THE FEASIBILITY OF INFORMATION COMMUNICATION TECHNOLOGY (ICT) AS A TOOL FOR DEVELOPMENT – CARIBBEAN COMMUNITY (CARICOM) PERSPECTIVES

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A dissertation presented to the Faculty of Arts

in the

University of Malta

for the degree of

Masters of Arts in Contemporary Diplomacy

July 2007

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I. Abstract

As a result of global trends relating to trade, many small economies continue to seek replacements for traditional markets which no longer offer preferential treatment. Information Communication Technologies (ICTs) are presented by the Caribbean Community (CARICOM) as one such alternative, as a contributor to social and economic development. It is also seen as a set of activities wherein competitiveness can be achieved regardless of size, once the enabling environment is created.

Through a series of interviews, reviewing of documents and five case studies an assessment is made of the readiness of CARICOM for ICT development. An analysis is presented of various ICT strategies to ascertain capacity, both at the national and CARICOM levels for increasing over all development. The findings reveal a need for harmonizing regional ICT policies through the CARICOM Single Market and Economy (CSME); institutional coordination; and a funding mechanism to prevent ad hoc implementation of ICT strategies. These findings if implemented can enhance CARICOM development through ICT.

Acronyms

ACP	African, Caribbean and Pacific
ACT	Antigua Computer Technology
ADSL	Asymmetric Digital Subscriber Line
AIS	Academic Information Society
APUA	Antigua Public Utilities Authority
ASYCUDA	Automated System for Customs Data
BPS	Barbados Postal Services
BWA	Broadband Wireless Access
C&W	Cable and Wireless
CAGR	Compound Annual Growth Rate
CANTO	Caribbean Association of National Telecommunications Organisations
CAGR	Compound Annual Growth Rate
CARICAD	Caribbean Centre for Development Administration
CARICOM	Caribbean Community
CARIFORUM	Caribbean Forum
CARIFTA	Caribbean Free Trade Association
CCJ	Caribbean Court of Justice
CDB	Caribbean Development Bank
CITO	Central Information Technology Office (Jamaica)
CKLN	Caribbean Knowledge and Learning Network
CMDA	Code Division Multiple Access
CRNM	Caribbean Regional Negotiating Machinery
CSME	CARICOM Single Market and Economy
CTU	Caribbean Telecommunications Union
DSF	Digital Solidarity Fund
ECCB	Eastern Caribbean Central Bank
ECCU	Eastern Caribbean Currency Union
ECMS	Escher Electronic Counter Management System
EEPSI	Enabling Environment for Private Sector Information
EMIS	Education Management Information System
EDUTECH	Education Sector Enhancement Programme (Barbados)
ECTEL	Eastern Caribbean Telecommunications Authority
EPAs	Economic Partnership Agreements
EU	European Union
EU-LAC	European Union-Latin America and the Caribbean
FTAA	Free Trade Area of the Americas
FTC	Fair Trading Commission
GCN	Global Caribbean Network
GDP	Gross Domestic Product
GITR	Global Information Technology Report
GM	General Motors
GNI	Gross National Income
GNP	Gross National Product

GOAB	Government of Antigua and Barbuda
GSM	A European developed standard using a time division multiplexing bandwidth compression technique
HEART	Human Employment and Resources Training
HIPC	Highly Indebted Poor Country
IADB	Inter-American Development Bank
ICT	Information and Communication Technologies
ICT DI	Information and Communication Technology Diffusion Index
IMF	International Monetary Fund
IT	Information Technology
ITTMP	Information Technology-based Training and Management
ITU	International Telecommunications Union
JAMAL	Jamaica Movement for the Development of Literacy
KID	Knowledge Innovation and Development
MDC	More Developed Country
NIHERST	National Institute of Higher Education, Research and Technology
NRI	Networked Readiness Index
OECS	Organisation of Eastern Caribbean States
OOCUR	Organisation of Caribbean Utility Regulators
SCIT	School of Computing and Information Technology (Jamaica)
SMEs	Small and Medium Enterprises
SMMEs	Small Medium and Micro Enterprises
TASF	Technical and Advisory Support Facility
TATT	Telecommunications Authority of Trinidad and Tobago
TSTT	Telecommunications Services of Trinidad and Tobago
UN	United Nations
UNCTAD	United Nations Conference for Trade and Development
UNDP	United Nations Development Programme
UNDESA	United Nations Department of Economic and Social Affairs
UK	United Kingdom
UWI	University of the West Indies
USA	United States of America
USAID	United States Agency for International Development
UTECH	University of Technology
VoIP	Voice over Internet Protocol
WiFi	Wireless Fidelity
WiMAX	An air interface standard for fixed broadband wireless access systems employing a point-to-multipoint architecture
WSIS	World Summit on the Information Society
WTO	World Trade Organisation
YTEPP	Youth Training and Employment Partnership Programme

II. Acknowledgements

This work was assisted by the inputs and guidance of several persons for which the

researcher is extremely grateful. The mistakes therein are his

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1. ICT: The Response to Global Challenges for Caribbean Community (CARICOM) Economies

1.1. Introduction

As world economies transform seeking prosperity for citizens, the struggle continues for small States to be competitive and resultantly metamorphose their development tracks. Many of the micro states find themselves no longer buffered by preferential trade quotas, but instead are faced with the trends of globalization and trade liberalisation. It is expected for micro economies to operate and negotiate within world trading systems without any special and differential treatment. And many global trade negotiations are stalled, as lesser developed countries, especially in Africa, the Caribbean and the Pacific (ACP), refuse to participate in arrangements because of differing levels of trade capacity and competitiveness. There is also the contention with industrialized countries who keep protective subsidies for certain national sectors of production, while expecting complete open trade from more vulnerable economies.

Many academics and political leaders have expounded on these trends, citing the unfairness of some trade practices espoused by the 'world powers' within the halls of the United Nations and the World Trade Organisation. Developing countries are challenged to survive in these arenas, where the rules are made by and are therefore more amenable to the larger developed countries. The context of this dilemma is further exacerbated by the additional influential power wielded by these larger economies, bolstered by their provision of donor assistance and resources to developing countries.

1.2. Defining Development for CARICOM

Extensive research and discussion has focused on varying models of development and the continuing debate of the world's ever changing concept o/*f what elements constitute real development. Such discussion can fill volumes, since it is a topic discussed and researched almost daily. What is however evident is that there is no universal definition or a definitive set of social and economic rules to guide development.

For the purposes of this paper, an attempt is made to define and discuss development within the Caribbean context. These parameters are influenced by factors such as limited geographic and population size, micro economies, and most significantly, the effects of world trade and globalization. As seen in Dominica and to some extent other banana producing Windward Islands, the removal of preferential treatment within the European market emaciated a significant portion of their economies. So development can be affected by world forces outside the control of national boundaries.

Many Caribbean academics view development in society as a many sided process not limited to progress based on economic indicators such as a country's Gross Domestic Product (GDP), Gross National Income (GNI) and Gross National Product (GNP). In speaking of development, the GNP of a country is especially highlighted since it measures the final output of goods and services produced by the entire country. However in determining development a series of social indicators must also be included because a country's prosperity and well being cannot be seen only in a strict economic sense. Therefore in theory, it is possible for a country to have a satisfactory growth rate of per capita product and yet have very high levels of crime, illiteracy and limited access to health and social services. And the reverse could be also possible in perceiving a country with high literacy, low rates of crime and yet poor economic performance.

It would be safe to agree with Caribbean economists like Clive Thomas, who espouse that in the Caribbean context, development is linked to a system of ownership, control and production focused on satisfying the needs of the masses. These basic needs are personal (food, clothing, and housing), non-material (health, education), and access to public services. The basic needs can only be satisfied through job creation, health protection, the acquisition of certain skills and education/training to exploit the new technologies.

1.3. Significance of the Research

The economic reality of the Caribbean is spelt out by the World Bank:

> "The Caribbean is at a development crossroads. Decades of reliance on traditional markets, and on trade preferences, have given way to a new reality, where traditional agriculture plays a much smaller role in most economies, and where a much harsher and more competitive international wind blows. In such an environment, business as usual will not suffice." [1]

Specifically, the World Bank and many other international and Caribbean institutions have fingered Information Communication Technology (ICT) as avenues for potential development of products and services.[2] What is also noteworthy is that there are a number of 'model' countries that are used as benchmarks when highlighting the usefulness of ICTs as a development tool. Some of these countries such as Costa Rica, Estonia and Singapore, like the Caribbean, are also developing countries and their successes have made the possibility for similar results in the Caribbean region even more believable.

Therefore, this research is important, as it reveals to what extent the environment is present to secure gains from ICT, such as the removal of laws impeding ICT development and whether there are onerous customs duties on ICT equipment. It investigates if there are any other barriers to investment in ICT within CARICOM, for example high prices for telecommunication services.

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[1] The World Bank. *A Time to Choose: Caribbean Development in the 21st Century.* World Bank, 2005. pp xi USA
[2] ibid pp 94

Traditional economic stimuli for CARICOM member states, especially agriculture have suffered and continue to be buffeted by world trends. For example, in the Windward Islands of the Caribbean (Dominica, St. Lucia, St. Vincent and the Grenadines and Grenada), the 1990s saw a near collapse of their banana industry because of the erosion of preferential access to the protected European market. Banana was the largest earner of foreign exchange and in 1991 accounting for over 75% of all agricultural exports, over half the value of total exports and 15% of GDP.[3] Approximately 57 thousand people or 31% of the active labour force were involved directly or indirectly in banana production. For roughly 60% of the households involved in the banana industry, the crop represented their sole income.[4]

It is therefore no surprise that in seeking economic alternatives, all national budget speeches within the Caribbean make some connect to the possibilities of prosperity – economic and social development facilitated by ICTs. This prospect is also echoed within the Caribbean Community (CARICOM).

1.4. Methodology

This paper focuses on the grouping of fifteen developing Caribbean countries called the Caribbean Community (CARICOM) located just south of Florida and wedged between the giant markets of North and South America. It comments on the traditional economic activities of CARICOM member states within the context of global trends and argues whether there is an environment for ICTs to assist development.

 The discussion also investigates the enabling environment relating to infrastructure and to what extent countries have engaged ICT within a national developmental framework. This is

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[3] Anita van de Vliet, "Banana Wars," *World Link*, March/April 1994, p. 36
[4] ibid p. 36

done through a series of case studies representing a sample of the mixed levels of development and populations within CARICOM. For example, Jamaica, the most populous English-speaking member state and St. Kitts and Nevis, the smallest independent member are discussed. Antigua and Barbuda with its success and challenges of Internet gambling is presented as a model of note. That country's ongoing saga with the United States of America (USA) and subsequent WTO ruling relating to Internet gaming is highlighted to show how ICT can bring visible economic benefits and development to any country irrespective of size. Case studies are also developed for Trinidad and Tobago and Barbados. The former, having the most economic success from trade within CARICOM and a significant GDP linked to oil production. Barbados is chosen because even with its small geographic size and population, it still remains one of the most stable and buoyant economies which positions it as a More Developed Country (MDC) within the grouping.

ICT are mooted by many as an untapped opportunity for the Caribbean, and as such, this qualitative research uses a series of primary interviews, secondary sources and evaluation of policy documents (literature review) to investigate to what level, related national efforts, strategies and regional plans are in place to siphon real or perceived growth or improved living standards.

Some external difficulties with the analysis include a lack of statistical data with respect to services in general in CARICOM. Institutions such as the CARICOM Secretariat and the Caribbean Regional Negotiating Machinery are in the embryonic stages of researching such data. The word limit of this paper would also not allow such detailed research into statistics for ICT services and related economic activities within CARICOM.

1.5. Research Question

Given some of the global economic trends previously outlined and their impact on economies of a Caribbean regional bloc, this paper therefore briefly discusses and reflects on efforts of using ICT as an opportunity for increased economic growth, development and competitiveness.

The researcher seeks to answer the following questions in this paper:

- Is there an enabling environment for ICT to assist CARICOM development?

- Are there obstacles within the enabling environment that prevent development?

- What national and regional ICT strategies have being developed and their status of implementation?

- Has the development capacity increased in countries who have implemented ICT strategies?

- Can further integration under the CSME assist the development of ICTs?

To accomplish this, Chapter 2 highlights the theoretical underpinnings of ICT through a literature review of the subject as it relates to developing countries, international initiatives and another bloc of countries. An attempt is also made in this chapter to place CARICOM ICT plans within a global context and briefly show what initiatives work on an international level. Chapter 3 focuses on the evolving ICT policy initiatives of CARICOM in order to ascertain if they are adequate to establish an agenda for development for the region. Some analysis is also presented on the status of new ICT technology within CAICOM. Chapter 4 discusses further, the policy initiatives vis a vis development with an analysis of five case studies of CARICOM Member States at varying degrees of development – each having different approaches to embracing ICT as an integral part of their economies. Finally in the last chapter, the research concludes with some recommendations which range from the need for harmonisation of regional policy and the rationalisation of regional resources. Chapter one continues with an overview of CARICOM thus providing reader with the

historical perspective, its objectives and future vision of the regional integration movement. It also reveals the extent to which international trade agreements affect CARICOM economies, thereby pressing the need for alternative markets and solutions, such as a focus on ICT.

1.6. Brief History of CARICOM

CARICOM is the oldest and in terms of number of member states, the largest integration group in the Western Hemisphere. With a combined population of about 14 million and GDP of $28.198 billion, it also represents the smallest integration group in the hemisphere in economic terms.

The grouping has a history steeped in linkages with the United Kingdom (UK) and Europe. And the most reverberating effort of regional integration happened in 1958 when ten British Caribbean territories, united, and formed the West Indies Federation.[5] The Federation disintegrated in 1962 as a result of disputes over the distribution of power between the Federal Centre and the individual island administrations, taxation, freedom of movement and a customs union. Thereafter, most of the British Colonies in the Caribbean proceeded separately to political independence, beginning with Jamaica and Trinidad & Tobago in 1962.

Initiatives for regional economic cooperation were further pursued with elements of success over the last forty years. In 1965, the Governments of Antigua and Barbuda, Barbados and Guyana agreed to establish a CARIFTA, having signed the Dickenson Bay Agreement on 15 December 1965. They were joined by most of the English speaking territories and by 1 August 1968, CARIFTA was signed by 11 governments. In April 1973, the Georgetown Accord among CARIFTA members called for its transformation into the Caribbean Community and Common Market (CARICOM). On 4 July 1973 CARICOM was formally

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[5] The ten territories which comprised the West Indies Federation were Antigua and Barbuda, Barbados, Dominica, Grenada, Jamaica, Montserrat, St. Kitts-Nevis-Anguilla, saint Lucia, St. Vincent and the Grenadines and Trinidad and Tobago.

established via the Treaty of Chaguaramas signed by four Commonwealth Caribbean

independent states,[6] with provisions for the eight other territories which signed the Accord

by 1 May 1974. The Bahamas acceded to the Caribbean Community but not the Common

Market in 1983; while Suriname and Haiti became full members of CARICOM in 1995 and

2002 respectively.

1.7. Influence of Global Trade and other Factors on CARICOM Economies and Development

Caribbean states and their development fortunes are unique and mainly influenced by small

size, natural disasters and concomitant economic vulnerability. In 2005, the majority of

Caribbean countries registered a decline in their rate of growth with respect to the previous

year. The highest rates of growth were recorded by Grenada, St. Lucia, and Trinidad and

Tobago (9.2%, 7.9% and 7.0% respectively) followed by St. Kitts and Nevis and Suriname (5%

each). Five other countries registered moderate growth rates averaging between 2% and 3%.

These include the Bahamas, Belize, Dominica and St. Vincent and the Grenadines. Jamaica

recorded growth while Guyana witnessed a contraction of its economic activity (1.4% and -

2.9% respectively).[7]

CARICOM governments are all struggling with the new vicissitudes of economic world

trends. The Prime Minister of Barbados, Owen Arthur, in the Barbados Nation newspaper

28 April 2006 urged CARICOM to accept that the days of receiving preferential treatment

for their goods were at an end, but he was also critical of the "calloused" manner in which

the developed nations were handling the process. According to him:

> "it is the callous manner in which the transition is being managed, as witnessed last
> November with the instant and unilateral evisceration of the sugar protocol. That has
> caused us much concern. In the case of Barbados we have in fact already started to

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[6] The original signatories were Barbados, Guyana, Jamaica and Trinidad and Tobago. The Treaty of
Chaguaramas came into effect on 1 August 1973.
[7] UNECLAC *Preliminary Overview of Caribbean Economies 2005.* Available: www.eclac.cl/portofspain/
21 April 2006.

develop new activities as we diversify around our dominant sector, sugar, as suggested by the Commission"[8]

Arthur was making specific reference to the political agreement reached by the European Union (EU) Agriculture Council (November 2005) on the reform of the EU sugar regime which has implications for another main CARICOM agriculture export – sugar. The new regime started to take effect on 1st July 2006, and will see the price of raw sugar supplied by CARICOM and other African, Caribbean and Pacific (ACP) Members reduced by a cumulative total of 36% over four years. For a Highly Indebted Poor Country (HIPC) like Guyana, this means a potential loss in export earnings of some US40 million per annum when the full cuts take effect in 2009/10.[9]

Former British Secretary of State Jack Straw has described efforts to get Europe to give funds for economic development in CARICOM as frustrating –

"…We continue to argue with our European colleagues about the importance of fairness when it comes to compensation and transitional regimes for sugar and for bananas and for other commodities…"[10]

Straw's comments certainly shores up the urgency for CARICOM States to inculcate new approaches to economic development. Europe is offering fewer than 50 million Euros to Caribbean and other developing nations as compensatory transitional payments, while Britain had been lobbying for close to 200 million Euros.[11]

Apart from the bilateral arrangements with countries such as the UK, most CARICOM Member States have also signed on to the Free Trade Area of the Americas – FTAA (though still born at the moment); are members of the World Trade Organisation and are involved

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[8] Prime Minister Owen Arthur was referring to the Sugar Protocol with the European Union. The Fifth UK/Caribbean Forum began in Barbados 28 April 2006.
[9] Statement by Clement Rohee, Guyana's Minister of Foreign Trade. 16 March 2006. Available on line www.moftic.gov.gy/speeches/sp_SugarUp.NA.htm 15 April 2006
[10] Trevor Yearwood. "A Raw Deal! Straw-Europe Tight-fisted with Monetary Aid to Caribbean." Barbados Nation Saturday Sun 29 April 2006, pp. 6
[11] ibid

in negotiating the CARIFORUM/European Community Economic Partnership Agreement (EPA). CARIFORUM is the grouping of CARICOM Member States and the Dominican Republic. Of course one can always discuss whether or not CARICOM can enter an economic arrangement with the European Union and other such agreements as equal partners. All of these arrangements and negotiations have significant implications for the economic dynamics and survival of the region as a whole.

1.8. The CARICOM Single Market and Economy

In response to these world economic changes, CARICOM leaders have agreed to unite their economies under the CARICOM Single Market and Economy CSME. Although suggested since 1989 in Grande Anse Grenada for implementation in 1993, it was not until January 2006 that six CARICOM Member States completed amending internal legislation and created the Single Market.[12] The six other Member States[13] joined in June 2006 and that the Single Economy Framework will be finalised by 2015 thereby pushing the process further in implementing the CSME. One critical element in creating the CSME is the ratification and passing into law of the Revised Treaty of Chaguaramas, the Agreement that governs CARICOM (herein referred to as the Revised Treaty) which establishes the Community including the CSME. This Treaty was signed in July 2001 and must be ratified nationally to bring 15 economies together in one seamless economic space. The CSME is signalled by CARICOM leaders as the region's only route at this time for economic prosperity in the face of world trends.

It is interesting to note that even while many CARICOM leaders repeatedly make reference of the potential benefits of ICTs, there is little mention of ICT as a tool or enabling

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[12] The six CARICOM States agreeing to begin the Single Market - Barbados, Belize, Guyana, Jamaica, Suriname and Trinidad and Tobago.
[13] The six Member States are Antigua and Barbuda, Dominica, Grenada, St. Lucia, St. Kitts and Nevis and St. Vincent and the Grenadines. The three other Member States who have not joined as yet are the Bahamas, Montserrat and Haiti.

environment within the Revised Treaty. In fact although successful examples of world economies transformed by ICT were in evidence when the Revised Treaty was signed in 2001, CARICOM still focused to a great extent on regional agricultural, industrial, trade and transport policies. And in some instances like the transport policy little progress has been achieved in creating and executing such a policy. There is also no mention of harmonising key policy areas relating to ICT within the Treaty. These and other areas will be discussed further, but in making a case for the CARICOM Single Market & Economy (CSME), so far, 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 regionally.[14] In fact in the Revised Treaty, reference to ICTs is mentioned only twice - in Article 53, Member States are asked to promote "the creation of, and access to, trade and technology information networks"[15] The second reference is in Article 153 and states that, "The Member States undertake to provide opportunities for access to their technological and research facilities by nationals of disadvantaged countries."[16]

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[14] The World Bank. *A Time to Choose: Caribbean Development in the 21st Century.* World Bank, 2005. pp 99
[15] CARICOM Secretariat. *Revised Treaty f Chaguaramas Establishing the Caribbean Community Including the CARICOM Single Market & Economy.* Guyana 2002. pp 36
[16] ibid pp 98

2. Literature Review

2.1. Theoretical Underpinnings of ICTs

The view that ICT (various elements including networking equipment, telephony, connectivity, office equipment, manufactured products, computers, the Internet, mobile instruments) as a major contributor to growth in some sectors has caused some Caribbean countries to believe international successes can be duplicated in CARICOM. In researching the topic there are however very little published documents on ICT and how it can be harnessed for development within CARICOM. Therefore some analysis is also made of the strategies developed by another integration bloc, international efforts and the initiatives used by countries with successful strategies.

There are a number of papers that can be accessed via the Internet and from institutions outlining various strategies for developing critical ICT areas within the Caribbean Community but very little progress on an overarching regional structure covering the many aspects of ICT. For example the United Nations Department of Economic and Social Affairs (UNDESA) and the Caribbean Centre for Development Administration (CARICAD) developed the Action-Oriented E-Government Strategy for Countries of the Caribbean Region 2004-2007.[17] There is also very little movement on this strategy due to lack of funds to be discussed in chapter 3 and it remains limited in its focus on an analysis of "e-

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[17] CARICAD. Action-Oriented E-Government Strategy for Countries of the Caribbean Region 2004 – 2007. May 2004

government readiness" and consultations.[18] And even though linked to the CARICOM strategy, both efforts are stalled because of inadequate funding; therefore any movement in one area seems disjointed. The rationale being that an effective e-government structure needs to be facilitated by a relevant infrastructure.

A background paper entitled "Mobilising ICTs for Caribbean Development: A 21st Century Imperative" was tabled at a CARICOM ICT Ministers meeting in October 2004. The author Dr. Gillian Marcelle called for the creation of an enabling environment, flag ship programmes and the creation of a regional executing agency among other areas.[19] However as she also concluded, the work is conceptual for the acceptance of CARICOM Ministers. And though she may have been limited within her remit as a consultant, there was no indication of the next steps related to legislation and progress towards developing a protocol for CARICOM. Further the ICT Ministers fora may not have been the best route to see implementation of the document. That specific grouping of Ministers meets in an ad hoc fashion with no regular schedule, in fact the last ICT Ministers forum was in 1995 and none have been planned since 2004.

The University of the West Indies has pulled together a number of papers presented at ICT seminars facilitated by its Centre for International Services in 2005. The end result is a book entitled: Bridges on the Digital Divide Volume 2. Therein are a series of essays discussing various aspects of ICT ranging from "Internet Governance" to "ICT Standards and Measurement[20]" The work is important as it outlines a broad view of what is being developed around the region to bridge the digital divide as presented in a number of case studies. However unlike another document prepared by the Caribbean Regional Negotiating Machinery (CRNM) it does not focus on a specific way forward for connecting the

[18] Ibid pp 6
[19] Marcelle. Gillian. Mobilising ICTs for Caribbean Development: A 21st Century Imperative. October 2004
[20] Sanatan R. Bridges on the Digital Divide Vol. 2. Barbados. UWI 2005.

organisations responsible for elements of ICT within CARICOM. The CRNM paper though dealing with convergence issues gives a synopsis of CARICOM efforts at ICT strategies and implementation status. It further discusses infrastructure, barriers to ICT trade and new technologies.

The CARICOM ICT Connectivity Agenda will be addressed in detail in chapter three, but as presented to CARICOM States, it is sometimes ignored within national plans although there is a clear practical case for linking both. As will be further developed such a disconnect presents a barrier to creating the enabling environment for ICT as an economic activity.

The researcher therefore attempts to not only discuss the main questions articulated within this paper, but to present new suggestions for implementing the CARICOM ICT Strategy as a tool for development. None of the CARICOM ICT plans and papers presented thus far has advanced such a practical approach.

2.2. ICT for the World

The following table is culled from the Global Information Technology Report.

Rank	Country	Score	Rank	Country	Score
1	United States	2.02	59	El Salvador	−0.24
2	Singapore	1.89	60	Kazakhstan	−0.24
3	Denmark	1.80	61	Ghana	−0.25
4	Iceland	1.78	62	Colombia	−0.27
5	Finland	1.72	63	Egypt	−0.29
6	Canada	1.54	64	Bulgaria	−0.31
7	Taiwan	1.51	65	Uruguay	−0.31
8	Sweden	1.49	66	Panama	−0.33
9	Switzerland	1.48	67	Pakistan	−0.34
10	United Kingdom	1.44	68	Indonesia	−0.36
11	Hong Kong SAR	1.44	69	Costa Rica	−0.37
12	Netherlands	1.39	70	Philippines	−0.37
13	Norway	1.33	71	Argentina	−0.38
14	Korea, Rep.	1.31	72	Russia Fed.	−0.39
15	Australia	1.28	73	Azerbaijan	−0.40
16	Japan	1.24	74	Trinidad & Tob.	−0.42
17	Germany	1.18	75	Vietnam	−0.47
18	Austria	1.18	76	Ukraine	−0.49
19	Israel	1.16	77	Morocco	−0.51
20	Ireland	1.15	78	Namibia	−0.53
21	New Zealand	1.14	79	Uganda	−0.60
22	France	1.11	80	Serbia & Mon	−0.63
23	Estonia	0.96	81	Venezuela	−0.65
24	Malaysia	0.93	82	Macedonia, FYR	−0.67
25	Belgium	0.87	83	Sri Lanka	−0.68
26	Luxembourg	0.80	84	Tanzania	−0.69
27	Portugal	0.56	85	Peru	−0.70
28	United Arab Emirates	0.54	86	Armenia	−0.72
39	Chile	0.52	87	Algeria	−0.72
30	Malta	0.51	88	Gambia	−0.72
31	Spain	0.47	89	Dominican Republic	−0.73
32	Czech Republic	0.36	90	Nigeria	−0.74
33	Cyprus	0.36	91	Kenya	−0.75
34	Thailand	0.35	92	Mongolia	−0.76
35	Slovenia	0.34	93	Tajikistan	−0.77
36	Tunisia	0.33	94	Moldova	−0.78
37	South Africa	0.30	95	Mali	−0.78
38	Hungary	0.27	96	Georgia	−0.82
39	Qatar	0.25	97	Bosnia & Herzegovina	−0.87
40	India	0.23	98	Guatemala	−0.88
41	Slovak Republic	0.19	99	Cameroon	−0.88
42	Italy	0.16	100	Honduras	−0.89
43	Greece	0.08	101	Mozambique	−0.94
44	Lithuania	0.08	102	Madagascar	−0.99
45	Mauritius	0.07	103	Kyrgyz Republic	−1.01
46	Kuwait	0.06	104	Cambodia	−1.03
47	Jordan	0.03	105	Zimbabwe	−1.04
48	Turkey	0.00	106	Albania	−1.04
49	Bahrain	0.00	107	Ecuador	−1.07
50	China	−0.01	108	Benin	−1.07
51	Latvia	−0.03	109	Bolivia	−1.10
52	Brazil	−0.04	110	Bangladesh	−1.11
53	Poland	−0.09	111	Guyana	−1.11
54	Jamaica	−0.11	112	Nicaragua	−1.14
55	Mexico	−0.14	113	Paraguay	−1.23
56	Botswana	−0.16	114	Chad	−1.36
57	Croatia	−0.23	115	Ethiopia	−1.39
58	Romania	−0.23			

Table 1: The Networked Readiness Index Rankings 2005[21]

The Global Information Technology Report (GITR) assists in determining national ICT

strengths and also highlights the importance of ICT application and development for

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[21] World Economic Forum. *Global Information Technology Report* (2006) Online. Available pdf
www.weforum.org 23 April 2006.

economic growth. The Networked Readiness Index (NRI) looks at national economies to measure the degree of preparation to participate in and benefit from ICT developments. The NRI has 3 indexes which assess: the environment offered; the readiness of key stakeholders and the usage of ICT among these stakeholders. Only three CARICOM Member States are represented in the NRI – Jamaica (ranked 54 with a score of -011), Trinidad and Tobago (ranked 74 with a score of -0.42) and Guyana (ranked 111 with a score of -1.11). From this chart CARICOM's ranking is not impressive when compared to other countries and regions. This can have a negative impact on attracting ICT investment since many companies would be influenced by the indicators within the NRI.

2.3. International ICT Strategies

According to the GITR Report author and Chief Economist Augusto Lopez-Claros the Nordic countries are consistently at the top of the NRI because of an education infrastructure that empowers the labour force allowing it to be comfortable with technology.[22] Of course one can also suggest that the cold climates of the Nordic countries also force persons to remain indoors for longer periods and are hence easier encouraged to use new technologies. This is unlike the communities in temperate climates like the Caribbean where life styles are linked with outdoor activity. In fact, the average Caribbean family would spend very little time inside even after returning home from work or school.

In looking at the other success stories at the international level, countries such as Bangalore and Singapore have high technology firms coming together in clusters which had a positive effect on the economy. "This approach has been attempted frequently in the Caribbean with almost universally poor results, due partly to the choice of low wage dependent clusters such as call centres, as well as the failure to link foreign investment to local skills." [23] It must

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[22] ibid
[23] The World Bank. *A Time to Choose: Caribbean Development in the 21st Century.* World Bank, 2005. pp 94.

be understood that the Caribbean cannot adopt wholesale any strategy without realising the difference in environment and skills capacity. What CARICOM States may wish to consider adopting, are other key elements within ICT development frameworks which though linked to economic progress in some countries must be seen as workable in the Caribbean. These strategies all possess the common denominator of facilitating ICT development through education, improved connectivity, access to ICT, private sector involvement, telecommunications liberalisation (except Costa Rica) and incentives.

At the top of the NRI chart is the USA, who jumped four places to push Singapore from the top spot. Lopez-Claros states that the USA continues to be an ICT powerhouse because of collaborations between the academic and business community and the creation of leading research institutions.[24] At least one CARICOM State Antigua and Barbuda has followed this example with its International Institute of Technology.

2.3.1. Estonia

Estonia is another success story of economic growth through its national ICT approaches. Upon achieving independence in 1991, Estonia realised the importance of having a project for bringing the country into the digital age and premised its IT strategy on providing broad-based connectivity, providing access to technology and information as a right and on leveraging its human resources to expand economic growth.[25] With a modern telecommunication network, low connectivity costs and high rates of computer literacy, Estonia's investment has led to an "explosion in ICT applications in banking, education, health, transport and public administration"[26] Like other ICT development models, Estonia de-monopolised the telecommunications industry, mostly through the liberalisation on the

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[24] World Economic Forum. *Global Information Technology Report* (2006) Online. Available pdf www.weforum.org. 23 April 2006.
[25] UNDP. *Creating A Development Dynamic – Final Report of the Digital Opportunity Initiative.* Available. http://www.opt-int.org/framework/pages/appendix3Case3.html. 20 March 2006.
[26] ibid

wireless sector; extended telephone connectivity throughout the nation, for example, Estonian mobile operators were the first in the world to introduce Wireless Application Protocol (WAP) services to customers; and its deregulation and privatisation programme made it a highly attractive for foreign investors.

The close ties with Nordic neighbours allowed Estonia to capitalise on manufacturing mobile phones, gaining access to local and global markets because of its location as a gateway between the East and West. Local entrepreneurship has produced new companies including Microlink, the largest IT Company in the Baltic States. The following are some details of Estonia's ICT strategy which have reaped benefits:

Education: There is a highly educated and skilled workforce with strong ICT emphasis placed on University curricula, therefore, it is assumed that the generation of Estonians now in school will be 100 percent computer literate.

Connectivity: Farmers in remote areas are offering produce on local versions of eBay; the Internet is used extensively for e-government and e-banking functions with most commercial banking transactions conducted via the Internet.

Strategy: ICT providers are encouraged to support rural development through concessions; "win-win" agreements are forged with Nordic telecommunications companies; politics is kept out of the computerisation programme by channelling government investments through an NGO; and a marketing campaign to encourage demand.[27]

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[27] ibid The Estonian Strategy is also dependent on strong leadership to encourage and coordinate broad-based commitment.

Estonia currently has not adopted cluster development policy since the country is concerned with operating within international (Nordic-Baltic) rather than domestic clusters. A 2004 study (on E-government in Europe: Rethinking Public Administration, by the Economist Intelligence Unit), ranked Estonia as number one in Central Europe. Its government's pioneering role in introducing paperless meetings of Government Ministers would certainly be a quantum leap if adopted by CARICOM, which is one organisation with numerous paper processing for meetings. And Estonia is considered the European e-tax services champion with 59% of tax returns filed electronically.[28]

2.3.2. Costa Rica

Unlike Estonia, Costa Rica's telecommunications policy has been to maintain a national regulated monopoly, which is responsible for electricity, telephones and high-level Internet access. This monopoly, Instituto Costarriencense de Electricidad (ICE) has converted Costa Rica into one of Latin America's most densely networked countries.[29] In 1999 Costa Rica claimed 8.3% economic growth from the strategy of using ICT as an export engine, the highest in Latin America. However, similarly to Estonia Costa Rica, has "…developed itself into a viable location for high tech industries by providing not only an educated population and prime geographical location, but also by demonstrating the success stories of Intel, Microsoft and others."[30]

The following are some of the elements within Costa Rica's ICT strategy:

Infrastructure: There has been critical investment in developing one of the most advanced networks in Latin America, enabling easy access to ICT for the general population.

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[28] Policy Brief Estonia (2005) Online Available at:
http://europa.eu.int/information_society/activities/gothenburg-conference/doc/pdf/brief_estonia.pdf
26 April 2006.
[29]UNDP. *Creating A Development Dynamic – Final Report of the Digital Opportunity Initiative.* Available.
http://www.opt-int.org/framework/pages/appendix3Case2.html 20 March 2006.
[30] ibid

Enterprise: An attractive investment environment was created for the development of high-tech industries. Since 1995, several foreign electronics firms have located plants in Costa Rica; these include Intel, Microsoft, Lucent Technologies and Siemens. Computer chips at one time accounted for 37% of Costa Rica's exports, compared to bananas at 10% and coffee at 5%.[31]

Human Capacity: Similarly to Estonia, in Costa Rica there is an effort to educate the population and emphasise the presence of IT in the curriculum. There has even been a redistribution of expenditures from defense funding to education.

2.4. i2010 - The European Union ICT Strategy

The European Union (EU) leads CARICOM as the most integrated bloc of countries in the world. It has widened its membership and has moved from being a Community to a Union of countries, giving rights to its citizens to move freely. It has also developed a single currency- the Euro, and has a supranational body where laws are made at its headquarters in Brussels which are automatically applicable in the member states. This is unlike the CARICOM arrangement where decisions taken by the CARICOM Heads of government at the Community level must be then ratified and implemented within national borders.

The EU ICT strategy, though similar to others previously discussed, has the key step involving the approval of Member States, therefore i2010 sets EU ICT policy until 2010.[32] This is one of the suggestions that will be developed in making a CARICOM ICT strategy meaningful for enabling development. The EU strategy has three priorities:

1. to create a Single market for converging ICT and media

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[31] ibid
[32] http://ec.europa.eu

2. increase of investment in ICT research and

3. inclusive information society[33]

Of interest to this research is priority one which surprisingly is not yet advanced within the CARICOM agenda.

2.5. World Summit on the Information Society (WSIS)

Major commitments and recommendations towards the international development of ICT have been articulated over the last five years via the WSIS. This event was endorsed by the UN General Assembly in 2001 and was carried out in two phases: the first phase in Geneva December 2003. This section was to develop and foster a statement of political will with "concrete steps to establish the foundations for an information society for all"[34] The second phase (Tunis November 2005) was to put the Geneva plan of action into motion as well as to find solutions and reach agreements in the fields of Internet governance and financing mechanisms.

> "We emphasize that the adoption of ICTs by enterprises plays a fundamental role in economic growth. The growth and productivity of well-implemented investments in ICT can lead to increased trade and better employment. For this reason, both enterprise development and labour market policies play a fundamental role in the adoption of ICTs. We invite governments and the private sector to enhance the capacity of Small, Medium and Micro Enterprises (SMMEs), since they furnish the greatest number of jobs in most economies. We shall work together, with all stakeholders, to put in place the necessary policy, legal and regulatory frameworks that foster entrepreneurship, particularly for SMEs.[35]

The entire forty paragraphs of the Tunis Commitment speaks inter alia to bridging the digital divide, wider development of public access points, affordable access to ICTs, mobilising resources and underscores special attention for the vulnerable and particular needs of developing countries. With such an extensive commitment, the obvious question of

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[33] ibid
[34] World Summit on the Information Society. Available on line http://www.itu.int/wsis/basic/about.html. 21 April 2006.
[35] World Summit on the Information Society – Tunis Commitment. Available on line http://www.itu.int/wsis/docs2/tunis/off/7.html 21 April 2006.

resources arises and the Digital Solidarity Fund (DSF) was established mainly for "specific needs at the local level and seeking new voluntary sources of solidarity finance"[36]

There was also agreement to ensure sustainability of progress towards the goals of WSIS after the Tunis phase with a mechanism for follow up at national, regional and international levels. For the national level, countries were encouraged to set up a national implementation mechanism, in which:

a. "National e-strategies, where appropriate, should be an integral part of national strategies.

b. ICTs should be fully mainstreamed into strategies for Official development assistance (ODA) through more effective information-sharing and coordination among development partners.

c. Existing bilateral and multilateral technical assistance programmes, including those under the UN Development Assistance Framework, should be used whenever appropriate to assist governments in their implementation efforts at the national level.

d. Common Country Assessment reports should contain a component on ICT for development."[37]

Various UN agencies were identified as possible facilitators for key areas such as capacity building and ICT infrastructure. There were representatives from CARICOM Member States and the CARICOM Secretariat present at WSIS, but there have been limited success is securing the assistance for key areas referred to. In the Tunis Commitment there are elements which are related to the national vision for ICT development in most small economies. In paragraph 12 of the Tunis Commitment and in other sections it outlines and

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[36] ibid
[37] ibid

seeks commitments to the very routes already used by some countries like Estonia, Costa Rica, Singapore, the USA and those headlining the NRI rankings. The CARICOM Connectivity Agenda makes reference to the international plans and as such outlines the role of setting up national strategies. The upcoming chapter will discuss whether the CARICOM ICT policy is adequate to enable development for the region, to what extent the infrastructure is present and the barriers to investment.

3. CARICOM ICT Connectivity Agenda

3.1. Bilateral Arrangements within the Strategy

The Caribbean Community first attempted to address a coordinated ICT policy and strategy in 2003 by creating a Connectivity Agenda and Platform for Action. The strategy underscored the importance of ICT as an instrument for strengthened connectivity and a tool for prosperity and social transformation. It was premised on the decision that CARICOM would be a part of the international ICT sphere using the European Union-Latin American and the Caribbean (EU-LAC) Alliance for the Information Society (@lis) Programme and the United Nations Task Force for the Information Society as entry points. And similar to Estonia and its linkages with the Nordic states, the CARICOM plan also mentions intentions to enter bilateral arrangements with other hemispheric countries and blocks, such as the Dominican Republic, Costa Rica, Cuba and Central America among others. However, unlike the Estonian model, CARICOM has made little progress in terms of realising such bilateral ICT arrangements.

Although there are bilateral agreements for trade between CARICOM and some countries like the Dominican Republic and Costa Rica, no serious Community efforts have been made to court ICT companies to set up operations within CARICOM.[38] Instead agreements with the Dominican Republic, Costa Rica and Cuba are utilised for trade in goods such as agricultural products. These goods are generated from the larger CARICOM States with heavy agriculture and meat production - such as Belize (red beans, oranges and shrimp).

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[38] Carryl Ivor, Telephone Interview. 4 July 2007

And as such, there are limited gains from the agreements since in most cases CARICOM companies lack the capacity to supply the orders.[39]

Without the initiative to implement the above-mentioned element of the strategy, no economic returns can be gained. And once again, as outlined in chapter one, CARICOM in its search for alternative economic activity has not seriously engaged the possibility of exploiting manufacturing of ICT products by attracting companies from the countries previously mentioned. Of course consideration must be given to whether telecommunication infrastructure and general ICT costs are barriers to attracting such investment. This will be discussed later in the chapter. Such investment engagement could be developed by embellishing the limited reference to ICT within the Revised Treaty of Chaguaramas and placing the ICT policy on the same level of importance like agriculture. This can be done via the development of an ICT chapter within the Revised Treaty, thereby placing the necessary policies and institutions for facilitating economic activity in this sector as protocols to be developed as national legislation.

3.2. Executing the Scope of the Strategy

The scope provides a "general framework" and outlines a three-step process for CARICOM countries:

a. Assessment and planning

b. Implementation (including infrastructure, utilisation, content, legal and regulatory frame work and financing)

c. Evaluation [40]

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[39] ibid

[40] CARICOM UNDP ICT Proposal 2006

The agenda and continuation of national strategies is expected to be directed by a working group, established by a secretariat or national coordination office with active participation by civil society including the private sector. The larger CARICOM states have offices responsible for coordinating strategies as can be seen in Jamaica, Trinidad and Tobago, Barbados, Guyana, Grenada, St. Lucia, and St. Kitts and Nevis. In the other states, there is one person responsible for coordination.[41] And as in the case of some regional integration initiatives, the Organisation of Eastern Caribbean States (OECS)[42] has adopted a sub-regional approach which like that of CARICOM is challenged for financial resources. It is thought that the "CARICOM network will be strengthened once the OECS has completed its strategy"[43] There is however no precedent for this line of thinking, since the efforts at forming a single economy within CARICOM is not necessarily boosted by, for example, the reality of tighter economic linkages among the OECS.

The three-step process outlined within the scope is being implemented at the national level in an ad hoc fashion as will be seen within the case studies of chapter four of this paper. Each of the countries are implementing at their own pace, thereby further underscoring the need for a coordinated process enshrined into Community policy. In all three areas, there is no commitment to a regional time frame for execution. And the proposed completion of the OECS strategy cannot be seen as a catalyst for strengthening the CARICOM network since this cannot replace the necessary political will and national bodies necessary to move implementation of the ICT plan forward. In fact having a separate OECS strategy can be seen as duplication of efforts and within the larger of context of CARICOM, this is the norm. As such, it may be prudent for the certain CARICOM initiatives to merge with the OECS and

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[41] CARICOM UNDP ICT Proposal 2006. pp 6
[42] There are eight members of the OECS, six of which are CARICOM States: Antigua and Barbuda, Dominica, Grenada, St. Lucia, St. Kitts and Nevis and St. Vincent and the Grenadines. This grouping of smaller economies is further integrated than the CARICOM initiative with a single currency and central bank.
[43] CARICOM UNDP ICT Proposal 2006. pp 6

vice versa depending on which one is further developed. This should be the case of any ICT strategy and enabling institutions.

3.3. The Eastern Caribbean Telecommunications Authority (ECTEL): A Case for Rationalising Resources within the CARICOM ICT Strategy

To briefly elaborate on the work at the sub-regional level one can discuss the reality that the OECS has a single currency and collaborates as a bloc even within the Caribbean Community, yet this in no way strengthens the integration efforts of the wider body to possess a single currency. Also, although the OECS has its own stock exchange, there is no quick response to establishing a CARICOM stock exchange. There are instances when the sub-regional efforts seem to possess more impetus than the progress of regional integration at the wider level. This may seem to thwart the larger integration initiatives since focus is diverted to the sub-regional level by more than half of the CARICOM member states. And the public statements goading the tighter coordination of policies at the sub-regional level over the broader CARICOM sphere abound for many initiatives. For example the head of the St. Lucia Hotel and Tourist Association Earl Chastanet advocates that the OECS should first work on its own integration efforts. He sees this as the first step before these extremely micro economies can gain benefits from the CSME.[44] Of course his argument can be easily debunked since world trends will exclude the economic development of small Caribbean islands unless they also get into blocs and the larger the integration effort, the greater the chance of survival. With a total population of approximately half a million the OECS as a group knows it is in a better global economic negotiating position as part of CARICOM with its population of 14 million.

The argument for integrating and rationalising resources also holds true in executing a CARICOM ICT strategy. Given the relatively minute populations and economies of the

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[44] Richards Nasheta. "Tourism Official Expresses Reservations about CSM." The Daily Observer, Saturday 3 June 2006

CARICOM member states a sub-regional approach also raises the question of duplication and competition for scarce resources. The Eastern Caribbean Telecommunications Authority[45] is presently executing a World Bank Funded Telecommunications and ICT Development Project for its five OECS Member States. One subset of this project is a consultancy, for expanding the use of broadband applications by governments and the private sector. There is very low broadband capacity in the OECS and by extension also within CARICOM in comparison to world standards.[46] Some of the outputs of the consultancy include:

a. Creation of model policy to develop the ICT sector.

b. Investigate maximum use of top level domain names and management

c. Facilitate synergies for e-governance platforms since there are cases within some islands where platforms differ[47]

d. Develop criteria for pilot ICT projects using broadband to demonstrate application in a tangible way using proposals from member states

It is expected that ECTEL consultants will look at all ICT initiatives including the CARICOM ICT Connectivity Agenda. However this approach of addressing aspects of ICT development within the OECS is a concrete example of the duplication previously referred to. The CARICOM ICT Agenda as formulated within a project document presented for funding by the United Nations Development Fund (UNDP) and Italy also underscores among other things:

a. The liberalisation of the ICT market in order to have availability of a wide and unrestricted access to the Internet at inexpensive rates

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[45] ECTEL was launched in St. Lucia 18 October 2000 as a telecommunications regulatory body for the OECS; it has five Member States so far – Dominica, Grenada, St. Kitts and Nevis, St. Lucia and St. Vincent and the Grenadines.
[46] Norville, Peter. Telephone Interview. 8 June 2006
[47] ibid

b. Political support from the government adopting e-government and e-governance in

      order to encourage citizens and business using the Internet[48]

While the language may be more generalised, the plans and efforts regarding the CARICOM

ICT Agenda and the OECS World Bank funded ICT Development project are similar. They

both investigate collaboration, connectivity costs, implementation of national ICT e-

governance projects with social value, e-policy and e-strategy formulation. The OECS

project is more specific with its activities and if history can be used, the sub regional bloc

may very well be the first to complete an ICT development project.[49] Then the question

would be raised as to whether or not the rest of CARICOM should use the OECS model. It

could be advanced that the OECS' ICT development project should be used as a propitious

point to highlight that CARICOM's regional integration efforts could be guided from the sub

regional core.

Not to be overlooked is the fact that ECTEL, as a body set up by the OECS, could also be

used for the wider CARICOM grouping to regulate and deal with issues of

telecommunications which are key to any ICT strategy. ECTEL was initially set up to

facilitate the liberalisation of the sub regional telecommunication sector, and could now

continue such a role for all of CARICOM along with facilitating the execution of areas within

the strategy where there is duplication previously mentioned.

3.4. CARICOM Current ICT Status

As indicated in chapter one, many CARICOM Member States and the CARICOM Secretariat

have underscored the vision of transformation to knowledge based societies and reaping

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[48] CARICOM ICT Connectivity Agenda draft project 2004 - 2007
[49] The OECS completed a pharmaceutical coordination arrangements even though it was a project touted at the
CARICOM level and there are talks of creating an OECS economic union even as CARICOM plans to integrate
regional economies by 2008

benefits for social and economic development. In fact, the upcoming chapter will investigate the national strategies of some CARICOM countries in more detail and assess whether their economies are benefiting from ICT efforts in light of the erosion of traditional markets. Trinidad and Tobago and Jamaica have possibly the most detailed strategies which will also be discussed in the next chapter. However the language within Fast Forward: Trinidad and Tobago's National ICT Strategy captures the picture of the many efforts within CARICOM though at varying levels of implementation. Trinidad and Tobago places its national ICT strategy within its vision to transform the country into a developed society by 2020. This is called Vision 2020 and within are statements also echoed by other CARICOM Members.

> "A major facet of Vision 2020 is the development of a strategy to facilitate the transformation of Trinidad and Tobago into a knowledge based society through the effective use if ICT."[50]

Similar to the pronouncements of Trinidad and Tobago, CARICOM Members have been moving forward incrementally towards the development of ICT at the national and regional level. The CARICOM Secretariat is expected to assist and monitor the efforts but some focal points have questioned the capacity of the Secretariat and indeed the commitment at the regional level in terms of finances and human resources. One would have to agree with the comment that it is somewhat "ridiculous" to have one individual driving the CARICOM ICT initiative within the CARICOM Secretariat[51]. That however is the case, as the point officer is stretched to find funds and execute elements of the CARICOM plan, with little success at securing donor assistance.[52] However, member states are seeking to use ICT to connect citizens for education, commerce health and cultural development. And most countries have developed an ICT plan or strategy, for example the Bahamas in 2003 presented a policy statement on e-commerce - the Bahamian Digital Agenda. Antigua and

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[50] Fast Forward: Trinidad and Tobago's National ICT Strategy. Available on line http://www.nict.gov.tt/plan/documents/appendix_B.pdf 21 April 2006. pp 10
[51] Bertin Cletus. Telephone Interview. 13 June 2006
[52] Britton Jennifer. Telephone Interview. 13 June 2006.

Barbuda also developed a draft ICT policy also hoping to transfer the twin island state into a knowledge-based society.

3.5. E-Government within CARICOM

As part of the attempts to develop ICT within the region, the Caribbean Technical and Advisory Support Facility on E-Government (TASF) were created under the aegis of the United Nations Department of Economic and Social Affairs (UNDESA) and the Caribbean Centre for Development Administration (CARICAD). One of the outcomes from the facility is the Action-Oriented E-Government Strategy for Countries of the Caribbean Region 2004-2007. The Strategy is informed by the section on e-governance within the CARICOM ICT/Connectivity Agenda and focuses on five issues:

a. Citizens participation in the modalities of implementation

b. Cost effectiveness in introducing ICT to public administration

c. Raise capacity and digitization of functions of public administrations

d. Monitor e-government in the broader context of e-readiness

e. An understanding of interrelations among applications, development goals and ICT literacy.[53]

Some of the products expected from the aforementioned e-government strategy include:

- Regional e-government observatory, comprising database of key country data related to e-government readiness as well as technical description of applications with evaluations of effectiveness;

- Internet-based Regional Discussion network;

- Prioritized Roster of Project Ideas that stem from discussion in the discussion network;

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[53] CARICAD. Action-Oriented E-Government Strategy for Countries of the Caribbean Region 2004 – 2007. May 2004. pp 6

- Internet-based portal of Caribbean e-government initiative;[54]

These products especially the regional e-government observatory would be critical in assessing the political will for implementation at the national levels since the resources are limited to execute at the regional sphere.

For the period September 2005 to February 2006, TASF was engaged in a number of workshops on e-government policy formulation in Dominica, St. Vincent & the Grenadines and Grenada. Just like most of the other ICT strategies and efforts discussed in this paper, e-government efforts within CARICOM also suffer from lack of finances. Implicit in the TASF E-Government report for the said period are requests for budgetary support to operationalise the strategy and support the work programme of the facility.

3.6. Coordinating CARICOM Institutions Responsible for ICT

There are a number of documents attempting to give an overview of CARICOM's ICT readiness. These, by and large are placed within a framework giving an outline of infrastructure (connectivity and cost), ICT policy, telecommunication liberalisation, legal framework, and international and regional links. Some of these ratings are compared with the rest of the world to give a picture of the work yet to be undertaken. One of the main challenges however, is harnessing the synergies of different national frameworks to create one effort for the region. Different players have undertaken efforts at strategising the way forward for CARICOM and the following analysis, charts, diagrams and are culled from the various regional and international organisations. Some of these key institutions concerned with ICT policy making and execution are of course the CARICOM Secretariat, The Caribbean Association of National telecommunications Organisations (CANTO), the

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[54] CARICAD. Action-Oriented E-Government Strategy for Countries of the Caribbean Region 2004 – 2007. May 2004. pp 14

Caribbean Centre for Development Administration (CARICAD), the Caribbean Learning and Knowledge Network (CKLN), the Caribbean Telecommunications Union (CTU), the CARICOM Sub-Group on Telecommunications, the Caribbean Regional Negotiating Machinery (CRNM), the Eastern Caribbean Telecommunications Authority and most recently the Organisation of Caribbean Utility Regulators (OOCUR).

In the mandates and strategies of the many organisations there is some element of overlap to be expected. For example both the CTU and OOCUR seem to be tackling issues of telecommunication regulation. The CARICAD e-government strategy refers to possibly creating solutions to "market access, especially by Small and Medium Enterprises (SME) and facilitation of trade among Caribbean countries, especially in the framework of the Single Market and Economy initiative"[55] Interestingly even though CARICAD is a CARICOM institution; two other regional organisations including the CARICOM Secretariat also place interest in market access and ICT for SME development in their strategies.

One solution advanced for dealing with the overlap and sometimes duplication of responsibilities is the realisation that representatives from Member States make up or guide the work programme of regional bodies responsible for ICT policy. Therefore it would be useful to create a fora for discussion on areas of focus. Not that another body should be created but it would be useful to discuss the progress of ICT developments and status since the formulation of the CARICOM Connectivity Agenda.[56] There should be no need to develop another body since there is already an ICT Steering Committee created by the CARICOM Secretariat and chaired by the Deputy Secretary General. That Committee does not meet regularly and in fact the stark reality remains that this connectivity agenda has not

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[55] CARICAD. Action-Oriented E-Government Strategy for Countries of the Caribbean Region 2004 – 2007. May 2004. pp 16
[56] Cross Philip. Telephone Interview. 13 June 2006.

moved forward in any real way since 2003 because of lack of funding.[57] It is also cause for concern that the CARICOM Secretariat had initially withdrawn ICT as one of its thematic priorities for the year 2006 to 2007. The interest given to the areas of work within the Secretariat's work plan are prioritised in themes and it is expected that those elements are pushed to the forefront of work programmes for financial and other resources. The initial absence of ICT from being considered a critical aspect of the work programme could well be a reflection of the value placed on the potential of ICT to facilitate real development and make economic inputs.

3.7. ICT Infrastructure and Accessibility

The implementation of ICT strategies is linked to two areas among others:

    a.   the availability of physical infrastructure to enable communication and

    b.   the accessibility of that infrastructure to all persons.

There are, of course, the other areas of education, costs and political will. The issue of education will be taken up as part of the discussion in chapter four when some specific national strategies are investigated. However according to most analysis of CARICOM telecommunications services sector, while the Caribbean possesses relatively sound infrastructure, it is unevenly distributed and expensive to use. Main line telephone penetration varies among the region as seen in table 1. There is also disparity in penetration rates for Internet access and usage. With the mention of Internet, there is the issue of high price rates as compared to developed countries; and within any ICT strategy, the Internet plays a significant role in providing services on line. Prices for high speed Internet continue to be relatively high and as such can be a barrier to investment.

It is within the coordination of the regional institutions responsible for ICT, that a regional approach can be taken to ensure the lowering of Internet costs and the

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[57] Britton Jennifer. Telephone interview 13 June 2006

distribution of infrastructure.

CARICOM Member State	Population 2004	per capita GNP (2004)	Penetration rates % (2004)	
			Main Line	Mobile
Antigua and Barbuda	77,000	$11,000 *	49.4	70.1
Bahamas	317,000	$17,700	44.1	58.7
Barbados	271,000	$16,400	50.1	73.9
Belize	261,000	$6,500	12.9	37.5
Dominica	71,000	$5,500 **	29.5	58.9
Grenada	103,000	$5,000 *	31.8	42.1
Guyana	767,000	$3,800	13.4	18.8
Haiti	8,437,000	$1,500	1.7	4.7
Jamaica	2,676,000	$4,100	18.7	82.2
Montserrat	9,300	$3,400 *		
Saint Kitts and Nevis	50,000	$8,800 *	50.0	20.0
Saint Lucia	150,000	$5,400 *	32.2	62.0
St. Vincent and the Grenadines	121,000	$2,900 *	15.7	47.1
Suriname	439,000	$4,300	18.5	48.5
Trinidad and Tobago	1,307,000	$10,500	24.6	49.6
Total	**15,056,300**			
Average			**10.9**	**29.9**

Source: ITU WTI 2005   '* 2002   ** 2003

Figure 1: CARICOM Fixed and Mobile Telephone Penetration[58]

Country	Hosts Total	Hosts per 10,000 inhab.	Users ('000s)	Users per 100 inhab.	PCs Total ('000s)	PCs Per 100 inhab.
Antigua & Barbuda	2,113	274.42	20.0	25.97		
Bahamas	322	10.16	93.0	29.34		
Barbados	211	7.79	150.0	55.35	34	12.55
Belize	3,696	141.61	35.0	13.41	35	13.51
Dominica	686	96.21	20.5	28,75	13	18.23
Grenada	19	1.84	8.0	7.77	16	3.52
Guyana	642	8.37	145.0	18.90	27	3.52
Haiti			500.0	6.09		
Jamaica	1,456	5.44	1,067.7	39.87	166	6.20
St. Kitts and Nevis	55	11.00	10.0	21.41	11	22.00
St. Lucia	41	2.73	55.0	36.67	26	17.33
St. Vincent and the Grenadines	15	1.24	8.0	6.61	16	13.22
Suriname	130	2.96	30.0	6.83		
Trinidad and Tobago	12,207	93.40	160.0	12.24	103	7.90
Total	21,593		2,301.5		447	

Table 2: Internet Indicators 2004[59]

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[58] The Caribbean Regional Negotiating Machinery. *Assessment of the Telecommunication Services Sector in CARICOM: Convergance Issues at the Regional and International Level.* Draft Version 2. pp 11 Montreal/Washington/ Barbados. January 2006.
[59] Information technology indicators 2004 available online: http://www.itu.int/ITU-D/ict/statistics/at_glance/Internet04.pdf 7 June 2006

Prices for high speed Internet access

Country	Service Provider	Service	Techn.	Speed (Kbps) Down	Speed (Kbps) Up	US $/m
Argentina	Ciudad	Flash	Cable	512	128	15
Argentina	Ciudad	Flash	ADSL	1,200	256	23
France	FT	Internet 512	ADSL	512	128	30
Barbados	C&W	ADSL 256	ADSL	256	64	31
Canada	Videotron	Haut Vitesse	Cable	3,000	820	32
Bahamas	Coralwave	Lite	Cable	2000	512	37
Canada	Bell Canada	Sympatico	ADSL	3,000	800	38
Jamaica	C&W	Ultra	ADSL	128	64	40
Jamaica	C&W	Premium	ADSL	768	256	40
Bahamas	Coralwave	Groove	Cable	3,000	768	55
Jamaica	N5	Wireless	MMDS	256	128	55
minican Republic	Tricom	Turbo Plan 1	ADSL	128	128	60
Bahamas	Coralwave	Rock	Cable	4,000	1,000	70
inidad & Tobago	TSTT	High Speed	ADSL	128	64	74
Jamaica	Kasnet	Res. Silver	MMDS	256	128	75
Barbados	C&W	ADSL 768	ADSL	768	128	86
Barbados	C&W	ADSL 1544	ADSL	1,544	256	108
inidad & Tobago	TSTT	Business 1	ADSL	128	64	184
minican Republic	Tricom	Turbo Plan 7	ADSL	1,536	768	259
inidad & Tobago	TSTT	Business 2	ADSL	256	64	286
inidad & Tobago	TSTT	Business 7	ADSL	1,544	256	693

Figure 2[60] Prices for High Speed Internet Access

3.8. Market Access

The status of telecommunications liberalisation within CARICOM member states is highlighted in Table 3. This is part of reform taking place since liberalisation is expected to decrease telephone rates and enable competition in the market place. Most of the markets are almost completely liberalised with competition in the cellular markets; in some cases there are at least three operators.

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[60] Stern Peter. *Infrastructure for ICT in the Caribbean* IADB, 6 April 2006.

| Country	Current market access (de jure)	Pro comp. Legislation.	Ind. Reg.	Cross border supply (mode1)	Foreign ownership limits	Some of the current players
Antigua & Barbuda	Competition permitted in mobile and Internet access	New legislation planned	None		None	APUA PCS, C&W, and Cingular, Kelcom Intl.
The Bahamas	Duopoly in fixed voice; monopoly in mobile and cable TV; some ISPs and others;	Telecom Act, 1999; PUC Act 1993 (Amended 2000)	PUC			BTC, Cable Bahamas, Indigo
Barbados	Fully liberalised since Feb. 2005	Telecom Act, 2002	FTC	Not prohibited in Act	None	C&W, Digicel, TeleBarbados, Antilles Crossing, Kelcom Intl.
Belize	Fully liberalized since Aug. 2002	Telecom Act, 2002	PUC	Not prohibited in Act	None	Belize Telecommunications Ltd., Speednet
Dominica	Fully liberalized since Mar. 2003	Telecom Act, 2000	ECTEL, NTRC	Not prohibited in Act	None	C&W, Digicel, Orange Caribe, SAT Telecoms, Marpin
Grenada	Fully liberalized since Mar. 2003	Telecom Act, 2000	ECTEL, NTRC	Not prohibited in Act	49% in trunking	C&W, Global Network Providers, Trans-World Telecoms Caribbean, Digicel
Guyana	Only domestic mobile services and ISP are liberalized	None; Telecom Act, 1990 still valid	PUC			GT&T, Cel*Star, CTL
Haiti		None; outdated law of 1977	Conatel			Teleco, Haitel, Comcel, Digicel, Rectel
Jamaica	Fully liberalised since March 2003	Telecom Act, 2000	OUR, FTC, SMA			C&W, Digicel, Oceanic Digital, FibraLink, InfoComm, N5
Montserrat	Has not undertaken sector reform		None			C&W
St. Kitts & Nevis	Fully liberalized since Mar. 2003	Telecom Act, 2000	ECTEL, NTRC	Not prohibited in Act		C&W, Digicel, Caribbean Cable, St. Kitts Cable, Cariglobe
St. Lucia	Fully liberalized since Mar. 2003	Telecom Act, 2000	ECTEL, NTRC	Not prohibited in Act		C&W, Digicel, Antilles Crossing
St. Vincent & The Grenadines	Fully liberalized since Mar. 2003	Telecom Act, 2001	ECTEL, NTRC	Not prohibited in Act		C&W, Digicel, Kelcom Intl.
Suriname	New Telecom Act has not yet been proclaimed	Telecom Act 2004 (not yet proclaimed)	TAS		40 %	Telesur, RTBG
Trinidad & Tobago	Fully Liberalized since June 2004	Telecom Act 2001; Amendment 2004	TATT	Not prohibited in Act	None	TSTT, Digicel, Laqtel, Lisa, CCTT

Table 3: The current (2005) telecommunications situation with respect to market access in CARICOM Members[61]

3.9. Infrastructure

According to research by the Caribbean Regional Negotiating Machinery, the average main

line penetration in CARICOM is less than 11% compared to nearly 60% in North America.

Its compound Annual Growth Rate (CAGR) since 1990 is 8.3%. Figure 3 shows the increase

in mobile penetration which is similar to the world trend. The diagram compares growth of

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[61] The Caribbean Regional Negotiating Machinery. *Assessment of the Telecommunication Services Sector in CARICOM: Convergance Issues at the Regional and International Level.* Draft Version 2 pp 19 Montreal/Washington/ Barbados. January 2006.

main line and mobile penetration in the Caribbean and North America.[62] There is also a direct link to the increase of mobile penetration within CARICOM to the liberalisation of the telecommunications sector.
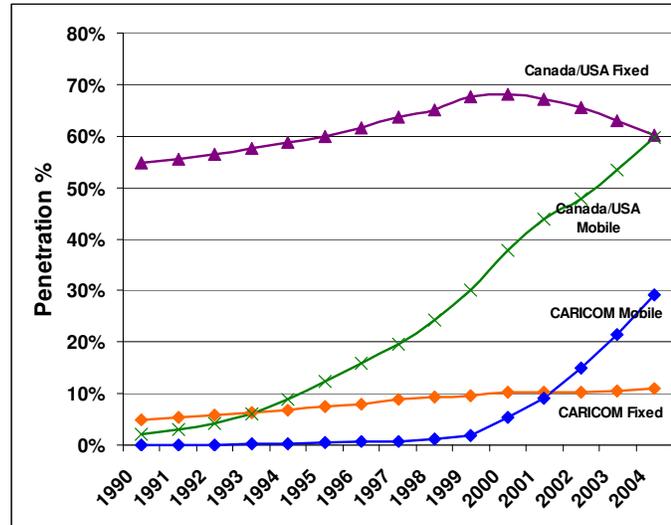
[63] Source ITU WTI 2005

Figure 3: Growth of Fixed and Mobile Telephones in North America (Canada and the USA) and in the CARICOM Member States

Apart from mobile and fixed telephone lines, the region is also connected by a large number of submarine fibre optic cable systems and satellite. While satellite gives good coverage, this is an expensive option of communication. There are about 19 submarine cable systems within the Caribbean area along with mobile operators who have licenses in virtually all CARICOM countries. Most Member States have at least one submarine cable with the exemption of Trinidad and Tobago and Jamaica who have more than one. In many of these countries all cables landing are controlled by the same operator, Cable & Wireless. This is changing in Jamaica, Barbados and St. Lucia, which are being connected with new independently owned cables. In Jamaica there is Fibralink, which was put into service March 2006. Other fibre optic cable systems planned or under construction include the Antilles

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[62] The Caribbean Regional Negotiating Machinery. *Assessment of the Telecommunication Services Sector in CARICOM: Convergance Issues at the Regional and International Level.* Draft Version 2. pp 20 Montreal/Washington/ Barbados. January 2006.
[63] ibid

Crossing Fibre Optic Cable System connecting Barbados, and St. Lucia in phase 1, Trinidad and Tobago, Grenada and St. Vincent and the Grenadines in phase 2 and Dominica, and St. Kitts & Nevis in Phase 3.[64]

The Global Caribbean Network (GCN) is an initiative of the regional government of Guadeloupe (a department of France) along with private investors which connects Guadeloupe with St. Croix and Puerto Rico and land in St. Kitts.[65]

Figure 4: FIBRALINK

[64] Stern Peter. *Infrastructure for ICT in the Caribbean* IADB, 6 April 2006
[65] ibid
[66] Stern Peter. *Infrastructure for ICT in the Caribbean* IADB, 6 April 2006

Figure 5: ANTILLES CROSSING

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ibid St. Christopher refers to St. Kitts

Figure 6: Global Caribbean Network

3.10.   Use of New Transmission Technologies within CARICOM

The Internet and new technologies continue to be the greatest agents for levelling the
economic playing field among all countries. This, of course, is dependent on just how
prepared countries are for utilising the tools and facilities. And while most CARICOM
national budgets still reflect greatest emphasis on traditional economic factors, there are a
number of new transmission technologies finding their way most times without government
regulation into the homes of Caribbean citizens. This is one example of the Internet giving all

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[68] ibid

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persons the same opportunity to become connected. Of course without the necessary

telephone penetration and access to a PC, the new technology would not be available.

Once the new technology is in place with cheap, quick and efficient access for all citizens, it

provides an all embracing role to foster socio economic development throughout a gamut of

services and activities. These include, improved education tools, enhanced health services,

increased employment and improved delivery of services including e-government and e-

governance. The following paragraphs seek to reveal what technologies are available within

CARICOM.

GSM which is a European developed standard using a time division multiplexing bandwidth

compression technique is being used by the main telecommunication providers within

CARICOM especially Cable and Wireless. Regardless of country size (Montserrat with its

population of 5 thousand now has GSM) the service is available evolving from narrow band

2G to full broadband 3G. To even increase more transmission speeds, there is the 3G

version of the Code Division Multiple Access (CDMA) which is used by U.S.A wireless

carriers such as Verizon to allocate bandwidth for users of digital wireless services. CDMA

distinguishes between multiple transmissions carried simultaneously on a single wireless

signal. It is an alternative to GSM and offers down stream speeds of up to 2.4 Mbps and an

upstream of 384 Kbps.

Broadband Wireless Access (BWA) and WiMax can provide affordable wireless access.

WiMax is the name for the wireless metropolitan area network with a range of 31 miles. It

makes broadband network accessible without the expense of running wires.

In the Caribbean, already countries are using clusters of WiFi hotspots or meshes covering a

whole area. Each hotspot can provide coverage within a radius of a few hundred meters of

the WiFi base station. Used in a point to point mode, WiFi can also become a cheap backhaul transmission link with line of sight ranges of up to 20 km. WiFi hotspots are currently being used in many Caribbean hotels, restaurants, government organisations and institutions. Some hotels charge a fee for WiFi Internet access.

Just as in any country the new wireless applications in CARICOM have increased the demand for spectrum available for fixed and mobile applications including broadband local access.

One of the latest lower priced means of voice services used by many CARICOM nationals is Voice over the Internet Protocol or VoIP. This delivers a fairly decent quality of audio and serves as an alternative to long distance telephone calls where rates in the Caribbean continue to be high and where access to high speed Internet at reasonable prices is becoming more available. Skype is a leading VoIP provider based in London and has over 200 million downloads of its free operating software and over 50 million users since it was founded in 2003.[69] Users can now place unlimited computer to computer and with the latest version can now add video calling to other Skype subscribers anywhere in the world at no charge. Calls can also be placed to nearly any telephone number in the world regardless of origin. Vonage[70] is another such company and offers an unlimited USA, Puerto Rico and Canada calling plan for about US$25 per month.

Many established operators have vigorously fought against authorising VoIP applications and some regulators and policy makers have joined them. The operators are concerned about their cuts in revenues from the lucrative long distance and international traffic. The opposing teams most times advance the argument that such services do not contribute equitably to

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[69] www.skype.com
[70] www.vonage.com

national development and universal service obligations. However several Internet cafes and telecommunications centres who allow low priced VoIP services over their systems offer an essential option for many ordinary citizens who would not be able to pay the costly rates for international calls. Therefore it would seem prudent for regulatory and policy making bodies to appreciate the role VoIP can play in connecting remote markets to both voice and data on a cost-efficient basis. CARICOM regulators should promote the use of such technology and a regional position should be maintained.

3.11. Is the CARICOM ICT Strategy Adequate for enabling Economic and Social Development?

No strategy or plan can be adequate in itself without the resources to implement the necessary elements towards a goal. Therefore, the expressed objectives within the CARICOM ICT Connectivity Agenda are noble and comparable to any other strategy. The content is also well presented and follows the path of facilitating critical initiatives at the national level linked to the Community which is also influenced by the global plans such as WSIS. It is very ambitious and rightly so, since the undertaking strikes at the heart of future development. However like many of CARICOM integration initiatives, there is no approved budget with actual funds allocated. So though the strategy contains many necessary proven practical recommendations, it remains a wish list for the most part, as evidenced by limited progress in its implementation since 2003.

It would be reasonably fair to state that if put into operation, the CARICOM Connectivity Agenda would create the enabling environment for development and address the obstacles to investment outlined later in this chapter. It would also be reasonable to believe that the new technologies previously discussed and the new entrants into the market could be regulated and laws harmonised once earlier suggestions such as a coordinated approach was undertaken by CARICOM ICT organisations to prevent duplication. What is arguably

lacking from the strategy is an avenue for ensuring its implementation. This seems to be the main issue in making the suggestions reality.

It is in this context that the researcher makes the following suggestions which though not new, were not presented in the CARICOM plan-

a. There is need for a political champion at the Community level. This is one of the pre-requisites necessary for most ICT action plans and strategies. In fact such input has seen success in Antigua and Barbuda, where the Minister of Information assiduously pushes ICT matters and has become synonymous with such activities through many media interviews and seminars. While this is the case at the national level, CARICOM has not engaged a political champion at the Caribbean level. This action is already being used for other integration initiatives, such as the operations of the CSME, which are led by the Prime Minister of Barbados and the CARICOM response to HIV/Aids is led by the Prime Minister of St. Kitts and Nevis. In both of these examples, because of such political muscle, donor agencies have supported the efforts with millions of dollars and technical assistance. In choosing such a champion the Community has a choice of using the Prime Minister of Grenada who is responsible for Science and Technology within the CARICOM Quasi-Cabinet, or securing the support of the Prime Minister of Barbados who is responsible for the CSME and its realm of trade in services, goods and telecommunications. However within the Secretariat a decision must be made as to which Directorate is totally responsible for ICT. At the moment the ICT focal point resides in the Office of the CARICOM Deputy Secretary General, while telecommunications lies within the Directorate for Trade and Regional Integration within the Unit responsible for Trade in Services.

b. The time is now suitable to place an ICT protocol before CARICOM Heads of Government for inclusion in the Revised Treaty of Chaguaramas. This would be

done via the writing of a draft policy document which will be taken through the consultative process by an inter-governmental task force. Once agreed and enacted into domestic law, countries will be committed for its execution, just like any other sector articulated within the Revised Treaty. Via this route, there would be no ambivalence once the initial draft policy document and consultations reveal the possibilities of economic gains.

c. The major hindrance in executing the CARICOM strategy is the lack of funds. One solution could be the setting up of an NGO for the channelling of funds, similar to the Estonian model. This is seemingly more transparent and will hopefully exclude the influence of politics. It is however suggested that for the CARICOM level, since there is already several financial regulatory and development institutions such as the CDB and the ECCB, one of these could be used, preferably the CDB, with its focus on development. As done in the case of setting up a Caribbean Court of Justice (CCJ) CARICOM governments can secure loans in the region of US$10 million and then ask donor agencies to match the funds, thereby ensuring a reasonable total of about US$50 million. Other monetary inputs can be made from the Petroleum Stabilisation Fund which is a financial mechanism facilitated through resources from Trinidad and Tobago to assist development and competitiveness in fellow CARICOM states. The CDB can also be mandated to invest part of the funds on capital markets to further ensure a significant total of approximately US$200 million is reached. Such a sum can then be utilised to execute the CARICOM ICT strategy, giving assistance to states at the local level. The fund could be called the CARICOM ICT Development Fund and could be replenished via continued investments by the CDB. So it will be operationlised with a set of rules for access and management.

3.12.   Obstacles to Investment at the CARICOM Level

Although most of the CARICOM markets are liberalized with competition in the mobile

phone arenas, there still remain some monopolies for fixed lines within the Community. The

lack of choice naturally maintains the high prices on telephone calls and most added services.

For example the cost of a one megabyte line in Canada four years ago was Cdn$40, while

the present price for a 512 k line in Barbados is $US50[71]. This 512 k line is used for ADSL

Internet service by this CARICOM member and is used to facilitate broad band Internet.

And as seen in Barbados, there are still duties paid on computers.

Figure 3 shows the growth of fixed lines within CARICOM is significantly less than that of

mobile services. This is unattractive to the investor especially in the tourism industry, a

service sector heavily dependent on services added to the fixed telephone line, such as the

Internet. This tourism sector is also well developed as a major income earner for most

Caribbean countries. This is one direct example where economic sectors may be seen as not

operating at optimum because of lack of fixed lines available[72]. The availability of mobile

services is more related to consumption rather than an ability to add value. Therefore the

CARICOM ICT Strategy has not yet met its target of totally liberalizing the important

market place.

As new ICT providers enter CARICOM there is the need for harmonised policies. The new

cable operators, Digicel, Antilles Crossing (fig. 5) and others who have interests in cable TV

and regional investments will discover the onerous procedures necessary for operating in

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[71] Chaitoo Ramesh, Telephone Interview. 4 July 2007
[72] ibid

each country. Operators would save time and money if there was a harmonised set of

procedures and conditions plus the availability of a CARICOM wide procedure for licensing

authorisations. Such developments would be timely as CARICOM continues with the

implementation of it Single Market and Economy.

4. Selected CARICOM ICT Case Briefs

The previous chapter discusses connectivity, costs and elements of infrastructure within CARICOM states. This chapter seeks to develop a number of case briefs specifically examining the state of ICT in an economy in terms of reviewing elements of Education (human resource capacity); E-government and Regulation (policy legal). There will also be an analysis of the national ICT policy and how it relates to the international and regional efforts. Most importantly, the impact on the economy will be discussed in terms of job creation, revenues and quality of life. This approach has been used by institutions and some CARICOM states to declare e-readiness assessments. As previously outlined in Chapter One, there is a vacuum in statistics for most services in CARICOM and ICT is no exception. Therefore, the case studies are limited in showing detailed figures of the gains injected into the national economies by ICT services.

Immediately following the case studies is a comparative analysis on the effectiveness of ICT initiatives among the countries. This discussion also investigates to what level development capacity has increased in the countries who have implemented ICT strategies.

4.1. E-Government and E-Governance within CARICOM

E-government is different from e-governance; where e-government is the involvement of ICT in supporting government delivery of service while e-governance seeks to empower and enrich citizens through access to information and services. E-governance is therefore not only focused on the outcomes of a project but focuses on autonomy, economic

development and public sector performance among other areas. A developed ICT sector, therefore leads to an effective e-governance framework.

For the most part, the countries of CARICOM with a few exceptions, like Jamaica are in the embryonic stages of e-government and e-governance is a distant target. Therefore, the case briefs will not examine this area in any detail except to comment on the fact that CARICOM governments have worked in silos for many years and the public moves from silo to silo for government transactions. ICT has changed that and allows governments to design services to fit the stakeholder. This is another benefit of ICT, which has been quantified in some countries like Jamaica, where, there is actual calculations indicating increased revenue collection and time saved. Not many other CARICOM states have addressed such data collection.

4.2. Creating ICT Statistics

There has been some progress in measuring and analysing ICT within some societies, but in others such as most CARICOM states, official ICT statistics is under development. "Moreover, with such emphasis on the demand side, information society statistics inevitably require surveys. Such collections have largely being done by developed economies through industry and household surveys. The time is now to strengthen ICT statistics in developing countries."[73] What becomes more challenging is assessing the impact in real tangible terms that ICT makes to the economy. This would take some sophistication in research to deliver statistics beyond the realm of just revenues collected. One can never really measure the priceless impact of saving lives because of the use and improvements of technology within the health sector. Nor can one totally measure revenues made from each niche market.

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[73] Ertl, Heidi. "Bridges on the Digital Divide Volume 2" *Measuring the Information Society: The Canadian Experience.* Ed. Sanatan Roderick. Barbados. University of the West Indies, 2005. pp 144

The UN Conference for Trade and Development (UNCTAD) had developed the ICT

Diffusion Index (ICTDI) which assesses a country's ICT development through the use of ICT

diffusion indicators. These indicators fall within two categories: (a) Connectivity (measuring

infrastructure development): Internet hosts per capita; number of PCs per capita, number of

telephone mainlines per capita and number of mobile subscribers per capita. The second

category is access (opportunity to be connected): number of Internet users per capita, adult

literacy rate, cost of a local phone call and GDP per capita.

In recent time, especially in developed countries, ICT analysis moved from the focus of

readiness to measurements of actual and potential accessibility of the infrastructure to

support the information society. And then, finally, the process developed wherein

measurements attempt to define inputs towards the economy to really address the issue of

impact and outcomes of technology. This recent level of research therefore asks whether

ICT makes a difference and why. It is difficult to address such questions and according to

Heidi Ertl, a Statistical Official of Statscom, Canada, such questions are more challenging to

measure and are usually, but not always addressed analytically.[74] It is therefore obvious that

ICT is a necessary mix of tools, products and services that should be measured to

understand the environment we live in and the way forward.

The measurement of ICT impact on the economy is neglected in the smaller CARICOM

countries. With the exception of Antigua and Barbuda, where communication is quoted as

being a serious engine for the economy, most countries have not registered ICT impact

within the national budget except to mention efforts at e-government and the development

of national strategies. There are some indicators to be found from the international and

regional agencies/organisations like the ITU and ECTEL, but for the most part, these are

basic analysis.

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[74] ibid pp 145

In June 2004, the ITU carried out research on ICTs in the Eastern Caribbean using St. Lucia as a case study. It gave a fairly detailed account focusing mainly on pervasiveness, absorption, connectivity, market and information society. With regards to economic impact the study delivered a synopsis commenting on call centres, number of staff employed by telecommunication companies including employment opportunities created by selling mobile phones and prepaid phone cards. It also quoted the Ministry of Trade as having registered some 40 ICT companies (computer training, software and consulting, networking, call centres and telemarketing, and computer dealers.)

The ITU case study stops short of analysing in any detail whether further ICT development will meaningfully respond to St. Lucia's economic challenges. It may be argued that a number of experts see investment in IT as a given and not an option. Just like a previous generation conformed to the pen for writing, IT has permeated all strata of life and the way business is conducted. The management of the IT tools is critical to development and concomitantly a country must be willing to digest and apply elements of change. Important to mention again, is that IT applications in one environment will not necessarily become universal success stories. Therefore achieving the benefits can be problematic without the necessary appreciation of the ICT dynamics.

4.2.1. Antigua and Barbuda

The English-speaking twin island state of Antigua and Barbuda is located in the Eastern Caribbean at the southern end of the Leeward Islands some 25 miles north east of Montserrat. It forms part of the archipelago of little islands nestled in the Caribbean Sea and known for tropical weather appealing to tourists and a laid back life style. It has a population of 80, 139 (2004) and is 170 square miles with a flat terrain, dry climate and a large number of white sand beaches. The climate and many beaches (tourism brochures state 365) are appealing to tourism which is the main income earner.

Antigua and Barbuda has a parliamentary democracy patterned on the British model with the British Monarch represented by a Governor General as head of state. The government is made up of three branches: legislative, executive and judicial. And like most of the other countries analysed in the case studies, there is a fairly transparent electoral process, with regular elections. This is one of the requirements for becoming a CARICOM member state. It gained independence from the United Kingdom on 1 November 1981 and has been a member of CARICOM since July 1974. It is also a member of the Commonwealth and the OECS.

There has been no poverty assessment done in recent times, but a poverty assessment was initiated in 2005 with the assistance of the Caribbean Development Bank, thereby giving the Government some guide to develop policies to target poverty. In 1994, it was estimated that 12% of the population lived below the poverty line; this is fairly low when compared to other OECS members.

Economy

According to the Caribbean Development Bank (CDB) Annual Economic Review 2005, estimates show that the Antigua and Barbuda economy grew by 3.2% in 2005 which was a decrease from 5.2% in 2004. These figures were projected earlier in 2005 by the International Monetary Fund (IMF) and the Eastern Caribbean Central Bank (ECCB). Noteworthy is the fact that communications was one of the main contributors to economic growth along with construction, banking, insurance, wholesale and retail sectors. And while tourism is a mainstay of the economy total tourist arrivals fell when compared for similar periods in the previous year.[75]

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[75] Caribbean Development Bank. *Annual Economic Review 2005.* Bridgetown. Caribbean Development Bank. May 2006. pp 18.

Antigua and Barbuda continues to have one of the highest Gross Domestic Products (GDP) within the OECS and indeed CARICOM at EC$2,209.8 Million (2004) and a GDP per capita of EC$27, 575 (2004). The country has a debt of close to EC$600 million but there have been efforts (negotiations with Italy) by the government to reduce that fiscal burden by 40 percent. Therefore the debt per capita is expected to decrease from EC$40 thousand to EC$30 thousand. There is also a debt management project attempting to reduce debt to GDP to approximately 80% by the end of 2007.[76]

The fact that communications contributed to the economy cannot be overlooked and one of the main areas of revenue identified in the 2006 budget was Internet gaming. Antigua and Barbuda has had some success over the last ten years with the maturing of its online gaming industry. While it is difficult to specifically show the direct contributions of ICT to the national economy, the inputs from the online gaming industry in Antigua and Barbuda is reflected in easily identified elements, such as job creation and funds received from licenses. This will be discussed in more detail. In studying the Internet gaming companies listed on the Alternative Investment Market, the Government of Antigua and Barbuda (GOAB) noted that six out of eight of those companies doubled their share prices since flotation. The country therefore believes that its Internet gaming jurisdiction will continue to flourish.

Education

The development and utilisation of ICT for a knowledge-based society is inextricably linked to the state of education within a country. This includes the incorporation of IT courses within the curricula at all levels. This policy has redounded to the success of other countries who have capitalised on ICT as a major income earner and catalyst for development as a tool and product. There are 37 government owned schools in Antigua, broken down into eight Secondary and 29 Primary. Barbuda has one of each because of its miniscule population

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[76] Cort Errol, *2006 Budget Presentation*, 30 November 2005.

(approx. 1500). There are also about 23 private schools eight of which include secondary level classes.

At the tertiary level there are the Antigua State College and the Antigua and Barbuda International Institute of Technology ABIIT, Antigua and Barbuda Hotel Training Centre, and the Antigua and Barbuda Institute of Continuing Education. There is also the University of the West Indies (UWI) with campuses in Trinidad, Jamaica and Barbados. The UWI is intended to serve all CARICOM Member States and others and there are national centres in the non campus countries with Resident Tutors offering long distance courses. Some of these courses are offered via video conferencing. In 2004, there were an estimated 1,867 persons [77] enrolled in tertiary institutions locally and in the United States of America (USA).

With a literacy rate of 90%, gross enrolment at secondary school is approximately 81% and the government spends roughly 3.2% of the GDP on education a smaller percentage than does St. Kitts and Nevis, St. Lucia and St. Vincent and the Grenadines.[78]

Free tertiary education is not yet a reality in the country and costs of overseas tuition are astronomical for the average citizen, in fact some parents mortgage property to afford their children the opportunity of tertiary education. It has been proposed to merge ABIIT, the Antigua State College and the Hospitality Training Institution to form one advanced unit. That is still not yet finalised.

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[77] IESALC/UNESCO, *National Report on Higher Education in Antigua and Barbuda*. Venezuela, IESALC/UNESCO, January 2006. pp 8.
[78] IESALC/UNESCO, *National Report on Higher Education in Antigua and Barbuda*. Venezuela, IESALC/UNESCO, January 2006. pp 7.

The Antigua and Barbuda International Institute of Technology (ABIIT)

"ABIIT was set up as a subsidiary of the Free Trade and Processing Zone to offer specialist training in information technology. The overall objective is to diversify the economy of the country and to attract investment in key economic development areas."[79] The institute began operations in 2001 with a focus on IT courses: Microsoft, Word, Excel, Desk Top Applications, Computer Programming, Repair and Network Engineering. It was given the status as Centre of Specialisation for Information and Communication Technology in the OECS and has affiliations with Munroe, Skidmore and Pace Colleges in New York along with American Intercontinental in Florida.

According to the Dean of ABIIT Eustace Hill, most of the graduates are absorbed into the community but some go to the US using transcripts and course outlines which are similar to US institutions. The Institution also provides the interaction with persons working in the IT industry, so students can benefit from practical experiences. With its 500 computers in the school, ABIIT is certainly unique in the OECS with the Caribbean region also acknowledging the vision of the school. For example, the Caribbean Telecommunications Union has signed an agreement with ABIIT to make it a node within its own IT efforts and development strategy.[80]

ABIIT has seen three graduation exercises with an estimated 150 persons trained, some of whom also enter the local Internet gaming industry as technicians to maintain the Internet systems. The programmes taught have also moved from a strict IT emphasis and embraced an element of business: accounting, banking and finance. The school sees itself as "IT centric"

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[79] ibid pp 36
[80] ibid

and infused IT into key business courses therefore providing students with the skills areas such as computerised accounting.[81]

The Online Gaming Sector

"Internet Gaming is a sanitised version of playing games on line for chance. The same games you go into a casino to participate are the same types of games that are available to you online. It also encompasses the whole issue of Sports Booking where you can place wagers on events that are happening around the world."[82]

Antigua and Barbuda gaming sector saw the Financial Services Regulatory Commission approving fourteen new licenses between April 2004 and November 2005. Eleven of the licenses went on to establish new companies and according to the 2006 national budget a total of 497 new jobs were created and wagering and gaming fees gave revenues of $EC2.4 million. This is certainly one sector that has significantly contributed to the national economy in real terms. The use of ICT in this case has benefited Antigua and Barbuda and makes significant input to the economy. This is easily measurable data in terms of job creation, salaries and license fees. For example once requirements are met by the Financial Services Regulatory Commission (FSRC), a Gaming licence is granted to virtual casinos for a fee of US$75 000 per year and a wagering licence is granted to Sports Books for US$50 000 per year.

The country was highly profiled over the last three years in its WTO challenge to US legislative attempts to prevent e-gaming within its borders. According to the E-gaming Review of March 2006, Antigua and Barbuda was once the location of choice and hosts 36 operators with 430 sites, "despite the droves of licensees who have left the shores in

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[81] ibid
[82] Nelson Simon "Bridges on the Digital Divide Volume 2" *Internet Gaming as Trade – An Early Perspective.* Ed. Sanatan Roderick. Barbados. University of the West Indies, 2005. pp 251

disagreement with regulatory decisions"[83] The magazine claims that facilities are impressive, but enforcement is perceived to be weak, and player complaints go unanswered even though regulations stipulate responses to complaints within 21 days by licensees.

As related by the Director of Offshore Gaming in Antigua and Barbuda it is safe to say that a gaming company operating in that jurisdiction contributes about EC$5 million to the economy per annum. However the country is trying to regain its economic position which it enjoyed in 1999 following measures taken by the USA to curb Internet gambling. Antigua and Barbuda appealed to the WTO that the USA was in violation of rules within the WTO that require the US to allow foreign gambling companies access to its market. The Government of Antigua and Barbuda (GOAB) argued that because of USA actions the tiny Caribbean country which had 119 licensed operators saw a decline to 28 by 2003. Back in 1999 online gaming also contributed ten percent of the gross domestic product (GDP) and employed approximately three thousand people but this number fell to less than five hundred by 2003. GOAB argued that the USA's use of various acts to curb off shore Internet gambling operators was a violation of commitments to facilitate cross border supply of services.[84]

The first WTO ruling was in favour of GOAB and this catapulted Antigua and Barbuda into the international sphere as the smallest member of the WTO to win a case against the biggest economy in the world. From its interpretation of the ruling GOAB advances that the way is now open for US companies like Citibank, Chase Manhattan, Bank of America, Yahoo and MSN among others to conduct offshore gaming advertisements or other such transactions.

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[83] "Towards a Common Standard" *E-gaming Review.* March. 2006.
[84] Cohen Michael. *Pocket Aces - A Comprehensive Look at the Legality of Off-Shore Internet Gambling within the USA.* May 2005. Online. Available html: http://64.233.187.104/search?q=cache:vZ-JIDzG0QoJ:www.gamblinglicenses.com/PDF/Pocket_Aces_Public.pdf+WTO+ruling+on+e-gaming+Antigua+and+Barbuda+and+the+United+States+of+America&hl=en&ct=clnk&cd=2. 2 August 2006.

The case has implications for Internet governance and the development of ICT within CARICOM, since other countries can follow the Antigua and Barbuda model in developing e-gaming jurisdictions. However, it also shows the vacuum in coordinating a regional approach to such issues since GOAB faced its challenge alone without the support of a strategic Caribbean platform. This means that for further issues of this nature CARICOM member states will face such battles individually.

E-Government

Antigua and Barbuda is someway behind in the area of e-government since GOAB is presently undertaking the following efforts at computerisation:

- All Government departments

- Land, Registry, Survey and Cadastral departments

- Inland Revenue and Customs departments

- Civil records, including birth and marriage certificates

- Police records to enable profile scans and motor vehicle identification[85]

There are also plans to introduce the online registration of companies and facilitate the payment of utility bills via the Internet. GOAB has focused on improving services offered by the Customs department thorough the software Automated System for Customs Data World (ASYCUDA). This allows traders to clear goods in a shorter period of time by processing warrants electronically and allow Customs officers to quickly deal with frequent traders. The programme is expected to be fully installed by 2007 with the assistance of the Caribbean Regional Technical assistance Centre. According to Minister of Finance Erol Cort, once in full operation the new procedures should allow travellers to determine if they owe taxes before arriving in the country and allow them to make payments while awaiting baggage. For traders the initiative will reduce time spent processing declaration forms and

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[85] Cort Errol, *2006 Budget Presentation*, 30 Nov. 2005

warrants and should lower the costs of clearing goods from the port.[86] GOAB allocated

$EC6.9 million within its 2006 national budget for implementing its E-government strategy

and developing ICT.

ICT Policy

The country has developed an ICT draft policy which can be found on the government

website. It outlines the vision to give affordable access to citizens and promote the country

as a regional IT centre of excellence with significant revenues because of the ICT industry.

One would hope that the mention of an independent telecommunications regulatory

authority within the policy would be some association with ECTEL rather than duplicating

efforts. Antigua and Barbuda is not a Member State party to the ECTEL agreement.

Interestingly, the draft policy only makes cursory mention of "representation at all necessary

International and Regional Forum"[87] There is no mention of association/linkages with other

regional initiatives, maybe because the policy was drafted in 2003 about the same time as the

presentation of the CARICOM Connectivity Agenda. It however speaks to adopting WTO

principles of interconnection.

In the summary, GOAB identifies having an open telecoms market, e-readiness,

interconnection and development of a regulatory framework as priorities. Just as in the case

of other CARICOM ICT policies the GOAB strategy is seen as the blue print for

transforming the country into a knowledge-based society. The policy also specifically

addresses telecommunications concerns and highlights affordability and the growth of

Internet access (via broadband) as paramount targeting schools, hospitals, libraries and

government offices.

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[86] ibid
[87] Antigua and Barbuda Information and Communication Technologies (ICT) Draft Policy Hp. 2005. Online.
Available: 5 August 2006.

Legal Framework

The Antigua Public Utilities Authority (APUA) has the monopoly on local fixed lines while Cable and Wireless (C&W) has exclusive license for international communications until 2012. There are three mobile operators – APUA, C&W and Digicel. For Internet access there are two providers – C&W and the local Antigua Computer Technologies ACT. A license was obtained by Karibe Cable Kelcom International to give cable television and broadband Internet service.

The government is still planning to create an independent regulator and there is a draft policy document intended for a Cabinet decision to facilitate full liberalisation of the telecommunications sector in 2006. This is yet to be done.

4.2.2. Barbados

Barbados, the most easterly island in the Caribbean is located 13 degrees north of the equator and is closest to St. Lucia and St. Vincent and the Grenadines. With an area of 166 square miles (431 sq. km) the island has a population of 273,200 (2004). Barbados primarily has a flat terrain with the highest point, Mt. Hillaby, in the interior being 336m. This English speaking country is predominantly made up of limestone and is known for its tropical climate and quality beaches, making it a popular tourist destination.

As an independent sovereign state in the Commonwealth since November 30, 1966, the Government of Barbados is a parliamentary democracy with a British Westminster-type structure. As such Queen Elizabeth II is the Head of State and represented locally by a Governor General. However, the present Government has proposed that the island become a republic thereby electing its own ceremonial president who would become the Head of State. The Government comprises three branches: Legislative, comprised of the House of Assembly and the Senate; Executive, controlled by the Prime Minister and his cabinet; and,

Judicial, through the Supreme Court of Judicature. Barbados has also been a member of CARICOM since August 1, 1973.

Barbados has a very high standard of living and is comparably more developed than most of its neighbours in the Eastern Caribbean. According to the UNDP, Barbados is the 4th most developed country among all the developing countries in the world[88]. The 2005 human development index of the UNDP ranked Barbados 30th out 177 countries.

Economy

Historically dependent on sugar, the Barbadian economy is now dominated by services, primarily tourism, off-shore businesses and light manufacturing. Although tourism registered a 4.2% decrease in 2005, the international business, and manufacturing sectors all showed increases. The former enjoyed an increase of newly incorporated entities by 22% and the latter expanded by over 3%. However, inflation was estimated to exceed 4%, a 2.5% increase over the previous year. The primary cause is believed to be rising energy costs and a number of policies to reduce these costs as well as the consumption of energy in the country are to be implemented.

In 2005, the estimated GDP was $4.745 billion and a GDP per capita of $17,000[89]. In the same year, the GDP real growth rate was estimated to be 4.1%. In 2004 and 2005, the Barbadian economy grew by 4.8% and 3.8% respectively. The growth in 2005 was fuelled by construction which recorded 17.6% growth, primarily as a result of ICC Cricket World Cup 2007. However, the country also reported a current account deficit in the balance of payments due mainly to a surge in imports and consequently credit, as well as a decrease in tourist arrivals.

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[88] Wikipedia Encyclopaedia Hp. Online. Available: en.wikipedia.org. October 28, 2007.
[89] The World Fact Book. Hp. Online. Available: www.cia.gov. October 28, 2007.

Although sugar output rose by 10.3%, the overall industry has been in decline. In an attempt to counter this, the Government has dedicated $3 million annually to provide incentives for the growing of fuel cane varieties. The approved varieties and their producers will be subsidised to the tune of a minimum payment of $90 per tonne as part of the transformation process.

In the 2005 Budget speech, the Prime Minister and Minister of Finance registered his government's commitment to implementing e-Government. This proposal includes the use of an integrated portal as a single point of access for government employees and the general public to government services and resources. This reflects the level of use of technology on the island and will facilitate communication between Government departments via tools such as file-sharing and web-conferencing.

Education

Barbados boasts a high literacy rate of 98% one of the highest in the world. Barbadians enjoy free education up to tertiary level and the Government has instituted a number of policies to assist in making quality education accessible to all. Texts are provided to students under the Textbook Loan Scheme and the Government pays the economic cost of students attending the University of the West Indies (UWI).

There are 80 primary schools (74 belonging to the government), 23 government secondary schools and one senior school along with two special institutions catering to children with visual and hearing impairments and the other accepts those who are mentally challenged.

Tertiary education is provided at the Erdiston Teacher's Training College, Samuel Jackman Prescod Polytechnic, Barbados Community College and the University of the West Indies (UWI). Affiliated to the UWI and based in Barbados are Codrington College which offers

the B.A. and L.Th and the Caribbean Meteorological Institute which offers B.Sc degrees in meteorology.[90] There is also a proposal to create a University College of Barbados which would be the merger of the Barbados Community, the Samuel Jackman Prescod Polytechnic and the Erdiston Teachers' Training College. Although the proposal is not yet concretised it is expected that business and IT will be a key part of the curricular. This suggestion could be in response to the lack of specific programmes at the UWI degree level dealing with software development, multimedia technology among other areas.

There are currently ten Community Resource Centres with Internet access and over 3500 persons have been trained in basic computer skills such as word processing and windows applications. These persons range from age 12–83 showing the government's appreciation of the need for an IT literate society regardless of age.

Education Sector Enhancement Programme (EDUTECH)

Barbados has been implementing EDUTECH which is a US$213 million reform programme for the national primary and secondary schools. It is financed by the Government of Barbados (45%), the Inter-American Development Bank IADB (40%) and the Caribbean Development Bank CDB (15%). EDUTECH uses ICTs such as computer software and other technology to develop well-rounded, re-trainable students who can think creatively and contribute to social, cultural and economic development of Barbados. There are four phases related to EUTECH: curriculum reform, development of human resources, development of technological infrastructure and physical renovations to schools.

Under the programme, 28 schools are presently equipped with PCs, printers, digital cameras, scanners, plotters, and science probes, electronic white boards, multimedia

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[90] Government Information Service. Hp. Online. Available: http://www.barbados.gov.bb/educaton.htm. 28 July 2006.

projectors and TVs. The programme also provides application software, Education

Management Information System (EMIS) software and academic software.[91] The

infrastructure is to facilitate the utilisation of technology in schools in areas of teaching,

learning and administration. This is also linked to teacher training and reform.

"One important innovation in the technology offered under the programme is the

Netschools pilot project. Under this project, four primary schools and two secondary

schools in the first two phases of the programme were expected to utilise the Netschool

Solution. This Solution provides rugged notebook computers for students called Studypros

and access to an Academic Information System (AIS) for teachers which include over 24,000

curriculum-correlated websites. The Studypros have network connections via infrared ceiling

access points."[92] Remote access to the school network is also allowed from home via the

Internet. Barbados is attempting to address issues of economic and social justice via the

Netschools project by ensuring students and families of lower socio-economic backgrounds

have access to the technology.

The EDUTECH programme has however experienced some challenges such as the

compromising of computer systems (removal of memory) especially at the Secondary level.

Then there is the issue of updating hardware, since there is no lease agreements,

replacements are expensive. The Netschools programme is also no longer in existence

because the company which provided the service was bought over. The ICT initiatives within

the primary and secondary schools also suffer from human resource capacity since there are

no individual IT coordinators in each programme school.[93]

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[91] Brief on the GOB/IDB/CDB Education Sector Enhancement Programme. Hp. Online.
http://unpan1.un.org/intradoc/groups/public/documents/CARICAD/UNPAN009517.pdf. Available: 28 July
2006.
[92] ibid
[93] Barbados. Ministry of Commerce, Consumer Affairs and Business Development. Draft Barbados' National
ICT Strategic Plan –Mobile Barbados: Building the Networked Nation. (ACB Knowledge Consultants) St.
Michael 2005. pp 40.

E-government

The government of Barbados is in the process of passing its E-government Strategy in the House of Assembly. In July 2006, the Deputy Prime Minister, Mia Mottley, moved the passage of a resolution for the House to note the draft strategy which was prepared by a sub-committee. It calls for the creation of a Central Information Management Agency which would be responsible for developing ICT strategies to deliver government services. These plans include "expanding the community development programme, the removal of duties on computers, the liberalisation of the telecommunications sector, the EDUTECH programme and the setting up of kiosks…providing citizens…access to Government's electronic services"[94]

The three main e-government initiatives that are implemented are: SmartStream Integrated Financial Information Management System, Enabling Environment for Private Sector Investment (EEPSI) and the Automated System for Customs Data (ASYCUDA). Currently, there are fifteen government agencies linked to the SmartStream project which is the computerisation of government's financial and human resource functions. It is intended to be the ultimate solution for investors and agents, 24 hours a day 7 days a week.[95] The EEPSI project also seeks to link government departments but this system does not relate to the SmartStream facility and there is no integration between the two systems. Therefore there is need for coordination of all systems within a wide area network (WAN).

- The Barbados Postal Service (BPS) is to implement the Escher Electronic Counter Management System (ECMS) in an effort encourage the private and public sector to outsource revenue collection and payment services to the BPS. This is not yet on line.

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[94] Brandford Albert "Plan to Bridge Digital Divide." Barbados Nation Newspaper. 25 July 2006
[95] Barbados Draft E-government Strategy. Online. Available.
http://www.redgealc.net/archivos/Presentations/Browne.ppt. 6 Aug. 2006

- The Registration Department has installed an Electronic Document Management system which should improve efficiency and electronically store and retrieve records. This is not yet online.

- Barbados laws are to be digitised and made available electronically. This is not yet on line.

- Government is investigating having one revenue collecting agency using the Internet as a major delivery point.

- Customs department started an online revenue collection system. The Automated Systems for Customs Data ASYCUDA + + version 2.7 is to be upgraded to the latest ASYCUDA version 3. There is a US$4.4 million loan to strengthen Customs capabilities.[96]

- The licensing Department has started the computerisation of application processes.

- The land Tax Department allows customers to quickly get a tax clearance certificate through it computerised system. Of course the customers must be up to date with tax payments.

Barbados' National ICT Strategic Plan

There are currently three recent ICT papers, in 2004, there was the study Review of the Status of ICTs in Barbados: Designing the Networked Nation commissioned by the Ministry of Commerce, Consumer Affairs and Business Development. This work outlined the state of ICT development and gave a work programme for a national ICT plan. The same Ministry again commissioned a National ICT Strategic Plan which was received in 2005. This most recent Plan builds on the findings of the earlier paper to chart the country's road towards the creation of a knowledge-based society. Then there is the 94 page draft e-government

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[96] Stoute Dick. "Speeding up the Release and Delivery of Cargo." Barbados Business Authority. 8 Aug. 2006 pp 26

document presently being considered by the cabinet. This document also mentions the continued implementation of the EDUTECH programme.

In discussing the 2005 ICT Strategic plan one of the main comments was on the fragmented approach of ICT for development. "Government's ICT policy players and their lines of specific responsibility include the Ministry of Commerce, Consumer Affairs and Business Development, the Ministry of the Civil Service, the Data Processing Department under the Office of the Prime Minister, the Ministry of Energy and Public Utilities and its Telecommunications Unit, the Attorney General's Chambers, the Ministry of Home Affairs, and the Ministry of Industry and International Business."[97] Barbados would need to address this issue in the first instance since it will only exacerbate the challenge in integrating the regional ICT strategies within the local efforts. The draft national strategy in fact speaks to considering CARICOM ICT connectivity and regional approaches to e-commerce, e-government and the Caribbean Knowledge and Learning Network (CKLN).

The draft strategy also considers and gives guidance on strengthening the ICT sector and diffusing new technologies throughout the country and economy.

Legal Framework

The telecommunications sector was liberalised in 2005. Cable and Wireless gave up its exclusive international services license and there are now four mobile operators in the market: Sunbeach, Cingular Wireless, Cable and Wireless and Digicel. Antilles Crossing and Telebarbados are among those offered landing licenses. A new telecommunications act was proclaimed in 2002 with enabling regulations for interconnection, licensing, universal service, standards, data communications, spectrum management and numbering issued in 2003. In

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[97]Barbados. Ministry of Commerce, Consumer Affairs and Business Development. Draft Barbados' National ICT Strategic Plan –Mobile Barbados: Building the Networked Nation. (ACB Knowledge Consultants) St. Michael 2005. pp 13.

what seems to be a continuation of the ICT fragmentation even in the regulatory aspect, the telecommunications Act divides regulation responsibility between the Ministry of Energy and Public Utilities and the Fair Trading Commission (FTC).[98]

There are at the moment licenses issued to Internet Service Providers (ISP), these include Caribsurf, Sunbeach and Freemotion.

4.2.3. Jamaica

Many claim that the island of Jamaica has become the most easily identifiable English speaking island within the Caribbean - often when one speaks of the Caribbean, reference is made to Jamaica. This may be because, with a population of 2,644,600 (2004)[99], it is the most populated country in the English speaking Caribbean. With 4,244 square miles (10,991 sq. km.) the country is situated in the Caribbean Sea some 93 miles (150 km) south of Cuba. As Xaymaca, the Arawak name for the country which means 'land of wood and water' suggests, Jamaica is known for its many waters, tropical weather and mountainous interior.

In 1958, Jamaica joined the West Indies Federation, a grouping of the Ten Caribbean Islands in the British West Indies, which ended in 1961, after a referendum and the consequent withdrawal of Jamaica. The following year, on August 6, 1962, they gained independence from Britain. Following a serious economic slump, the country had a democratic socialist government from 1974-1980; however, since then, there has been full democratic governance.

Economy

It is no surprise that tourism is one of the main industries in Jamaica but the manufacturing and distribution sectors are also very instrumental as sources of vital foreign exchange

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[98] The Caribbean Regional Negotiating Machinery. *Assessment of the Telecommunication Services Sector in CARICOM: Convergance Issues at the Regional and International Level.* Draft Version 2 pp 120 Montreal/Washington/ Barbados. January 2006.
[99] CARICOM Member States, Geographic Profiles, CARICOM Secretariat, www.caricom.org

earnings. Within the manufacturing sector, bauxite is the largest industry, making Jamaica the third largest producer of the mineral. Agriculture, forestry and fishing are also important to the island's economy, as they have carved out niches and are well known for products such as Blue Mountain coffee and Jerk seasoning.

In an effort to stabilise the economic situation in Jamaica, together with stabilising the Jamaican currency and reducing inflation, the Government since 1991 has implemented a system inclusive of the removal of exchange controls, floating exchange rate, tariff liberalisation, and removal of restrictions on foreign investment. This stabilisation program has worked to some extent as the country's GDP was EC$23,909.4 Million in 2004 with a GDP per capita of EC$9,041 in the same year.

Jamaica's stabilisation program included privatisation and divestment programs which bore positive results in the communications sector. With a globally competitive fully digital telephone communication system, there is 90% mobile penetration on the island[100]. Development in this area has been so far advanced that some argue that the market is saturated and cannot accommodate any more operators.

In 2005, the Jamaican economy showed mild progress, an indication that there were serious negative impacts by exogenous variables such as Hurricane Ivan which caused severe damage to infrastructure and agriculture, as well as rising oil prices.

Education

Primary and secondary education is subsidised by the Government and there is a plethora of well renowned schools on the island up to tertiary level. There are 150 high schools and tertiary education is offered at the University of the West Indies (UWI); Caribbean

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[100] Wikipedia Encyclopaedia. Hp. Online. Available: www.en.wikipedia.org. October 28, 2007.

Northern University; the University of Technology (UTECH); the Edna Manley College of the Performing Arts; College of Agriculture, Science and Education; G.C. Foster College of Physical Education and Sports and twelve teacher training colleges. There are also 14 community colleges, a dental auxiliary school, a Vocational Training Development Institute, twenty-nine vocational training centres and six Human Employment and Resources Training (Heart) vocational training institutions.[101]

An e-learning programme for high schools was recently launched and offers curriculum material and tutorial sessions to students via the Internet and cable television. So far a pilot project will begin with 20 schools, but the intention is to link all high schools.

Many students from the rest of CARICOM attend not only the UWI Jamaica Mona campus, but also the dental auxiliary school, the Edna Manley College and UTECH. UTECH has a School of Computing and Information Technology (SCIT) which offers a degree in Computing and IT; Computing and Management Studies and a diploma in Computer studies. There are also other certificate and associate degree modules. There are six laboratories with 150 computers connected with Ethernet switches and buildings are linked via fibre optic cables.[102]

With an increasing literacy rate, approximately 88% (2003) up from 75% in 1994, the government continues its adult literacy programme (Jamaican Movement for the Advancement of Literacy – JAMAL) which is organised by professional workers and supported by volunteers.

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[101] Jamaica Information Service. Hp 1996-2003. Online Available: http://www.jis.gov.jm/gov_ja/education.asp 7 August 2006.
[102] Faculty of Engineering and Computing, University of Technology, Jamaica. Hp. 2004. Online. Available: http://www.utechjamaica.edu.jm/Faculties/Eng&Comp/SCIT/facilities2.htm. 7 Aug 2006

Jamaica's economy has already benefited from its efforts at educating its citizens in IT since there is a local company doing "back office" accounting for General Motors (GM) New York. Local accountants qualified in IT and using the Internet for transmission of documents are able to produce monthly financial statements for GM at a cheaper cost in comparison to rates in the USA.[103] It is easy to understand that even with a cut in comparable wages; local accountants would still be better paid than other colleagues working for the civil service or national companies.

The Central Information Technology Office (CITO)

Key to Jamaica's ICT developing is CITO. which is a publicly owned company reporting to the Minister of Commerce, Science and Technology, through a subcommittee of Cabinet responsible for ICT. CITO is headed by a board with a Chief Executive Officer. CITO has responsibility for preparing, updating and implementing the national strategic plan, promote effective use of ICT and present a yearly e-readiness survey among other areas.

CITO had a budget of $18.4 million for 2005/2006 and is also focusing on an e-Governance framework, monitoring government standards for selected ICT areas, hosting technology seminars and managing a government Microsoft enterprise agreement.

E-Government

Jamaica is possibly the most advanced within the English speaking Caribbean with its e-government services. What is missing from these initiatives is the linkage between agencies and Ministries. It would be necessary to have a common e-government portal with access for all persons. There is also no legislation as yet to support the e-transactions and electronic signatures used for e-documents, yet Jamaica provides a number of such services, these include among others:

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[103] duQuesnay, Michael. Personal Interview. 31 March 2006.

- Customs e-Payment System. This was launched in 2003 and facilitates on line import duty payments. Revenues have increased by 100% (from US$200, 000 to $US400, 000) since the launch of the system. The processing time for some entries has decreased from eight days to two hours.

- Inland Revenue Tax Payment Portal allows for the online payment of twelve taxes once a registration number and the payment amount are provided.

- The Registrar of Companies office offers subscriber based online access to forms for payment of fees and company registration.

- The National Land Agency has a facility which allows the printing of and viewing of documents and the deposit of plans.

Jamaica National ICT Strategy

Jamaica is upgrading its ICT strategy with the intention of setting out key initiatives for government to pursue.[104] Since 2002 the country presented its five year strategic IT plan which articulates the development of e-commerce, e-government and the education of citizens about the benefits of ICT. The plan also advanced the path for telecommunications development and infrastructure to facilitate ICT for all citizens. Work in this regard continues with the recent launching (28 July 2006) of a business information centre project that costs $19 million. It will provide technical expertise and business support for micro, small and medium sized clients.[105] Information(IT driven) centres will be scattered around the island allowing persons to learn about establishing businesses, tax processes along with other "e-services."

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[104] duQuesnay, Michael. Personal Interview. 31 March 2006.
[105] Jamaica Information Service. Hp1996-2003 Online. Available: http://www.jis.gov.jm/commerce_science/html. 6 August 2006.

Over the years in executing the plan Jamaica has benefited from an e-governance project supported by the Canada which is to be implemented and already there are a comparatively high number of government services provided online. However, along with the lack of supporting legislation for e-government transactions (authentication of electronic receipts), there is no priority setting cross-government for IT projects.

While the 2002 ICT strategy precedes the CARICOM connectivity agenda, CITO is aware of the relevance of regional initiatives and seeing how they relate to national plans to avoid duplication.

Legal Framework

Jamaica was in the forefront (within CARICOM) back in 1999 when it restructured its telecommunications market and concluded an agreement with Cable and Wireless for full liberalisation of that sector by 2003. The 2000 telecommunications Act established the Spectrum Management Authority, the Jamaica Telecommunications Advisory Council and a Telecommunications Appeal Tribunal. Since the liberalisation of the market, approximately 400 varied licenses have been issued to 137 companies. These include some 60 international carrier licenses, 77 Internet Service Providers, and three mobile.

Along with the telecommunication act the other main legislative instruments are the Offices of Utilities Act, 1995, the Broadcast and Rediffusion Act, 1949 (amended 1996 and 2001), the Office of Utilities Regulation Act 1995 along with others. Policy rests with the Minister of Commerce, Science and Technology.[106]

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[106] The Caribbean Regional Negotiating Machinery. *Assessment of the Telecommunication Services Sector in CARICOM: Convergance Issues at the Regional and International Level.* Draft Version 2. pp 133 Montreal/Washington/ Barbados. January 2006.

4.2.4. St. Kitts and Nevis

This twin island federation is located in the Eastern Caribbean on the northern side of the Leeward island chain and some 19 degrees north of the equator. With a combined area of 101 square miles (269 square kilometres) and separated by a channel of about 2 miles (3.2 kilometres), both islands are English speaking and enjoy tropical weather year round. In 2004, the population was 47,928 making St. Kitts and Nevis the smallest independent nation in the Western hemisphere. Tourism is the fastest growing industry in the economy owing to a number of historic sites and buildings, quality beaches and scenic landscapes. Both islands are volcanic with mountainous terrains and a coastline that resembles a bat and ball (St. Kitts and Nevis respectively).[107]

The Government, with its executive, legislative and judicial branches, is a constitutional monarchy with a Westminster-type Parliament and the legal system is based on English Common law. There is universal suffrage at 18 years.

St. Kitts and Nevis became independent on September 19, 1983 from Britain, their former colonial masters since 1783. The country became a member of CARICOM on July 26, 1974 and is an original signatory to the Treaty of Basseterre forming the OECS.

St. Kitts and Nevis has been placed 39th out of 177 countries in the United Nations Human Development Index, ranking number one in the OECS and number two in the entire Caribbean. It also has a literacy rate of 98%.[108]

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[107] CARICOM Member States Geographic Profiles, CARICOM Secretariat. www.caricom.org
[108] The World Fact Book. Hp. Online. Available: www.cia.gov. October 28, 2007.

Economy

Prior to July 2005, sugar was the main industry in St. Kitts and Nevis and the country was the last sugar monoculture in the Eastern Caribbean. However, the Government took the decision to close the unprofitable industry after years of operating at a loss, and Tourism has taken over as the country's main industry.

CDB's Annual Economic Review 2005 estimated the real economic growth in St. Kitts and Nevis to be 4.8% in 2005. When compared to the estimated 6.4% growth in 2004, their economic performance may appear to have declined. However, in considering the decline in the agriculture sector, the economic growth was achieved mainly through the contribution of the expanding tourism industry. This expansion was fuelled by a significant increase in stay-over arrivals which led to overall growth even in the face of a decline in cruise ship arrivals when compared to 2004 figures. In 2005 expansion was also recorded in construction, manufacturing, transport and communication, wholesale and retail trade, and banking and insurance, while non-sugar agriculture production showed some level of decline in growth.

As part of the East Caribbean Currency Union (ECCU), St. Kitts and Nevis uses the Eastern Caribbean (EC) dollar which is pegged to the US dollar at an exchange rate of EC$2.7 to US$1. Their estimated GDP in 2004 was EC$1,092.2 million making their GDP per capita in the same year to be estimated at EC$22,789. At this rate, the country boasts one of the highest GDP rates in the OECS. However, at the end of 2005 the country had incurred a public debt of 173.6% of GDP to the tune of some $760.5 million growing by 6.8% from the estimated level in 2004. In the 2005 Budget speech, the Prime Minister attributed this

'massive increase in public debt' to a number of factors including transitional costs of adjusting to a changing global environment.[109]

To counter the result of high debt, the Government has implemented a Fiscal Stabilisation Programme with the mid-term objective of generating an annual surplus on the Current Account of at least 1.5% of GDP and reducing the fiscal deficit to less than 3.5% of GDP. The Government has also embarked on a Privatisation and Commercialisation Programme and has identified a wide range of public sector assets suitable for commercialisation. Other medium-term goals set by the government include increasing the real rate of economic growth to at least 6% per annum and the narrowing of the balance of trade and current account deficits.

Education

There is compulsory education from ages 5 to 16 years. In the last budget, the Government has increased allocation to post-secondary education including the Non-Formal Youth Skills Programme and Advanced Education Centre, and a new Hospitality Centre.

The telecommunications and information technology sector has continued to be an avenue for growth for St. Kitts and Nevis. The Government has committed to continue computer education in primary and secondary schools, as well as programmes such as the Rural Computer Education Programme for adults.

St. Kitts and Nevis had ranked 20th in the world in Internet access availability and the Government has committed to improving this access by extending it into community centres, clinics, and community-based institutions. There is also an EU-funded Information

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[109] St. Kitts and Nevis Prime Minister's Budget Address for the year 2005

Technology Based Training that commenced in 2005 aimed at assisting young persons acquire appropriate skills.

Impact of Liberalising Telecommunications in St. Kitts and Nevis

Revenue from telecommunications was estimated to be $98 million in March 2005. This was primarily due to the expansion of the mobile and Internet markets. In response to this expansion, the use of fixed lines has contracted, with subscribers declining by 16%, for the period March 2002 to March 2005[110]. During the same period, mobile subscribers, primarily to Cable & Wireless which was the sole provider cellular services up until that time, grew by more than 350% representing over 29,000 subscribers. The majority of subscribers utilise the prepaid mobile service, which is more accessible since it does not require a fixed monthly commitment or a permanent address.

Compared to other ECTEL States, the market for Internet services has doubled. In March 2005, Internet subscribers were estimated to be 8,270, representing a 100% increase from March 2002[111]. Of these users, approximately 55% were estimated to have broadband service and 30% using a service other than the original provider, Cable & Wireless. Although the growth in mobile telecommunications has been significant, the traffic level from mobile phones is still significantly less than from fixed phone lines.

Telecommunications has had a significant impact on the economy of St. Kitts and Nevis, with GDP estimated to have increased by 5.1% in 2004 largely due to this sector. The sector has also attracted significant investment since it has been liberalised. In March 2005, investment in the telecommunications sector was estimated to be $38 million. This was mainly due to

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[110] Eastern Caribbean Telecommunications Authority, Socio-economic Impact of Liberalisation of Telecoms Sector in the ECTEL Member States, May 2006
[111] Eastern Caribbean Telecommunications Authority, Socio-economic Impact of Liberalisation of Telecoms Sector in the ECTEL Member States, May 2006

Cable & Wireless upgrading their infrastructure in preparation for new entrants into the market.

Despite of this increase in investment, employment in telecommunications during the same period was estimated to decrease. This was due mainly to a 15% reduction in staff by Cable & Wireless. An increase has been projected for the period 2005–2006, as liberalisation of telecommunications has opened opportunities in ancillary services since activities, such as wiring and trenching, previously performed by providers are now outsourced to independent contractors. Other ancillary opportunities include sale of phone cards and other mobile phone accessories.

With the liberalisation of telecommunications came an upgrade in technology. Mobile service is now available on the GSM platform with GPRS technology. As the sector becomes more competitive, innovations such as SMS text and picture messaging, Internet access via mobile phone and blue tooth technology have become available to consumers. This trend is expected to continue as competition within the sector continues to heighten.

E-Government

There is no evidence of e-government in place in St. Kitts and Nevis, taxes, utility bills, procurement, health services are all processed and revenue collected without an online facilitation for clients.[112] However there is computerisation of government offices but lots of initiatives is Ministry based without the necessary coordination cross-government. This lament seems to be the mantra throughout most CARICOM Member States. In fact even with the present digital applications in St. Kitts and Nevis there is need for a WAN, a government domain to manage all systems. For example, the Ministry of Finance has a Financial Management software application called FITRIX, which allows government to

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[112] Wharton Wresley. Telephone interview. 18 July 2006

monitor transactions in real time. However another Ministry would need a network to use that system and every other service since there are no linkages.

As in the public service of many other CARICOM States information resides within individual Ministries of St. Kitts and Nevis like a fiefdom.[113] This affects the cross-government coordination of IT initiatives.

St. Kitts and Nevis National ICT Strategic Plan

The St. Kitts and Nevis ICT strategy has not yet been finalised but an ICT assessment was carried out in 2002 with the assistance of the CARANA Corporation, a US company which is known in the Caribbean for its consultancies with the United States Agency for International Development (USAID). That research shows that nothing much has changed since then with regards to e-government. In 2002 the country's small and medium-sized enterprises (SMEs) only used ICT as it relates to word processing, spread sheets with little customised software applications or complex networks.[114]

The more recent (2006) ICT strategy position paper has to be revised. This was prepared by Burchell Crook who is the Director of Technology. The Minister of State in the Ministry of Information and Technology started an initiative to revise the ICT strategy and policy. Presently, he is seeking more contributors including Government and the Private Sector. In addition, there are five sub-committees reviewing the legal aspect of the policy as well as private sector education.[115]

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[113] Wharton, Wesley. Telephone Interview. 18 July 2006

[114] St. Kitts and Nevis: ICT Assessment. Online Available: html http://www.c-trade.org/files/clusters/ICT/CARANA%20-%2020St.Kitts%20Nevis%20ICT%20Assessment.pdf. 6 August 2006

[115] Wharton, Wesley. Personal Interview. 18 July 2006

There are two more initiatives – an ECTEL project and a European Union (EU)-funded project. The ECTEL project has a specialist doing a strategy for the ECTEL grouping which will be modified in the future for the national environment. The EU-funded initiative aims to produce a national ICT policy as an alternative to sugar, which St. Kitts and Nevis stopped producing.

The initiative is called the Information, Technology-based Training and Management Project (ITTMP) Rationale. There has been €3 million dedicated to this project which began in 2005. The objective of the initiative is to foster economic diversification and growth and it has the following three components.

1. Undergraduate and Graduate Scholarships – (10 undergraduate and five graduate).
2. Provide computers to colleges so that individuals can practice skills and transfer design to real IT items.
3. Constructing labs for schools and community centres and connect community centres to train the community with priority to persons who worked in the sugar industry in order to make them more marketable.

Legal framework

ECTEL promotes the liberalisation of telecommunications in St. Kitts and Nevis, as it does in the four other party States. Its prime role is to coordinate and recommend policies, regulations and procedures to the National Telecommunications Regulatory Commission.

The telecommunications sector in St. Kitts and Nevis was liberalised in March 2003. Since then nine licenses have been issued - two licenses were issued for Fixed Public Telecommunications, three for Public Mobile Telecommunications, four for Internet Network and Services.

In May 2002, Cable & Wireless and OECS contracting States signed an Agreement which facilitated the reduction in rates for outgoing international calls from fixed lines. One year later in May 2003, per second billing for IDD calls was introduced. Despite these initiatives, however, there has been a decline in outgoing international traffic. One assumption is that this reduction may be as a result of the proliferation ad easy access to the Internet. In addition to the two initiatives mentioned above, ECTEL Member States negotiated a Price Cap Plan with Cable & Wireless in 2004, which ensures that residential fixed line access rates are frozen at EC$26.40 until October 2008 while business access rates increase by the inflation rate. In an attempt to fuel competition, mobile phone rates are not regulated in St, Kitts and Nevis.

4.2.5. Trinidad and Tobago

This twin-island republic is the southern-most in the Caribbean chain of islands, located some seven miles (11 km) from Venezuela. Trinidad and Tobago which became one State in 1888 became independent on 31 August, 1962 from the British. On 1st March 1976, the country became a Republic with a President replacing the Queen as the Head of State. Both islands have a combined area of 1,980 square miles (5,128 sq. km) and a population of 1,065,842. Approximately 80% of the nationals are of African and Indian decent with the remaining 20% mainly of mixed race[116]. Both islands are of a tropical climate with a mixture of mountainous and flat terrain.

Economy

Being the most industrialised and divergent economy in CARICOM, Trinidad and Tobago's economy is bolstered by their petroleum and energy sectors, including production of oil and natural gas. The country is one of the largest producers in these areas. International business and tourism are also becoming important economic contributors in their own right. Notably

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[116] Wikipedia Encyclopaedia. Hp. Online. Available: www.en.wikipedia.org. October 28, 2007.

tourism has been the source of growth in Tobago's economy. As such the country boasts modern telecommunications and transportation (including air and sea) links.

The success of the country's economy has, however, had a checkered past. The economy first recorded its growth boom in the 70's due to rising world oil prices. During 1970 and 1977 GDP grew by some 72.5%. Then as a result of a contraction in the price of oil as well as high levels of public spending, the economy went through a period – 1988 to 1993 – of economic hardships.[117]

Since then, unlike most of the other Caribbean countries, Trinidad and Tobago has benefited from low inflation and a trade surplus. Recently, though the Central Bank has reported that the economy is facing the threat of inflation as a result of, rapid economic growth, increasing domestic demand and the tightening of productive capacity[118]. In April 2006, by means of a Monetary Policy report, the Central Bank confirmed this when it reported that the demand for foreign exchange has been propelled by car sales, the construction boom in the public sector, increase in credit card spending as well as an increase in the sales of furniture and appliances.

This warning comes on the heels of a recent IMF review, which concluded that the Trinidad and Tobago economy was projected to grow by more than 12% by the end of 2006 and is operating near capacity. The IMF has therefore suggested that the Government adopt a tighter fiscal policy in an attempt to curb inflation, noting that it would also alleviate the pressure from the labour market. Even with the positive economic outlook, the country has also been suffering from a significant increase in crime and violence.

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[117] Government of Trinidad and Tobago. Hp. Online. Available: http://www.gov.tt. October 28, 2007.
[118] The Jamaica Gleaner Hp. Online. Available: www.jamaica-gleaner.com. 4 August 2006.

Education

Trinidad and Tobago has a literacy rate between 80 and 85% with education at the primary level being compulsory. Beyond the primary level, there are secondary schools as well as other forms of training offered by technical and vocational schools. After secondary level, there is the advanced level, two-year program, the Trinidad and Tobago Hotel school, as well as a Youth Training and Employment Partnership Programme (YTEPP) sponsored by the Government.

One of the campuses of the University of the West Indies (UWI) is located in Trinidad (St. Augustine campus) and offers undergraduate and postgraduate programmes. A health science and nursing college, as well as a school of languages is operated by the National Institute of Higher Education, Research and Technology (NIHERST). There is also a leading teaching and medical science facility in the Caribbean located on Trinidad which is named after the country's first Prime Minister, the Eric Williams Medical Sciences Complex.

In terms of using ICT within the education sector the government plans to connect all 636 of the country's schools to high speed Internet by 2008. This will be done via the Knowledge, Innovation and Development (KID) Programme.

E-Government

Although its 2003 ICT policy speaks specifically to e-government, Trinidad and Tobago seemed not to have made much progress in that regard. Embedded in the national ICT Strategy is reference to plans for the development of e-government. At that time it noted the lack of uniformity in developing online services to clients and called for a comprehensive plan. Presently, though, there is little advancement which is surprising for the country with the most dynamic economy in CARICOM. Even within the banking sector the country's

largest financial institutions Republic and RBTT banks are yet to deliver services via the Internet.[119]

The government ICT Unit was created to oversee the transition to e-government. But focus has been on the implementation of a Government Communications Backbone project for connecting government ministries and agencies. Presently, there are 230 sites connected to the backbone with five government ministries yet to be linked. This is expected to be completed in another 18 months.[120] Efforts are also ongoing to complete a portal for which a prototype has been approved and this facility should be in the completion stage.[121] On the backbone of which phase one was completed in 2005, there will be a WAN portal - government website, creating a single point of entry to access information about services rather than having separate ministries websites. This single portal will guide anyone to the area desired rather than having to search the sites of various Ministries and agencies. It is expected for all government services to be linked by 2007 and the full implementation of e-government by 2008.[122]

Some experts do comment that Trinidad and Tobago's efforts at e-government facilities are tardy, since a country desirous of becoming a first world nation in 2020 should not be carrying out so many government services in the present day through paper routes. It seems that the government is following the time lines within its ICT strategy, because several ministries are presently copying and scanning documents in preparation for offering services on line. Further, unlike St. Kitts and Nevis and other States where the government continues to operate in silos, Trinidad and Tobago is moving along a path of tying all ministries via WAN. Many CARICOM states are yet to build such connections.

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[119] Farrel, Terrence Dr. Telephone Interview. 9 August 2006.
[120] Wilson, Jacqui. Telephone Interview. 10 August 2006.
[121] Wilson. Telephone Interview. 10 August 2006.
[122] Thomas, Cleveland. Telephone Interview. 10 August 2006.

National ICT Strategy

As indicated earlier in this paper, Trinidad and Tobago has a fairly ambitious ICT strategy which is part of the country's vision to be a developed society by 2020. The ICT input for the vision is the execution of the strategy to transform the country into a knowledge-based society and harnessing the new technologies to provide responses to wealth creation, poverty reduction, education and social justice among other areas. With the creation of an ICT Secretariat, the methodology for executing the five year ICT plan involves developing a national vision, establishing the current state of ICT and creating action plans for five working groups. The efforts are also focused at getting stakeholder buy-in for the ICT plans.

Trinidad and Tobago undertook a benchmarking assessment by comparing its e-readiness with Costa Rica, Ireland, Malta, Jamaica, Mauritius and Singapore. At the time of the assessment, Trinidad and Tobago was ahead of its fellow CARICOM Member State Jamaica in ICT rankings. However, more recent rankings have placed Jamaica ahead.

After some gestation period in executing its ICT strategy, the government finally created an ICT unit in 2005, which now has a staff of sixty persons and approval for another 15 in the near future making this effort the most significantly staffed unit with CARICOM. There are about 30 ICT projects running parallel throughout the country including upgrading all systems to broadband and connecting ministries to a WAN.[123] Another of the efforts includes preparing e-legislation to ensure information security, authenticity of electronic signatures and electronic transactions. It is planned for Cabinet to approve into law in 2007.

The ICT unit in Trinidad and Tobago realizes it has some work to do in promoting its activities, but remains committed to the task of full implementation of its strategy by 2008. That is what they consider to be the proof of their deliverables. They have also focused on

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[123] Thomas Cleveland. Telephone interview. 10 Aug. 2006

the SMEs in setting up a site for such companies to list their products, source information and have a presence on the web.

Legal Framework

Under the telecommunications Act of 2001, the Minister of Telecommunications is responsible for policy and granting licenses and concessions on the recommendation of the Telecommunications Authority of Trinidad and Tobago (TATT). The Act was amended in 2004 and circulated that same year. Some enabling regulations were submitted for public consultation fees methodology, access, authorisation framework, and spectrum management.

Telecommunications Services of Trinidad and Tobago (TSTT) is the only operator of a facilities based network and provider of fixed telephone service. In 2005, two companies Laqtel and Digicel received frequencies for cellular mobile services. TSTT still has the monopoly on basic telecommunications services for public use until 2010. Value added services are open but providers have to use the transmission facilities of the monopoly TSTT. The same is true for satellite based mobile and fixed satellite services, which is open (for private use) but the providers have to use the satellite network of TSTT. Terrestrial and satellite-based mobile and fixed satellite services- for public use and telecommunications equipment sales, rental maintenance et cetera. is open without limitations. No commitments are made regarding teleconferencing and Closed User Groups (CUG).[124]

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[124] The Caribbean Regional Negotiating Machinery. *Assessment of the Telecommunication Services Sector in CARICOM: Convergance Issues at the Regional and International Level.* Draft Version 2 pp 137 Montreal/Washington/ Barbados. January 2006

Education

Undoubtedly, the five countries have fairly high levels of literacy among their populations. Interestingly the smaller states have the highest literacy rates - Barbados and St. Kitts and Nevis with 98% each. Trinidad and Tobago though having the most economic wealth within CARICOM, trails with its literacy rate between 80-85% and also suffers from high levels of crime and the country has pockets of poverty in the midst of its great resources. This fact underscores the point made in chapter one that economic indicators cannot be used to assess a country's overall development without acknowledging other social factors. In attracting investment, businesses will always err on the side of caution when deciding on a location, because even the best ICT infrastructure and rates cannot replace the need for a stable environment conducive to worker safety thereby ensuring maximum returns.

 Among the five case studies, Barbados is the only country with free tertiary education and its government plans to have a University College of Barbados with a focus on business and IT. If such a plan is realised, this will allow the island to further position itself as a nation with a highly educated labour force. The country however needs to attend to the ailments of its EDUTECH programme which had an initial positive start with very high goals. This is unlike the case of ABIIT in Antigua and Barbuda which continues to be a beacon for IT training not only nationally but within the OECS sub region.

Each of the countries have some focus on IT training, and the Jamaican company which provides "back door" accounting services for General Motors - done by local computer programmers - exemplifies possibilities with a qualified and skilled IT work force. St. Kitts and Nevis is seemingly the least prepared for such opportunities, as it lacks a specific IT training institution. One can assume that its EU funded ICT programme will be successful in

training a cadre of persons in IT and also retool and upgrade the skills of the former sugar industry workers.

E-Government

With the exception of Jamaica and to a limited extent Barbados, none of the other countries possess real e-government operations. Without this, there is the backward paper operations needed for all transactions. This retards progress in the operations of business and can frustrate customers. It is also surprising that Trinidad and Tobago with its oil wealth still has no real form of e-government and even in the financial sector some of its largest banks do not provide online services. In spite of this all countries are in need of legislation to ensure information security, authenticity of signatures and electronic transactions. This is critical for a country like Jamaica which already has e-government operations.

It is not unexpected that Trinidad and Tobago may once again surpass Jamaica as the leading CARICOM state on the NRI rankings as it finishes a number of projects including a WAN portal tying all government ministries. Government ministries in St. Kitts and Nevis and other CARICOM states operate in silos for the most part.

ICT Policy

Jamaica possesses the most advanced ICT policy in terms of implementation and this could be one factor deciding its place as the highest ranked CARICOM country represented on the NRI. Trinidad and Tobago with its vast resources has the ICT Unit with the most staff. Only Jamaica also has a dedicated ICT secretariat. St. Kitts is lagging behind without an ICT policy at a stage for implementation, but hopes to develop one under its EU funded project. Antigua and Barbuda's policy is dated from 2003 and it should consider upgrading this plan in keeping with the new ICT environment. It is recommended for the new version to include linkages with the CARICOM strategy.

Barbados seems to be at no loss for updated polices with at least three strategies presented since 2004. Any strategy needs to address the present fragmented approach to ICT policy, with so many players responsible for the area within different Ministries.

Legal Framework

Antigua and Barbuda and Trinidad and Tobago are yet to fully liberalise their telecommunications sector. Jamaica was the first within CARICOM to begin the process and now has approximately 400 varied licenses been issued to 137 companies. St. Kitts and Nevis is fully liberalised and being an ECTEL member state has a price cap with Cable and Wireless wherein fixed line access rates are frozen at $26.40 until 2008. In mentioning ECTEL, it is hoped that CARICOM can use the organisation as its regional telecommunications regulatory body rather than "recreate the wheel." This may assist not only in curbing overlapping of responsibilities for ICT at the CARICOM level, but also at the national; as in the case of Barbados, although fully liberalised, it has regulatory responsibility shared between the Ministry of Energy and Public Utilities and the FTC. None of the other countries has such an arrangement. One can assume that capitalising on the legal expertise within the FTC is the rationale for such an arrangement. The government of Barbados may wish to consider placing the telecommunication personnel within the FTC or having the legal expertise housed within the Ministry. The present situation seems onerous.

Impact of ICT on the Economy

Throughout the research the potential impact of ICT on CARICOM economies has been discussed. The need for the enabling environment was presented as possibly the most important element in securing economic activities related to ICT. Within the case studies, there are actual examples of such activities as seen even in Antigua and Barbuda with its dated ICT strategy and telecommunications monopoly. By implementing its policy

document, an online gaming company contributes some EC$5 million into the economy per annum. In 1999 online gaming contributed 10% of Antigua and Barbuda's GDP.

In Jamaica the Customs e-Payment System have facilitated a 100% increase in revenues from US$200, 000 to $US400, 000 compared over a similar period, since the launch of the system. The processing time for some entries has decreased from eight days to two hours. It is difficult to measure the cost of the time saved through a speedier process, both for the customer and the staff. This is another input for the economy. St. Kitts and Nevis received EC$98 Million estimated from telecommunications in 2005. This was due to the expansion of the mobile and Internet markets.

The preceding were a few examples of direct financial gains through ICT, because of a national strategy. In all of the success cases there is a Minister of government championing the cause who is also very visible and passionate about the issues. This is further bolstered by use of innovation, for example online gambling was seen as a new development within CARICOM and Antigua and Barbuda leads the way. It is possible that other countries may duplicate the operations especially now that a little Caribbean island is leading and winning an international charge via the WTO against the USA over access to its markets for online gambling. ICT is therefore levelling the international playing field and unlike the agriculture sector which is seasonal and dependent on large plots of land, ICT can impact small CARICOM economies with immediacy, once the appropriate model is adopted.

5. Conclusions and Recommendations

The analysis and information provided in the research, points to the affirmative that ICT is a critical tool for development in CARICOM. Irrespective of the relatively high costs for some ICT aspects, like the internet and telephone calls, even in the states without a formal ICT strategy, there are many instances of the socio economic development facilitated by the gamut of ICT services or infrastructure. In the fields of education, there are the examples of IT training programmes preparing the population for employment. As highlighted in Antigua and Barbuda, there is a direct link between the training curricula and needs within the work environment. This is also underscored in the Jamaica case study which reveals, computer programmers gainfully employed by doing accounting for General Motors.

In looking specifically at how ICT enables the development of education, the research produced several examples of institutions using innovative technology to train students. An inter-connection is created because the trained students, where possible, are absorbed into the work force, thereby improving their own living standards. Programmes such as EDUTECH in Barbados and the IT focus of ABIIT in Antigua are case-in-points. As seen in Antigua and Barbuda some three thousand persons were at one time employed within the online gaming sector. This sector contributed 10% of the GDP in 1999. So there is concrete evidence of the positive role ICT plays in socio economic development throughout CARICOM.

To further amplify the impact of ICT as a tool for development, the study of St. Kitts and Nevis, showed that telecommunications gave revenues of EC$98 million in March 2005 due

to the expansion of mobile and internet markets. In this country with a population of less than 50 thousand, ICT has revealed its potential as a tool to replace the sugar industry, which was a casualty to new trends within the global markets. This country like others is also using ICT to link rural communities and health centres. And in Trinidad and Tobago there is the approach of ensuring further development for their SMEs by providing a website for marketing.

Recommendations

Even with the examples of CARICOM development through ICT, there is need for improvements within the enabling environment to ensure further over all benefits. The following recommendations are thus presented, not as an exhaustive list, but as a practical set of suggestions.

a. **A funding mechanism for the CARICOM ICT strategy**

The CARICOM ICT strategy will languish as an idea, unless funding is secured. The lack of resources is presented as one of the present challenges, within Chapter Three. There is a cursory mention of the need for finances in the plan but no direction is given for facilitating substantial amounts. In that regard an institution such as the CDB should be tasked with creating a CARICOM ICT Development Fund. This can be financed through one-time government contributions, which are matched by the donor community and the Petroleum Stabilisation Fund. CDB then invests these monies on international capital markets, as it did when creating the financing for the CCJ. Upon receiving a significant sum from the investments, of about US$200 million, a portion can be used to implement the CARICOM ICT strategy, which should also assist more vulnerable member states where necessary. The remainder of the monies are reinvested by the CDB to ensure sustainability.

This mechanism is more practical for continuity in implementing CARICOM ICT activities, because it prevents ad hoc events, which are dependent on the vagaries of donor inputs. Donor agencies are also more amenable to projects which involve contributions from developing states. Such arrangements show commitment and ownership. At this moment there is no such meaningful ownership of the CARICOM ICT strategy by the member states.

b. Coordinating Regional Institutions

As presented in the research, there is duplication of efforts among a number of CARICOM organisations responsible for different elements of ICT. It is therefore recommended, that a steering committee comprising representatives from said organisations, decide on rationalising resources. ECTEL should be developed as the CARICOM telecommunications regulatory body, thus preventing the need to create a similar organisation. ECTEL has already proven its worth, by liberalizing telecommunications within its OECS members and negotiating price caps with telecommunications providers. Having one such CARICOM body would ensure the best telecommunication rates especially for smaller states.

With information sharing through the steering committee, there would be no competition among institutions for donor funds. That committee would also allocate to each regional ICT organisation activities to be facilitated from the regional strategy. It would also be decided at that level, for the CARICOM Secretariat to present an over all project proposal for funding to the international community. Thereafter, funds are meted out from the proposed CARICOM ICT Development Fund to the agencies responsible for implementing different parts of the CARICOM ICT Strategy.

c. CARICOM ICT Political Champion

Within some member states there is a minister responsible for ICT who is passionate and articulate about the issues. This is the case both in Antigua and Barbuda and Jamaica.

However at the CARICOM level, there is no such voice. Interestingly, the Prime Minister of Grenada is responsible for science and technology within the regional quasi-cabinet. Such a champion has ready access to the media, interface with colleague Heads of Government and rubs shoulders with many influential individuals in international circles. So the work at the CARICOM level would benefit from a Prime Minister given responsible for pushing the ICT strategy.

d. **Harmonising ICT policies as part of the CSME**

The CSME is presented as a platform to face the onslaught of globalisation. Yet, there is no real effort to place ICT within the context of a single market for goods and services. As suggested in Chapter One, e-enabling legislation can be prepared regionally similarly to the policies developed for industry, competition and agriculture within the Revised Treaty. Having a chapter on ICT within the Revised Treaty would ensure its enactment into national law. At the moment the CARICOM ICT strategy is not situated within a national policy document, a protocol or legislation. Therefore, no member state is required by law to implement any aspect of the strategy. In placing ICT within the context of a single economic space, elements such as regulatory services, access, provision of services, would be harmonized, thereby giving an environment of transparency for competition. A telecommunications provider would prefer dealing with one set of policies rather than several when making an investment in CARICOM.

The first step in attaining the harmonisation of ICT policies would be to develop a draft protocol through a series of national consultations and then presented for approval by the CARICOM trade ministers. This will then be given to the Conference of CARICOM Heads of Government for final passage into the Revised Treaty and then for enactment into law. As explained, this approach is more results-oriented, than engaging the ministers responsible for

ICT who have no regular forum or council; their inputs can be included via the national

consultations.

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