities in training and human capital, to the adoption of technology
and more efficient business processes. Academic studies that have attempted to quantify
these externalities have produced mixed results, but all point to the importance of establishing
links with the local economy as the key determinant of success. Otherwise, very little is left
behind when foreign investors exit the economy.

As Caribbean governments seek to attract new firms and FDI to their islands, they should
incorporate private sector firms and encourage joint ventures to improve chances of success.
The government and donors can help existing trade and industry associations to do feasibility
studies along with interested companies before investments ensue. Investment Promotion
Agencies, along with the government and the private sector, need to have a vision of the
country’s growth strategy and work together to execute it.

6. Strengthen new service and niche manufacturing clusters. Technology can and must be a
fundamental enabler of high potential clusters of existing Caribbean businesses, such as
tourism. This is an essential and largely under-appreciated imperative.

First and foremost, public and private sector partnerships should be created to attract
investment in promising sectors such as wellness and rehabilitation centers, high-end tourism
and yachting, stem cell research, virtual financial headquarters, medical devices, niche
agribusiness clusters, etc. This requires the articulation of a coherent and coordinated industry-
wide strategy for those targeted clusters that have the greatest potential for growth. In doing
so, there is a clear role for government and the private sector. The private sector, through
industry associations or business development institutions, needs to incorporate those industry
goals and facilitate collaborative initiatives that improve access to crucial inputs (training,
targeted technical assistance, etc.). In doing so, they can also lobby the central government
for particular infrastructure and/or institutional improvements and education and training
initiatives required to push forth a sector’s new vision for the future. Governments can support
these organizations by funding feasibility studies\footnote{Darnani (1998)}\footnote{For instance, governments or donors can support feasibility studies of industries that have the potential to export niche products or provide trade in services. They can provide information on best practices applicable to promising clusters, etc. Governments and donors should restrict their Competitiveness and the Role of ICT in the Caribbean Copyright infoDev 2005 - www.infodev.org} , facilitating the emergence of agencies in
nascent but promising industries, and implementing the necessary legislation to support their growth. Furthermore, credible private sector institutions or regional trade associations have a crucial role to play in countries where ICT business usage and absorption is minimal. As illustrated in this report’s Open Source case study, businesses along with development institutions can make concerted efforts to showcase best practices and educate the private sector in how ICT can improve productivity.

Ireland- Private Sector Institutions in Action
Ireland, through its Industrial Development Authority (IDA), offers an example of how this may be achieved. This agency spearheaded the effort to attract foreign companies to invest in Ireland. It touted to multinationals the relatively-cheap but well-skilled English speaking workforce, a low corporate tax rate, and access to the EU. It arranged for company-specific packages of investment support and lobbied the central government for particular infrastructure improvements and education initiatives such as a swift and decisive action in the area of IT. The Irish government was responsive and answered the call. For instance, it pushed forth education reforms that reduced the secondary dropout rate significantly and increased the levels of tertiary education.

Moreover, the IDA created an overseas network of offices to establish close relationships with executives in specific companies and compiled what many considered to be the best database of potential investors around the world. It developed and fostered close relationships with executives in firms that fit the pattern of development sought by the country, and maintained these contacts even when individuals moved to different firms. This information was provided free to interested firms, along with advice on how to proceed with potential deals.

In terms of strengthening new services and niche manufacturing clusters, there also needs to be a cognitive shift away from structural incentives as the catalyst for change. This cognitive shift entails having the private sector take the lead in developing its own future, by proactively seeking market opportunities and asking for government support only as an enabler, not as an architect of the future. In this regard, government policies aimed at rewarding innovation and entrepreneurship are favored, as well as merit-based promotions campaigns for public servants. The government should help publicize, reward and disseminate successful entrepreneurial activity to give Caribbean people the sense of possibility. The idea is to move away from a state of complacency where government is seen as the caretaker, to one focused on competition as the force that spurs innovation, human initiatives, learning, interpersonal trust and cooperation triumph.  

interventions to knowledge gaps that would not normally be provided (or shared) through the private sector because of the investments necessary is unfeasible due to the size and fragmentation of an industry, or the limited private returns to investing in knowledge.