

LIMITED
LC/CAR/L.103
20 November 2006
ORIGINAL: ENGLISH

**EXPLOITING THE POTENTIAL OF THE CARIBBEAN INFORMATION SOCIETY
AS AN ENABLER OF HUMAN DEVELOPMENT IN THE REGION**

This document has been reproduced without formal editing.

Acknowledgement

The Economic Commission for Latin America and the Caribbean wishes to acknowledge the assistance of Dr. John Prince, Consultant, in the preparation of this report.

Table of Contents

Executive Summary	iv
I. Introduction	1
A. Critical Human Development Challenges in the Caribbean	1
B. ICT and Human Development	7
C. Project Background and Definition	8
1. Methodology	8
II. Findings of the Survey	11
A. Access and Digital Inclusion	11
1. Broadband Services	12
B. Capacity Building & Knowledge Creation	14
1. Science and Technology	14
2. National ICT Strategies	15
3. Content Policies	18
C. Policy/Legislation for Creating an ICT Enabling Environment	18
1. Internet Governance	18
2. e-Commerce Governance	22
3. Policy Coordination	23
4. Market Liberalization and Regulation	24
5. Business and Commerce	25
6. e-Government	25
7. Potential for Regional and International Cooperation	26
D. Success Stories and Potential for Collaboration	26
E. Listing of Sectors with Potential for ICT Investment and Development	27
III. Recommendations of the Barbados Meeting	29
A. Summary of Recommendations	29
B. The Way Forward	30
IV. Indicators for Assessment of the Information Society	32
A. Indicators for Assessment of Access and Digital Inclusion	32
B. Indicators for Assessment of Capacity Building & Knowledge Creation	34
C. Indicators for Assessment of Public Transparency and Efficiency	39
D. Indicators for Assessment of the Requisite Policy for Creating an Enabling Environment	40
E. Outcomes of the ICT Policy Makers Seminar	46
1. Compiling Quality Information for Benchmarking Developments In Caribbean Information Society (ECLAC ICT Policy Makers Meeting Barbados, September 2006)	46
(a) Access and Digital Inclusion	46
(b) Capacity-Building and Knowledge Creation	47
(c) Policy/Legislation for Creating an ICT Enabling Environment	48

(d) Recommendations	49
F. Draft Information Management Framework.....	50
V. Summary Country Profiles	52
<hr/>	
A. Barbados	52
B. Grenada	56
C. Guyana	60
D. Jamaica	65
E. Saint Lucia.....	69
F. Suriname.....	73
G. Trinidad and Tobago.....	77

List of Tables

Table 1. Human Development and Poverty	1
Table 2. GDP, Unemployment, Poverty and Human Development	3
Table 3. Literacy and Education.....	4
Table 4. Selected Health Indicators	6
Table 5. Profile of Sample of Caribbean Countries.....	8
Table 6. Population Growth, Concentration, Distribution and Migration	9
Table 7. Public ICT Funds and National ICT Budgets	11
Table 8. Universal Access Financing	12
Table 9. Investment on Research and Development.....	14
Table 10. Summary of National ICT Strategies.....	15
Table 11. National ICT Strategies and Public Sector Reform	16
Table 12. Public ICT Budget Info and Coordination.....	16
Table 13. Information Available on Total Government ICT Expenditure.....	17
Table 14. Information Society Relevant Legislation	17
Table 15. Top Level Domain Governance in the Caribbean	19
Table 16. Commercialization of Domain Names	20
Table 17. Top Level Domains Commercial Exploitation Cases.....	21
Table 18. Commercial Potential of Caribbean Top Level Domains	22
Table 19. Nature of e-Government Services.....	22
Table 20. E-Government Policy Coordination	24
Table 21. Market Liberalization and Regulation.....	24
Table 22. Potential Sectors for Investment and Development.....	27
Table 23. Access and Digital Inclusion (Infrastructure).....	33
Table 24. Access and Digital Inclusion Indicators (Usage).....	34
Table 25. Access and Digital Inclusion indicators (Affordability)	34
Table 26. Estimated and Expected Regional Access and Digital Inclusion Index.....	34
Table 27. Capacity Building & Knowledge Creation Indicators (Pro-active and Absorptive Human Resource)	36
Table 28. Capacity Building & Knowledge Creation Indicators (Pro-active and Absorptive Human Resource)	37
Table 29. Capacity Building & Knowledge Creation Indicators (User Confidence, Legislation).....	38
Table 30. Estimated and Expected values Re: Regional Capacity Building and Knowledge Creation Index.....	38
Table 31. Public Transparency and Efficiency Indicators	39
Table 32. Estimated and Expected Value RE: Regional Public Transparency and Efficiency Index.....	40
Table 33. ICT Enabling Environment Indicators.....	42
Table 34. Enabling Environment Index.....	46

Executive Summary

Faced with a number of human development challenges, such as poverty, high unemployment, increasing crime, exacerbated by the region's vulnerability to natural disasters, Caribbean leaders have recognized that information and communications technologies (ICT), if deployed strategically, could have a positive impact on human development and adopted "ICT for Development" as an alternative development paradigm. However, lack of data and information is hindering attempts to evaluate and measure the effectiveness of public ICT initiatives.

The Economic Commission for Latin America and the Caribbean (ECLAC), therefore, conducted a survey of Caribbean countries aimed at documenting and subsequently monitoring public ICT policies in the following areas: policy development; State modernization and e-government; access; supply of goods and services; and public budget expenditure. Seven countries were studied. However the data collected did not permit an in-depth analysis. This notwithstanding, some interesting findings were unearthed which could provide a road map for future work.

Principal among the findings was the need for the establishment of a unit within the department or agency responsible for ICT to collect, collate and disseminate ICT information for analysis and forecasting. There was also need for deliberate action by the State to assist the economically disadvantaged and differently able to access ICT services.

The survey also revealed an inadequacy in the legislative provisions necessary to support an inclusive e-society in its efforts to take advantage of the socio-economic opportunities confined to the super highway. The need for urgent attention in this area cannot be overstated.

The results of the study suggest that the way forward should, at a minimum, enable the availability of reliable qualitative and quantitative information that would facilitate a comprehensive analysis of the benefits and limitations of the Caribbean Information Society. It is only from a position of empirical knowledge that the correct policy initiatives can be formulated for future development of ICT in the region and its attendant contribution to human development evaluated.

The study concludes with recommendations that increased funding should be allocated to promote access to ICT services and investment in research and development (R&D). Efforts should also be made to link ICT development with public sector reform initiatives; strengthen the relevant legislation; and develop a process for commercializing the use of top-level domain names. In addition, e-government facilities must be taken to the next and more interactive level; and since the lack of data was highlighted as a major constraint, the study recommends that the work begun with this study should continue and be expanded to include all Caribbean States, noting that a prerequisite to adequate and continuous data collection was the strengthening of capacity at the national level in this regard.

The findings of this study were presented to a group of senior Caribbean policy makers with responsibility for ICT strategic planning in Barbados in September 2006. Some of the

recommendations put forward by this group have been incorporated into the final version of this report. In response, a list of indicators on which data should be collected, collated and analyzed to assess the impact of the information society on human development on the Caribbean has been proposed. It was also recommended that assistance be sought to develop and/or improve the ICT information management capability in each Caribbean country. Summary ICT profiles for seven Caribbean countries are annexed to the document.

I. Introduction

A. Critical Human Development Challenges in the Caribbean

Human development is complex and multidimensional. Essentially, it depends on the extent to which a country has managed to create an environment for its people to access the socio-economic and civic fundamentals, lead productive lives, and participate in decisions that affect their quality of life.

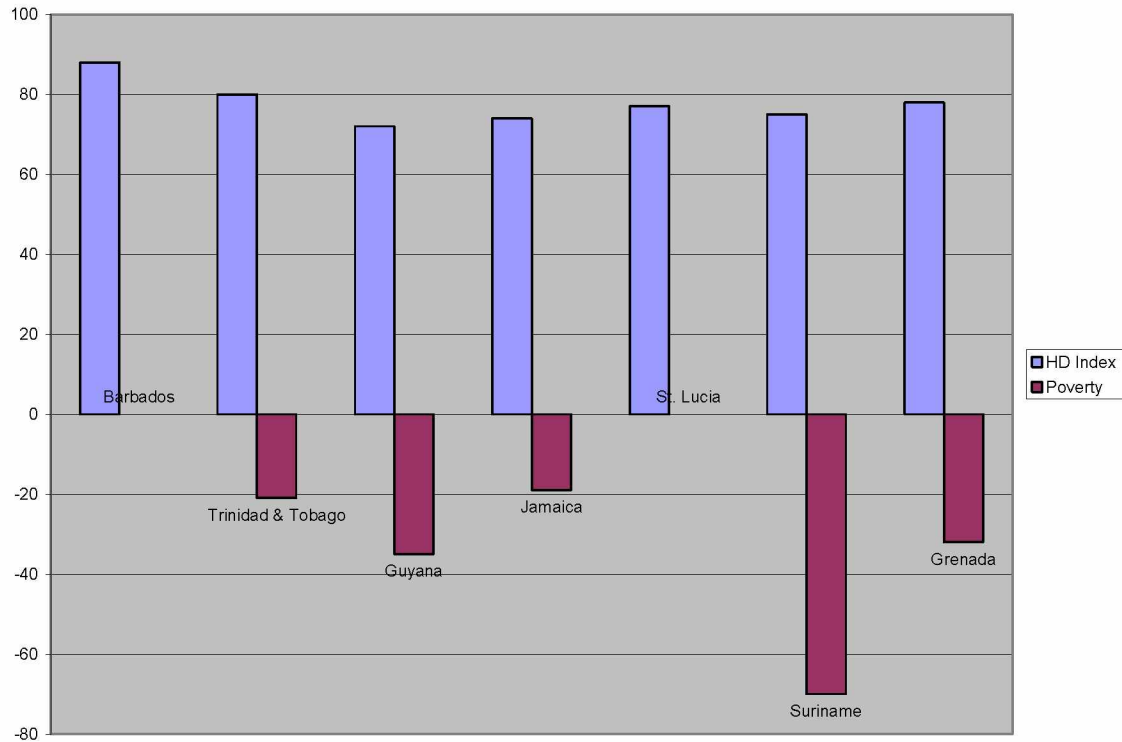
The Caribbean, like other regions of the world, is faced with a number of human development challenges that are of particular concern. The United Nations Millennium Development Goals (MDGs) provide useful indicators for benchmarking the progress of Caribbean countries in achieving human development in the region. Uppermost among these indicators are poverty and its typical socio-economic determinants, such as adult illiteracy, unemployment, crime, sub-standard health care and vulnerability to natural disasters.

The level of poverty is one of the most important indicators of human development. Usually, poverty is occasioned by a combination of low economic growth and inequitable distribution of income and wealth, or, high or moderate economic growth accompanied by skewed income distribution. The Caribbean has not escaped the poverty trap as evidenced by relatively high levels of poverty recorded for the following countries: 18.7 % in Jamaica, 21% in Trinidad and Tobago, 32% in Grenada and 35% in Guyana and 70 % in Suriname in 2004 (Table 1). Figure 1 illustrates the negative correlation between poverty and human development, indicating that the countries with lower a incidence of poverty have relatively higher levels of human development.

Table 1. Human Development and Poverty			
Countries	Population below Poverty Line (%)	Human Development (2005)	
		Rank	Index
High Human Development			
Barbados	N/A	30	0.878
Trinidad and Tobago	21	57	0.801
Medium Human Development			
Grenada	32 ²	66	0.787
Guyana	35	107	0.720
Jamaica	18.7	98	0.738
Saint Lucia	N/A	76	0.772
Suriname	70 ³	86	0.755

Sources: United Nations Development Program Human Development Report 2005; CIA World Factbook (<http://www.cia.gov/cia/publications/factbook/fields/2046.html>)
¹ Data is from CIA, 2004. ² Data is from CIA, 2000. ³ Data is from CIA, 2002.

Figure 1. Poverty and Human Development



High unemployment levels in some countries exacerbate the problem of poverty in the Caribbean. Notwithstanding the scarcity of data, Figure 2 suggests that countries with relatively higher levels of unemployment have higher levels of poverty. According to the 2006 International Labour Organisation (ILO) jobs report: “the largest increase in unemployment occurred in Latin America and the Caribbean where the number of unemployed rose by nearly 1.3 million, and the unemployment rate increased by 0.3 percentage points between 2004 and 2005 to 7.7 percent” .

In large measure, unemployment in the region has been associated with the speed at which a number of countries have been pursuing the structural transformation which is necessary to provide and sustain jobs for a growing workforce. In some countries within the Organisation of Eastern Caribbean States (OECS), the removal of preferential treatment for sugar and bananas has aggravated the unemployment problem and the impact of decline in the economic contribution of these two cash crops has not been buffered by emergence of new industries. This situation has been precipitated by the slow pace at which new entrepreneurial opportunities facilitated by ICT are being made available to, or grasped by, Caribbean peoples.

Table 2. GDP, Unemployment, Poverty and Human Development

Countries	GDP per Capita (US\$ 2003)	Unemployment Rate			Poverty Levels /HD Index	
		Both	Male	Female	Poverty	HD Index
Middle Income						
Barbados	9,867	11.0	9.6	12.6	N/A	0.878
Grenada	4,262	N/A	N/A	N/A	32 ²	0.787
Jamaica	2,802	15.8	10.3	22.3	18.7	0.738
Saint Lucia	4,611	N/A	N/A	N/A	N/A	0.772
Suriname	2,240	14.0	10.0	20.0	70 ³	0.755
Trinidad and Tobago	7,607	10.4	7.8	14.5	21	0.801
Low Income						
Guyana	1,010	N/A	N/A	N/A	35	0.720

Source: United Nations Statistics Division Social Indicators,
<http://unstats.un.org/unsd/demographic/products/socind>

Education and training are imperatives for creating and taking optimal advantage of available employment opportunities. The Caribbean has made commendable progress in adult literacy through a primary and secondary education system with an average enrolment of over 90%. However, in an age where access to coded information for conversion into knowledge is growing in essence as an employment tool, tertiary levels of ICT training have become an important determinant of employment opportunities and, in turn, human development.

Effective deployment of ICT demands new skills of the workforce. This requires well-designed and well-directed programmes to promote a culture of continuous learning and upgrading of the skills sets of the workforce to meet the challenge of production of goods and services. Adult education programmes aimed at bringing older persons in the workforce up to speed with the new technologies and ways of working are critical for successful adjustment to change. As indicated at Figure 3, Barbados and Trinidad and Tobago, with higher adult literacy rates as compared with similar figures for Suriname and Jamaica, both have lower unemployment rates than that recorded for those two countries. This brings to the fore the challenge faced in deploying ICT applications to address unemployment problems in the Caribbean.

Figure 2. Unemployment and Poverty

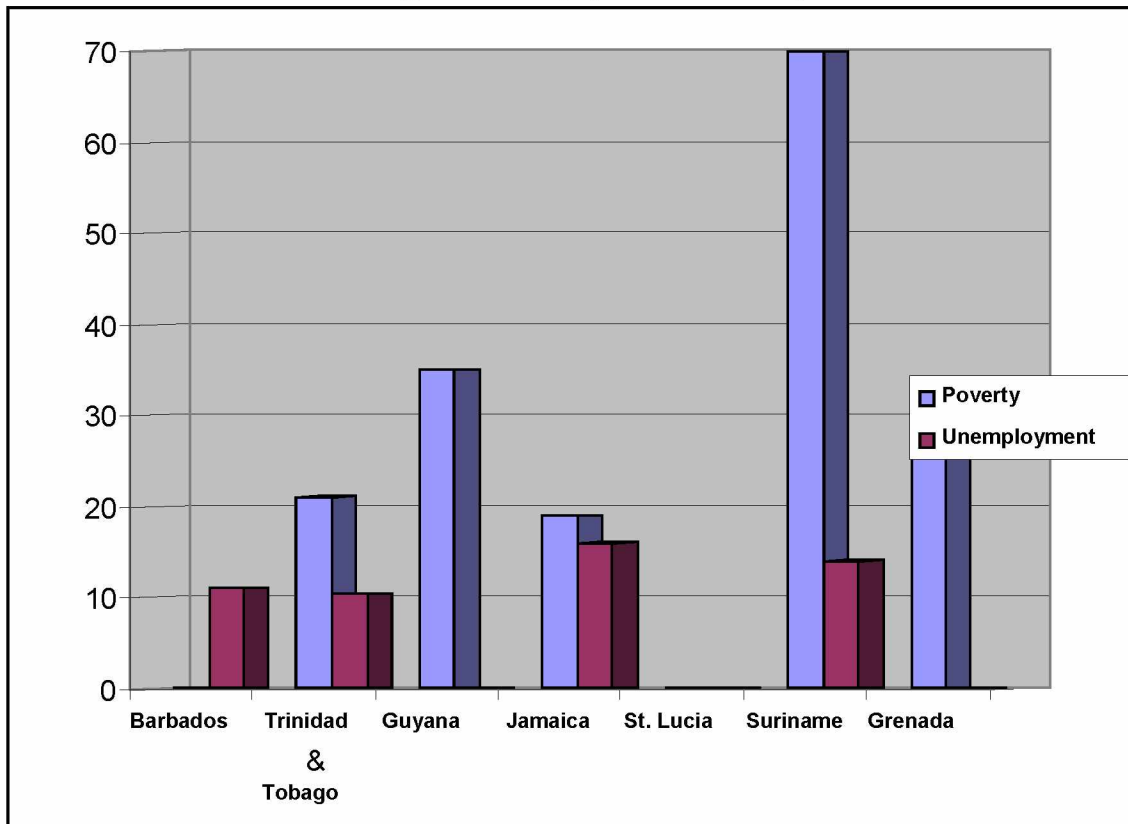


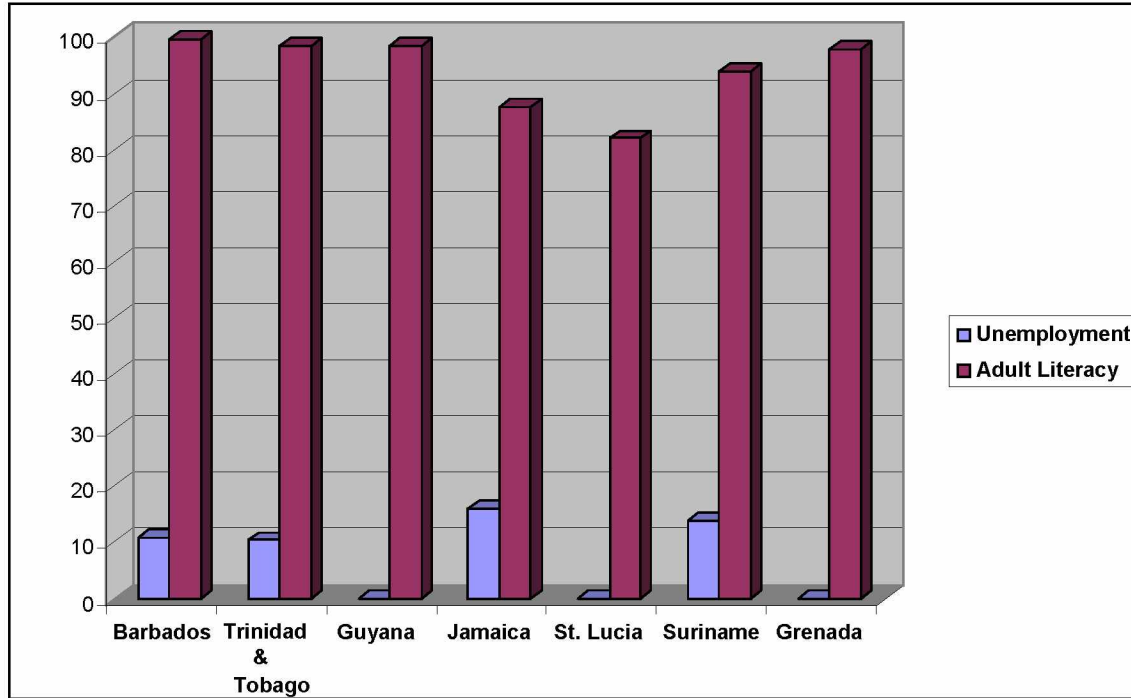
Table 3. Literacy and Education

Countries	Adult Literacy Rate (%)	Education Enrolment Ratio		
		Primary	Secondary	Tertiary
High Human Development				
Barbados	99.7	109	106	27.1 ²
Trinidad and Tobago	98.5	100	82	9
Medium Human Development				
Grenada	98.0 ¹	N/A	N/A	N/A
Guyana	98.6	125	95	6
Jamaica	87.6	100	84	17
Saint Lucia	82.0 ¹	N/A	N/A	N/A
Suriname	94.0	126	74	12 ³

Source: Commonwealth Secretariat: Small States Economic Review and Basic Statistics, Vol. 10, 2005. Data is from 2002-2003, except where indicated.

¹ Data is from 1995. ² Data is from 1990. ³ Data is from 2001-2002.

Figure 3. Unemployment and Adult Literacy



The adequacy of health care infrastructure and the quality of health care is another important aspect of human development. The Caribbean has done well in the areas of providing potable water and sanitation services (Table 4). However, life expectancy and infant mortality rates give cause for concern. Morbidity and mortality from treatable diseases remain relatively high. Specifically, the HIV/AIDS pandemic is a major health challenge, with the Caribbean being second only to Sub-Saharan Africa in terms of prevalence. HIV/AIDS undermines development by decimating people in the prime of their lives, raising medical treatment costs and leaving many orphaned children.

The health situation in the region also calls for improvement in diagnosis, treatment and preventative care, particularly for lifestyle diseases, such as diabetes and cardiovascular diseases. In the circumstances, it is incumbent on Caribbean countries to engage certain sophisticated, tested and proven ICT solutions which are impacting health care positively in developed and emerging economies.

Table 4. Selected Health Indicators					
Countries	Life Expectancy at Birth		Infant Mortality Rate	% of Population with Access to Improved	
	Male	Female		Drinking Water Sources	Sanitation Services
High Human Development					
Barbados	71.1	78.3	11	100	100
Trinidad and Tobago	66.9	73	14	90	99
Medium Human Development					
Grenada	N/A	N/A	17	95	97
Guyana	59.8	65.9	49	94	87
Jamaica	68.9	72.5	15	92	99
Saint Lucia	70.8	73.9	15	98	89
Suriname	65.8	72.5	26	82	93
Source: United Nations Statistics Division Social Indicators, http://unstats.un.org/unsd/demographic/products/socind					

The increasing crime rate in the Caribbean has become a serious threat to the security, socio-economic stability and hence the quality of life of citizens. Murder rates for both Jamaica and Trinidad and Tobago, which are among the highest in the world (above 20 murders a year per 100,000 people), continue to rise. Indications are that the crime rate is affected by the traffic in narcotic drugs, increased access to firearms, the breakdown of family and community support systems, poverty and inequality and the deportation of criminals from the United States, the United Kingdom and Canada, among other factors. Violent crimes portend erosion in the quality of life by putting pressure on public and private expenditure on security services and impacting negatively on foreign investment and tourism. This situation is of deepest concern in economies which are heavily dependent on tourism. Globally, governments have been making increasing use of ICT as part of their crime deterrent and solution initiatives. In this regard, the collective and individual efforts of Caribbean governments need to be assessed and, where necessary, countries need to develop programmes and projects to integrate ICT into crime prevention, detection and solution in the region.

Human development in the Caribbean is also linked to its preparedness to treat with natural disasters given the region's vulnerability to hurricanes and floods. Over the last two decades, destruction to the infrastructure of the productive and social sectors due to hurricanes and floods has been substantial in cost. Hurricane Ivan resulted in an estimated damage of around EC\$2.4 billion, the equivalent of over 200% of GDP in Grenada in 2004, while the 2005 flood in Guyana accounted for damage of around 60% of GDP. The importance of ICT in aiding disaster preparedness should not be understated. The extent to which this is a reality in the Caribbean needs to be addressed.

B. ICT and Human Development

Historically the technological revolution has been at the center of human development as evidenced in the fundamental changes new technologies have made to present day lifestyles. The information revolution, ushered in towards the end of the twentieth century by a combination of telecommunications and computing technologies, has created a capability for real-time contact among peoples of different continents and countries. Through ICT, a cross section of people can now access world information resources on a range of human development integers including: health care, employment opportunities, business, finance, markets, goods and services, disaster preparedness, etc. ICT has created a platform for peoples of the developing world to enjoy the full benefits of the Global Information Society and the Global Civil Society.

There is an important and indisputable connection between ICT and human development. However, the correlation is not achieved automatically, especially not in developing countries. Indeed, an ICT enabled paradigm of development has been advanced as a means of achieving the United Nations Millennium Development Goals.

Recognizing the importance of ICT as an enabler of human development, world leaders reaffirmed their commitment (the Tunis Commitment of WSIS, 2005) to the World Summit on the Information Society (WSIS) Action Plan, 2003: to build a people-centered, inclusive and development-oriented information society based on the principles of the Charter of the United Nations and upholding the Universal Declaration of Human Rights. The aim is for people everywhere at any time to be able to share and utilize information and knowledge in order to achieve their full potential and attain their development objectives.

Within the context of the Tunis Commitment, Caribbean leaders have also made their own commitment to use ICT to improve the lives of Caribbean people, having regards to the cultural and lifestyle realities of the people whom they serve.

C. Project Background and Definition

ECLAC has undertaken a research, awareness and capacity building project on public ICT policies in the Caribbean region. This project, which was executed by the ECLAC Subregional Headquarters for the Caribbean in Port of Spain, is a segment of a broader programme entitled eLAC 2007 which is being undertaken by ECLAC. Within the context of eLAC2007, an action plan for Latin America and the Caribbean was developed and approved by the governments of the region at a ministerial meeting held in Rio de Janeiro (June 2005) in advance of the Tunis phase of the WSIS.

The first phase of the initiative which provides a partial assessment of the ICT in the Caribbean, based on a sample survey, is complete and its findings are presented in this document.

1. Methodology

(a) Survey Sample

The survey questionnaire was sent to all English- and Dutch-speaking Caribbean countries. In addition follow-up visits were made to nine countries. Of the countries visited seven provided full responses to the questionnaire. The findings presented are based on information provided by these countries. These limitations notwithstanding, the sample is considered representative of the peculiarities of the region in that the countries included represent the four major geographical profiles in the region -- small islands, medium-sized islands, archipelagic States and continental States. The countries comprising the sample also reflect the spectrum of economic circumstances in the region: high-income, middle-income and low-income States (Table 5).

Table 5. Profile of Sample of Caribbean Countries

Countries	Population (000)	Surface Area (km ²)	Size	Geographical Profile	Human Development ¹	Income ²
Barbados	269	430	Small	Island	High	Middle
Grenada	102	340	Small	Archipelagic	Medium	Middle
Guyana	751	214,970	Large	Continental	Medium	Low
Jamaica	2,651	10,990	Medium	Island	Medium	Middle
Saint Lucia	161	620	Small	Island	Medium	Middle
Suriname	449	163,270	Large	Continental	Medium	Middle
Trinidad and Tobago	1,306	5,130	Medium	Archipelagic	High	Middle

¹ According to United Nations Development Program Human Development Report 2005.

² According to Commonwealth Secretariat Economic Review and Basic Statistics Volume 10, 2005.

The sample is also representative of the variations in levels of human development in the region, ranging between the high and medium on the United Nations Development Programme (UNDP) Human Development Index (Table 5).

As indicated at Table 6, the sample captures the variation in urban/rural settlement in the region, ranging from a high 77% concentration in urban settlement in Suriname to a low of 31% in Saint Lucia. Both Barbados and Jamaica have almost even urban/rural settlement rates.

Table 6. Population Growth, Concentration, Distribution and Migration

Countries	Total (000)	Annual Growth (%)	Settlement		Age		Migration ¹	
			Urban (%)	Rural (%)	< 15 (%)	> 60 (%)	Foreign Population (%)	Living Abroad ² (%)
Barbados	269	0.26%	52	48	19	26	9.16	35
Grenada	102	0.26%	41	59	N/A	N/A	8.50	8
Guyana	751	0.20%	38	62	29	14	0.21	50
Jamaica	2,651	0.51%	52	48	31	21	0.49	38
Saint Lucia	161	0.8%	31	69	29	20	5.45	67
Suriname	449	0.69%	77	23	30	18	1.49	51
Trinidad and Tobago	1,306	0.32%	76	24	22	22	3.20	27

Source: UN Statistics Division Social Indicators (<http://unstats.un.org/unsd/demographic/products/socind>), UN Population Division (2002). Data available as of 2005. sds

¹ Data is for 2000, revised on Sept. 2002.

(b) Data collection

Data collection was undertaken via a questionnaire prepared and sent to each country for completion. The information requested was segmented into the under-listed six major areas:

- a. Historical background
- b. Policy development
- c. State modernization and e-government
- d. Access policy
- e. Supply of goods and services
- f. Public budget expenditures.

Official government responses to the survey questions were sent in writing from those countries that responded. In addition, some field visits were undertaken and important information was collected through multiple interviews with government officials and local civil society and business sector stakeholders.

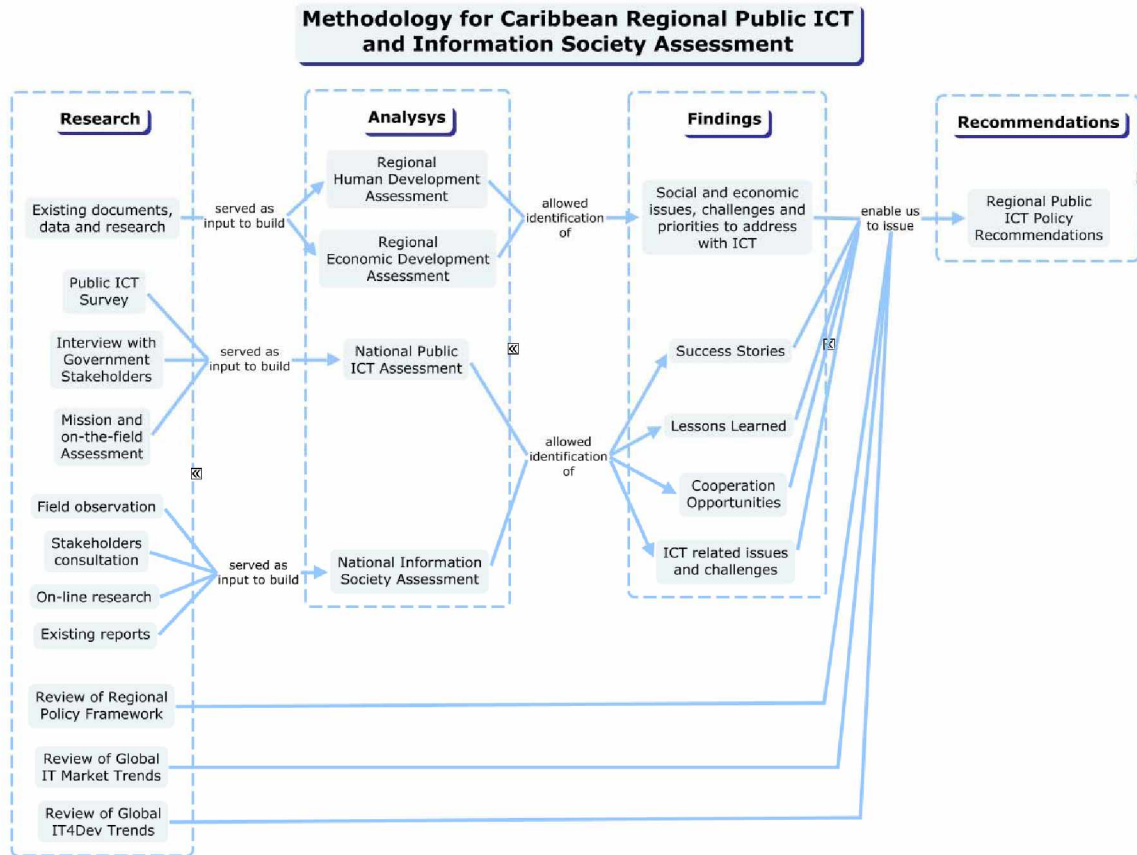
Information was also extracted from documents on ICT, human development and the Caribbean region (as listed in the Bibliography) and visits to appropriate on-line databases. Throughout the research there was daily monitoring of ICT-related and Caribbean news. This exercise provided timely updates on relevant information. Active participation in Caribbean

virtual groups and communities also helped to validate assumptions and collect additional input from regional stakeholders.

Annexed to the document is a compilation of ICT profiles of each of the countries that comprise the sample which chronicles their success stories for purposes of sharing with other Caribbean countries. Stakeholders in each country were sent a draft of their country’s profile for comments to inform the revision of the document prior to its completion

A detailed schematic of the research approach is captured at Figure 4.

Figure 4



II. Findings of the survey

A. Access and Digital Inclusion

The survey results suggest that public sector budgeting to promote access and knowledge creation in the Caribbean is significantly underfunded. Fewer than 20% of the countries sampled have specific budgetary provisions that support initiatives to promote universal access (Table 7).

Table 7. Public ICT Funds and National ICT Budgets

Countries	Availability of Specialized ICT Budget To Promote Universal Access
Barbados	<input type="radio"/>
Grenada	<input type="radio"/>
Guyana	<input type="radio"/>
Jamaica	<input checked="" type="radio"/>
Saint Lucia	<input type="radio"/>
Suriname	<input type="radio"/>
Trinidad and Tobago	<input type="radio"/>
<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Partial	

The situation is similar with respect a Universal Service Fund to facilitate Internet access by disadvantaged persons (Table 8). Only Jamaica has such a fund. Legislation exists for such a fund in Trinidad and Tobago but it has not yet been implemented.

Table 8. Universal Access Financing

Countries	Existence of Universal Access Fund
Barbados	○
Grenada	○
Guyana	○
Jamaica	●
Saint Lucia	○
Suriname	○
Trinidad and Tobago	◐ ¹

1. The definition exists in the Telecommunications Law, but is yet to be implemented and enforced.

● Yes
○ No
◐ Partial

1. Broadband Services

The available information did not permit a more rigorous analysis but the evidence suggests that Digital Subscriber Line (DSL) services are expanding in pockets in the region. Other forms of high speed access, such as V-Sat and dedicated lines, have been available for many years, although their market share is rapidly being eroded.

Urban/rural availability of broadband services is uneven and prices remain on the high end in most cases, compared to international rates and local per capita income figures. As a result, access to broadband is limited for rural households and low-income urban households. The same applies to individuals outside an institutional, academic or business environment. This notwithstanding, there are several initiatives that support the deployment of community access centers which complement the offer of commercial Internet cafés and broadband access to students at their school's computer lab through national education networks. Data did not permit an assessment of the proportion of rural and urban population in the Caribbean that benefit from these initiatives. However, one conclusion that could be drawn is that the Caribbean could benefit from wider availability and cheaper high-speed Internet access, particularly in rural areas.

Data for the Cayman Islands reveal that in 2006 Cable & Wireless announced a 700% increase in its broadband customer base over that of the previous year. Interestingly enough, households form the majority of those broadband subscribers. Of material interest would be an analysis of related factors, such as price, income, computer use and marketing, on the upsurge in broadband application in that country. A similar study is also necessary in the other Caribbean countries.

(a) Wireless broadband

WiFi hotspots are not common in the region, although the service is available free of charge or at a fee at large hotels and several airports, including the main terminals at Jamaica and Trinidad and Tobago. Some international restaurant and entertainment franchises offer free WiFi access in their cafés and bars, but it is seldom used by customers. An independent provider in Paramaribo, Suriname's capital city, has been offering wireless Internet broadband services. What is not known at this time is the average price of spectrum to provide WiFi services in the Caribbean, since internationally such prices are traditionally free or provided at very low rates.

(b) WiMax Networks

The deployment of **Worldwide Interoperability for Microwave Access (WiMax)** network is in its infancy in the Caribbean. A comprehensive survey is needed to inform a situation analysis as regards the deployment of this "standards-based technology" that enables the delivery of last-mile wireless broadband access as an alternative to cable and DSL and which portends a revolution of broadband capacity and usage in the region. In this regard, the manner in which the government-owned wireless network covering most of the major islands of the British Virgin Islands has expanded to comprise 38 microwave backbone sites and 140 last mile sites is worth noting. These sites enable low-cost wireless broadband internetworking among all the essential government service branches of the major islands on a single high-speed network that provides state-of-the-art connectivity (see Annex 1 for further details). Digicel's announcement in 2005 of a successful WiMax pilot in the Cayman Islands and its intent to extend the network in Grand Cayman and thereafter introduce the service in Barbados and Jamaica in 2006 is also worth monitoring.

(c) Broadband access and Caribbean culture¹

Broadband users benefit from globally rich multimedia on-line content and services and a range of education and business opportunities made possible through permanent, fast access to information. Other services available to broadband users include on-line mapping (such as Google Earth and Microsoft Windows Live Local) that provide detailed local satellite images, entertainment via radio and TV and low cost voice communications through voice over IP and videoconferencing. The impact of broadband technology on Caribbean culture can be life changing. Broadband availability will provide an on-line avenue for the promotion and distribution of local content within the region as well as to the international community. This could support continuous growth and evolution of regional culture as it coexists and competes successfully with global knowledge and culture.

Discussions held with government officials indicate that formal support for standards which facilitate access to on-line content by people with disabilities is not sufficiently widespread. The level of awareness being expressed on the special needs of the visually impaired and people with physical movement limitations can be improved. Collectively, there is need for

¹ See *Content Governance on section 2.5 e-Governance Assessment and also section 2.9 Local and Regional Content Assessment for more information.*

the region to lend support for default embedded features to include Open Source software that creates on-line content to promote virtual learning environments such as Plone and Moodle.

B. Capacity Building and Knowledge Creation

1. Science and Technology

Applied science and appropriate technology is an essential foundation for shaping an information society. As indicated at Table 9, apart from Barbados, Guyana, Jamaica and Trinidad and Tobago, there is limited availability of data to facilitate empirical inference concerning the level of investment in research and development in the region and, by extension, to enable analysis of the impact of science and technology policies on ICT.² This notwithstanding, the limited data show that there is insufficient investment in R&D in science and technology in the Caribbean, in part because of the absence of a structured and institutional research culture, and due as well to the low economic returns on activities, both in the medium- and long-term prospective.

A similar situation is observed with respect to investment in the region to promote IT industry development, as less than 30% of the countries provide funding to promote IT industry development.

Table 9. Investment on Research and Development

Countries	Investment on R&D as % of GDP	To Promote IT Industry Development
Middle Income		● ¹
Barbados	N/A	○
Grenada	N/A	○
Jamaica	0.1% ¹	● ^{1,2}
Saint Lucia	0.4% ²	○
Suriname	N/A	○
Trinidad and Tobago	0.1% ³	● ^{1,3}
Low Income		
Guyana	N/A	

Source: UNESCO Institute for Statistics

- | | |
|--|-----------|
| 1. Funds available for IT Strategy formulation. | ● Yes |
| 2. Funds available for IT Strategy formulation and some specific projects. | ○ No |
| 3. Technology Park and Clusters strategy under development. | ● Partial |

² *Manual for the compilation of science and technology indicators in the Caribbean, UN ECLAC, 2003.*
<http://www.eclac.cl/publicaciones/xml/3/13853/G0753.pdf>

2. National ICT Strategies

Trinidad and Tobago, Guyana, Jamaica and Grenada have all formulated and published ICT strategies focused on promoting human development by strengthening the capacity of their citizens to take advantage of the benefits of the global information society. To a lesser extent, Barbados and Saint Lucia are in the process of satisfying this criterion. However, only Trinidad and Tobago and Jamaica submitted information indicating that this strategy is supported by budgetary provisions (table 10). Information suggests, however, that budgetary provisions have been made for e-government projects in all of the countries surveyed.

The lack of information on this important ICT indicator points to the need for generation and collection of the relevant information to enable assessment of the implementation of the strategy and its impact on human development in the region.

Table 10. Summary of National ICT Strategies

Countries	ICT Strategy Formulated and Published?	Coordinating ICT Agency Appointed?	ICT Strategy Specific Budget Available?	ICT Strategy being Implemented?	Budget Available for e-Government Projects?
Barbados	◐ ¹	◐ ²	○	◐ ¹	◐ ⁵
Grenada	●	●	○	○	●
Guyana	●	◐ ³	○	○	◐ ⁵
Jamaica	●	●	●	●	●
Saint Lucia	◐ ⁴	●	○	○	◐ ⁵
Suriname	○	○	○	○	◐ ⁵
Trinidad and Tobago	●	●	●	●	◐ ⁵

1. There is a draft National ICT Strategy. There is a section on ICT in the National Strategic Plan 2005-2025.

2. There are several coordinating agencies. A new centralized structure has been proposed.

3. There has been a Coordinating Agency for the formulation of the Strategy.

4. There is an “e-Gov Proposal - Blueprint for ICT in Public Sector”.

5. Internal funds allocation within government agencies as opposed to formal allocation in public budget.

● Yes

○ No

◐ Partial

The region has done well in instituting public sector reform. (See tables 11 and 12). Nevertheless, the tables highlight the need for coordination between ICT projects and public sector reform programmes since such coordination is evident in less than 50% of the countries sampled.

Table 11. National ICT Strategies and Public Sector Reform

Countries	Public Sector Reform Programme in place	Coordination among ICT and Public Sector Reform Programme
Barbados	●	●
Grenada	●	○
Guyana	●	○
Jamaica	●	●
Saint Lucia	●	●
Suriname	○	○
Trinidad and Tobago	●	●

● Yes ○ No

Table 12. Public ICT Budget Info and Coordination

Countries	Public ICT Expenditure		Coordination of ICT Budget in Public Institutions		
	Detailed Information available	Ongoing Efforts to clarify	Is there a National Coordination Mechanism?	Among ICT Strategy and Public Institutions	Does the Coordination Mechanism influence budgetary decisions?
Barbados	●	●	●	●	●
Grenada	○	○	○	○	○
Guyana	○	◐ ₁	○	○	○
Jamaica	◐ ²	○	●	●	○
Saint Lucia	○	○	○	○	○
Suriname	○	○	○	○	○
Trinidad and Tobago	○	○	●	●	●

● Yes ○ No ◐ Partial.

1 Unit created by Office of the President is expected to collect/generate this info.

2 Information available on ICT coordination agency budget.

Assessment of public sector expenditure on ICT capacity building in the region is inconclusive given the lack of credible information required to undertake such analysis.

Only one country in the sample has data in this area (table 13). This figure is poised to increase since two other countries have commenced compiling the relevant information.

Country	Available	Being Estimated
Barbados	●	●
Grenada	○	○
Guyana	○	●
Jamaica	○	●
Saint Lucia	○	○
Suriname	○	○
Trinidad and Tobago	○	○
● Yes ○ No ◐ Partial		

The lack of requisite legislative instruments throughout the Caribbean to instill user confidence and in turn deepen the inclination of the citizenry to use ICT applications in their daily lives is an area of much concern. Less than 30% of the countries have laws governing electronic transactions. This figure should increase substantially in the near future as two countries are in the process of developing electronic transactions legislation (table 14). Misuse and cyber crime legislation are only enacted in two countries while data protection is yet to be prescribed in law in any of the countries.

Table 14. Information Society Relevant Legislation

Countries	Electronic Transactions	Misuse and Cybercrime	Data Protection	Consumer Protection	Freedom of Information
Barbados	●	●	◐	●	◎
Grenada	○	○	○	●	◐
Guyana	◐	○	○	●	◐
Jamaica	◐	○	○	●	○
Saint Lucia	○	○	○	◐	○
Suriname	○	○	○	○	○
Trinidad and Tobago	●	●	◎	●	●
● Enacted as a Law or Act. ◐ Under development, in Bill form.			◎ Under development. ○ Does not Exist.		

Approximately 86% of the countries have consumer protection legislation either in the form of an act or a bill. Freedom of information laws exist only in one country though such laws are in varying stages of evolution in 43% of the countries (Table 14).

3. Content Policies

In spite of the wealth of Caribbean culture, its availability on-line remains relatively restricted. This may be the combined result of weak intellectual property awareness and enforcement, lack of local funding and limited support for digital content creation or digitalization of existing content. Indications are that fear of plagiarism and piracy, the limited ability to facilitate e-commerce and the unavailability of alternative compensation methods keep able content creators from putting their content on-line. While there are isolated cultural initiatives on-line, there are few formal policies in the region for promoting the creation and availability of local content, either by regional organizations or national authorities.

There is no regulation or access to on-line content in the Caribbean. As Internet penetration deepens, access to unregulated global content and the ability to create unregulated content by local communities will present significant challenges to Caribbean content providers.

C. Policy/Legislation for Creating an ICT Enabling Environment

1. Internet Governance

Efforts in this area include an Internet Governance Forum convened by the Caribbean Community (CARICOM) in 2005 and the active involvement of the Internet Corporation for Assigned Names and Numbers (ICANN) which has been touring the region lately organizing meetings and seminars with government, business and civil society stakeholders. However, there is not sufficient debate on issues related to internet governance at the regional level, particularly with regard to the importance of national and regional self regulation of the Internet. This debate is important since it is quite uncommon to find mention of top-level domain control, adoption of IPv6, ownership and reliability of the network infrastructure and the Internet as a public social good in the strategic and technical discussions in the region.

(a) Control of Top-Level Domain

About two thirds of the countries have total control and management of their top-level domain (TLD). The other countries rely, in most cases, on the University of Puerto Rico to provide technical support and Domain Name System (DNS) services for them. Telecommunications service providers, partly owned by the State, handle the TLD for half of the countries which have control over their TLD, while the university manages that of the other countries which exercise domestic control over their TLD (table 15).

Table 15. Top Level Domain Governance in the Caribbean

Countries	tld	Sponsoring Org.		Admin. Contact		Technical Contact		DNS Servers	
		Location	Nature	Location	Nature	Location	Nature	Location	Nature
Bahamas	.bs	Local	Educ.	Local	Educ.	Foreign	Educ.	Foreign	Educ.
Barbados	.bb	Local	Private	Local	Private	Local	Private	Local	Private
Grenada	.gd	Local	Educ.	Local	Educ.	Foreign	Educ.	Foreign	Educ.
Guyana	.gy	Local	Educ.	Local	Educ.	Local	Educ.	Local	Educ.
Jamaica	.jm	Local	Educ.	Local	Edu.	Local	Educ.	Local	Educ.
Saint Lucia	.lc	Foreign	Educ.	Local	Private	Foreign	Educ.	Foreign	Educ.
St. Vincent and the Grenadines	.vc	Local	Gov.	Local	Gov.	Foreign	Private	Foreign	Private
Suriname	.sr	Local	Private	Local	Private	Local	Private	Local	Private
Trinidad and Tobago	.tt	Local	Educ.	Local	Educ.	Foreign	Educ.	Foreign	Educ.

(b) Commercialization of Top-Level Domains

None of the Caribbean TLDs are available through any of the large on-line competitive and fully automated retailers. This means that individuals and organizations cannot take advantage of the active competition in the Internet domain sales market.

Although several international on-line retailers advertise and offer domains under the TLD of the surveyed countries, in every case they act as mere intermediaries, charging consumers exorbitant rates and doing the manual process themselves.

Purchase of an Internet domain under the TLD of all the pilot countries is formally only available through a single source in each country and in most cases through a non-automated process that involves personal interaction and physical payment (table 16).

Table 16. Commercialization of Domain Names

Countries	tld	Price	On-line Commercialization			
			Info Request	Availability Check	Order	Payment
	.bs	.com.bs, .org.bs, .net.bs, .edu.bs: - National US\$100 reg.; US\$50/yr renew - International US\$200 reg.; US\$100/yr renew .gov.bs, .org.bs: - free for govt. .bs: US\$500 reg. + 2yr; US\$100/yr renew	●	●	◐	○
Barbados ³	.bb	BB\$115/yr (US\$57/yr)	●	●	●	●
Grenada	.gd	US\$100 register US\$50/yr renew	○	○	○	○
Guyana	.gy	US\$25/yr	●	○	◐ ⁴	○
Jamaica ⁵	.jm	.com.jm: intl. US\$29.95/yr nat. US\$19.95/yr .gov.jm: US\$9.95/yr .org.jm: US\$9.95/yr .edu.jm: free	●	○	◐	●
Suriname ⁶	.sr	Locally from Telesur: US\$25 registration US\$35/yr renew On-line from Register.sr: US\$299/yr	●	○	◐	◐
Trinidad and Tobago	.tt	National: .co.tt: US\$50/3yr .tt: US\$500/2yr; US\$500/5yr renew International: .co.tt: US\$100/3yr .tt: US\$1000/2yr; US\$1000/5yr renew	●	●	◐ ⁷	○
● Yes. ○ No. ◐ Partially.						

Total control of country code top level domains (ccTLDs) is not only a matter of e-governance, but can also be a lucrative source of revenue for some Caribbean countries. Registration of web domains under a country's TLD can be of interest to the global public and

³ .bb domains are only available to nationals and organizations registered and operating in Barbados.

⁴ Order can be placed by downloading (or copying and pasting) a text-based form and submitting by e-mail.

⁵ While an order can be placed and payment for it can be done on-line, the order is only complete upon manual verification by the registrar.

⁶ On-line order placement and payment available only through register.sr.

⁷ While an order can be placed on-line, it is only complete with off-line payment (via cheque or wire transfer).

not just to its nationals, as can be appreciated in the experiences of Armenia (.am), Federal State of Micronesia (.fm) and Tuvalu (.tv) among others (Table 17).

Table 17. Top Level Domains Commercial Exploitation Cases

Countries	tld	Commercial Use	Marketed by
Armenia	.am	Radio stations	www.dot.am
Federal State of Micronesia	.fm	Radio stations	www.dot.fm
Lao People's Republic	.la	People and organizations in Los Angeles, Latin America and Louisiana. Webmail in hundreds of .la 2nd level domains.	www.la www.easy.la
Tonga	.to	Popular redirection and specific use as in "come.to/website", "go.to/ website"	www.tonic.to
Tuvalu	.tv	TV stations	www.tv

The revenue from such international registrations can make total control of the country's TLD completely sustainable and even serve to promote nations to the world. Not only will some people find value or prefer having a web domain ending in one of the Caribbean's TLDs, but there is definitely a market for those seeking registration of popular keywords and short three- and four-letter domains which are no longer available under the common .com, .org or .net top level domains.

A cursory examination revealed a wide availability of such keywords as "business", "banking", "entertainment", etc. under most of the Caribbean's TLDs (table 18). This provides unimpeachable evidence of the commercial potential of Caribbean TLDs.

Table 18. Commercial Potential of Caribbean Top Level Domains

Countries	tld	Some Potential Commercial Uses
Barbados	.bb	big brother, bed & breakfast, bulletin board, baseball, broadband and baby boomer
Bahamas	.bs	bachelor of science, boy scouts, bookstore, bolivars (Venezuelan currency).
Grenada	.gd	graphic design, graduate degree.
Guyana	.gy	gymnasium.
Jamaica	.jm	jedi master, jamming.
Saint Lucia	.lc	letter of credit, library of congress, laptop computer, learning center.
Saint Vincent and the Grenadines	.vc	venture capital, video conference, virtual community, virtual classroom.
Suriname	.sr	satellite radio, senior, scientific research, search and rescue.
Trinidad and Tobago	.tt	table tennis, top ten, travel and tourism.

2. e-Commerce Governance

All the countries provide on-line access to public information (table 19). Because of immature legislative arrangements, E-government transactions, including on-line payments are only enabled in 43% of the countries. Public sector intranet services are available extensively or on limited scale in all of the countries. However, only in 28% of the countries is the business sector supported by E-government services (table 19).

Table 19. Nature of e-Government Services

Countries	Access to Information	On-line Transactions	On-line Payment of Services	Interconnection of Agencies	To Support Business Sector
Barbados	●	●	●	●	○
Grenada	●	○	○	◐	○
Guyana	●	○	○	◐	○
Jamaica	●	●	●	●	●
Saint Lucia	●	○	○	◐	○
Suriname	●	○	○	◐	○
Trinidad and Tobago	●	●	●	●	●

● Yes. ○ No. ◐ Limited.

(a) Vendor Issues

The level of E-commerce in the region seems underestimated. Indications are that a substantial number of on-line commercial transactions actually “take place” or are supported by business service providers abroad. This is because there are few local e-merchant and e-commerce providers. Information from the survey indicates that in most Caribbean States, on-line business payments often require the hiring of the services of an international e-merchant which necessitates opening of a bank account in a country serviced by the chosen e-merchant.

(b) Consumer Issues

Another enabling environment drawback is inconvertible local currency. Credit cards denominated in local currency are not accepted by international vendors. This limits e-commerce transactions to those with the wherewithal to obtain credit cards in convertible currencies from local financial institutions.

(c) Shipping Expenses, Reliability and Tariffs

Due to the small transactions volume of Caribbean countries, whether collectively or individually, international shipping expenses for import and export of goods negotiated on-line are relatively high. In several Caribbean States, lack of confidence in the reliability of the local and international postal service increases the shipping cost even when private international couriers are preferred. Trade in goods is also constrained by relatively high import taxes and episodic delivery delays.

3. Policy Coordination

Information outlined in table 20 suggests that half of the countries have a national mechanism to coordinate e-government policies in a manner that fosters development of the ICT industry, and to periodically evaluate and monitor the impact of national ICT policy coordination as an enabler of changes in the ICT industry.

Table 20. E-Government Policy Coordination

Countries	Part of a National Coordination Mechanism	To foster the development of an ICT industry	Periodically monitored and evaluated
Barbados	●	●	●
Grenada	○	○	○
Guyana	○	○	○
Jamaica	●	●	●
Saint Lucia	○	○	○
Suriname	○	○	○
Trinidad and Tobago	●	●	◐

4. Market Liberalization and Regulation

(a) Competition

There are varying degrees of competition in telecommunication services in all of the countries studied (table 21). Competition is most pervasive in mobile services. Fixed line domestic services remain the most challenged in terms of market liberalization, due mainly to the comparatively lower rate of return on investment in providing that service as compared to mobile services. The relatively lengthy period for network rollout has also hampered competition in the fixed line market. In all of the countries there is a choice of internet service providers.

Table 21. Market Liberalization and Regulation

Countries	Competition ICT Services	Independent Telecom Regulator	Budgetary control
Barbados	●	●	◐
Grenada	●	●	◐
Guyana	●	●	◐
Jamaica	●	●	◐
Saint Lucia	●	●	◐
Suriname	●	●	◐
Trinidad and Tobago	●	●	◐

(b) Autonomy of Telecommunications Regulators

Despite the successful telecommunication reform process and the enactment of new legislation that provides some measure of regulatory independence, concern remains in many countries of the region regarding the susceptibility of the telecommunications regulators to political influence. In most of the countries, the government maintains a stake on the former incumbent and exercises some measure of influence on the telecommunications regulatory regime. In some of the countries, the government is the key policy-making agency in

telecommunications and reserves the power to appoint and remove directors of the board of the regulatory body. More importantly, most regulatory bodies are accountable to government for budgetary allocations, notwithstanding their capacity to generate revenue through collection of regulatory fees.

5. Business and Commerce

(a) Tourism and e-booking

Caribbean economies depend heavily on tourism. The growing trend among tourists, seasoned and, even, occasional travelers of booking reservations on-line and purchasing travel packages via the Internet has a negative effect on the tourism earnings of most of the Caribbean States and, in turn, on the local economies. The vast majority of tourists come from developed countries with high Internet penetration. Often, the young and old, tech-savvy or simply budget-wise go on-line to research, compare, choose and pay for their travel destination and services through all-inclusive packages.

The absence of local merchant account providers leaves local hotels and resorts with limited options of opening a foreign bank account to facilitate on-line transactions through credit card payments from e-commerce providers. Invariably, this means that the revenue generated by those visitors seldom makes it to the country since it is more convenient for the hotel or tourism service provider to leave it abroad (and even avoid paying some taxes). The arrangement has the potential to generate a divide between small and large hoteliers as most small hoteliers do not have the resources or capabilities to open a bank account abroad and are therefore being left out of the competition and increased demand for tourism services on-line.

A public policy and/or legislation that provides the environment needed to encourage and promote the establishment of local merchant account providers by the financial and IT sectors, and facilitates the offer of on-line packages by the tourist sector can generate substantial revenue for the government in terms of both more foreign currency and money coming into the country and more taxes collected (less avoided).

6. e-Government

(a) Disaster Preparedness and Recovery

Proper assessment of risks and danger occasioned by natural disasters, especially hurricanes and floods, is one of the major challenges faced by the Caribbean States. The problem is compounded by a lack of data. Simple ICT solutions, readily available throughout the world, can help monitor conditions in remote places and better plan and predict the outcome of dangerous events and situations when combined with digital models. This is a case where ICT can help save lives and at the same time conserve resources that are often wasted by the inability to estimate the potential impact of a disaster.

When disaster strikes, ICT can help streamline the logistics of resource allocation, maintain communication among remote parties and gather, transmit, organize and allocate data

from different sources for rapid planning, strategy formulation, decision-making and deployment.

ICT and Disaster Preparedness in the Mauritius Strategy

The importance of ICT and early warning systems was highlighted in the conclusions of Round Table 2 - The way forward: building capacity of the Mauritius Strategy.

“11 i) Support ICT networks, early warning systems, remote sensing, computer based systems for mapping and wireless technologies. A number of countries highlighted new initiatives and ongoing efforts to advance capacity-building in these areas;”

7. Potential for Regional and International Cooperation

A cursory glance at the data on Caribbean States suggests the existence of disparity in the use and availability of ICT and in their readiness to be part of the development of an effective information society in Caribbean. Caribbean countries share a common identity, sense of brotherhood, openness and a long history of cooperation that goes beyond separate initiatives and good will and is tangible in an active legal, logistic and institutional framework for cooperation among its States. This creates an excellent opportunity for Caribbean States to learn from each other, share experiences and know-how – if not technologies and solutions. Through regional cooperation initiatives there is the prospect of promoting a more even development of the entire region aligned with the current integration process spearheaded by CARICOM’s many initiatives, which currently include the establishment of a single market and free movement of citizens within the Caribbean States.

D. Success Stories and Potential for Collaboration

Success Stories and Potential for Cooperation

Barbados:	ICT-related Legislation.
Dominican Rep.:	Administrative Systems for Public Education. Crime Enforcement Information Systems.
Guyana:	Multi-stakeholder consultation process for National ICT Strategy definition.
Jamaica:	Trade Facilitation System (Customs, Import and Export, e-Manifests, etc.) Interconnection of Government Systems.
Saint Lucia:	Geographical Information System (GIS). Census data and information mapping. Digital form processing.
Suriname:	Wireless broadband and VoIP services by private sector. Suriname National CMC Network
Trinidad & Tobago:	Government Infrastructure and Backbone. Implementation of National ICT Strategy. Smartcards. Small and Medium-Sized Enterprises Business to Business e-Marketplace.
Eastern Caribbean States:	Shared legislation.

E. Listing of Sectors with Potential for ICT Investment and Development

Table 22. Potential Sectors for Investment and Development

Sectors	Potential Demand and Impact		Competition		Regional Strength	Legislation Dependency
	Regional	Global	Regional	Global		
Mobile Technologies						
Applications Development	High	High	Low	Low but Growing	Low	Low
Applications Design	Medium	High	Low	Low but Growing	Low	Low
m-Commerce	Medium	High	Low	Low but Growing	Low	Low
Mobile Content	Medium	Medium	Low	Low but Growing	Low	Low
Digital Media						
Media Convergence	High	High	Low	Medium+ Growing	Low	Medium
Voice over IP	High	High	Medium+ Growing	Medium+ Growing	Medium	Medium
Content Development	High	Low	Low	Medium	Low	Low
Software Development						
e-Government	High	Medium	Medium	High	Low	Medium
Open Source	High	High	Low	High	Medium	Low
Telemedicine	High	High	Low	Medium	Low	Medium
General	Low	Low	Medium	High	Medium	Low
Videogames	Low	Low	Low	High	Low	Low
Multimedia	Medium	Medium	Medium	High	Medium	Low
e-Learning	High	High	Low	Medium	Medium	Low
Geographical Information Services (GIS)	High	High	Low	Low	Medium	Low
Network Technologies						
Security	High	High	Low	High	Low	Low
Wireless Networks	High	High	Medium	Medium	Medium	Medium
Digital Services						
Financial Services	High	High	Low	High	Low	High
On-line Gambling	High	High	Medium	High	Medium	High
Call Centers	Medium	Medium	Medium	High	High	Medium
Data Processing	Low	Medium	Medium	High	Medium	Low
Distance Education	High	Low	Medium	High	High	Medium

Digital Development Support Services						
Market Analysis and Data Mining	High	Low	Low	High	Low	Low
ICT Strategies and Policies	High	High	Low	Medium	Low	Medium
Disaster Preparedness and Recovery	High	High	Low	Medium	Medium	Low

III. Recommendations of the ICT Policy Makers Seminar, Barbados, September 2006

A. Summary of Recommendations

Based on information gathered by the survey and analyzed in this document, the following are recommended:

1. Future surveys of this nature should include most, if not all, of the countries that form the region that are willing to participate in such an exercise.
2. Specific budgetary provisions to promote access to ICT services using wireless technologies, particularly in rural and remote rural areas should be an imperative in all Caribbean countries.
3. Affirmative action should be taken by the State to ensure access by persons who are differently able.
4. In-depth analysis of mechanisms to widen the availability and lower the price of broadband services across communities in the Caribbean should be carried out with some measure of urgency.
5. Public sector support for tertiary institutions to undertake pilot R&D projects, aimed at enhancing the capability of the information society in the region, should be given due consideration.
6. A process in each Caribbean country to link and align ICT development with public sector reform should be developed and established between the department(s) responsible for ICT and public sector reform.
7. Intellectual Property Rights legislation supported by public education programmes should be enacted.
8. Regional or international assistance should be sought to develop and pass into law at a minimum, the following legislative instruments, giving due cognizance to the views of users and providers of information and content:
 - Electronic transactions
 - Cyber crime
 - Anti Spam
 - Data protection
 - Freedom of Information
 - Intellectual Property Rights
 Legislation should be supported by public awareness programmes to educate the population about the importance of the legislation and the manner in which it could be applied.
9. There should be an intensification of structured discussions towards finalizing a regional policy on Internet Governance. The discussions should include the issue of devising a process of commercializing top level domain names.
10. E-government facilities throughout the region should be upgraded to enable the public on-line submission of applications for various services, bill payment, complaints and contribution to policy-making.

11. The capacity of the agency responsible for disaster preparedness to use ICT solutions to predict, monitor and respond to natural disasters in the region should be improved.
12. Capacity should be enhanced in each ICT department to implement and manage data collection, as well as to undertake ICT situation analysis and forecasting in the respective countries, including the capacity for assessment of the impact of ICT enhancement on human development.

B. The Way Forward

The survey touched the tip of the Caribbean ICT iceberg in terms of assessment and monitoring of ICT development. More work needs to be done to meet the requirements specified in the Plan of Action agreed at the World Summit on Information Society (WSIS POA) (Tunis, 2005 and Geneva 2003). ECLAC is of the view that the intensification of the programme of activities to undertake a more detailed and comprehensive assessment of the Caribbean ICT situation, its development goals and impact on human development in the region is an imperative.

The survey showed that a comprehensive assessment of the efficacy of the information society in the Caribbean is a process that must result in the establishment of an extensive data base and determination of benchmarks on the pertinent ICT indicators beginning with the areas of:

- i. Access and Digital Inclusion;
- ii. Capacity-building and knowledge creation;
- iii. Public transparency and efficiency;
- iv. Policy instruments; and
- v. The enabling environment.

Such a project can be implemented within the eLAC 2007 Plan of Action on which information is available at: www.eclac.cl/socinfo.

It is material to note that the CARICOM Secretariat was given the mandate by their member governments to assist the Caribbean in implementing the WSIS POA. In response, the Secretariat has put together the CARICOM ICT Steering Committee in January 2005 which will work towards a regional position.

There is symmetry in intent of regional ICT projects. The missing link is the availability of concrete data. The importance of reliable data as a fundamental requisite for a comprehensive situation analysis of the information society in the Caribbean cannot be over-emphasized. More specifically, information should be comprehensive enough to enable analysis to unearth the critical elements which determine the current and required capacity of the information society in the Caribbean to impact positively on human development in the Region. This is a systemic foundation to enable periodic assessment and monitoring of ICT evolution in the Caribbean, in keeping with the WSIS .

From the inception, it is critical to identify a matrix of indicators on which time series data should be collected and collated. Of necessity, expected regional goals/benchmarks forecasts for ICT developments should form part of the data bank development.

In this regard, ECLAC has developed and proposes a draft matrix of indicators for consideration of the stakeholders as a guide for establishment of a regional ICT information bank to inform collection and collation of information to, inter alia:

- i. undertake future ICT situation assessments in the region;
- ii. examine the impact of ICT initiatives on human development; and
- iii. provide recommendations to enhance the efficacy of ICT strategies in the Caribbean.

IV. Indicators for Assessment of the Information Society

A. Indicators for Assessment of Access and Digital Inclusion

The World Summit on the Information Society (WSIS) identifies “access to information and communication technologies as the most fundamental prerequisite for an inclusive information society”. The broad parameters for measuring access and, in turn, digital inclusion are:

- i. Info-communication infrastructure determined by: fixed and mobile telephones, internet, computers, broadband access, and internet service providers, internet connectivity;
- ii. Usage of ICT as a tool for economic and social development (ICT subscriber information);
- iii. Affordability of ICT resources (wholesale cost and retail price of info-communication services) to a wide cross section of the population.

These parameters can be estimated using proxies detailed in tables 23-26

Table 23. Access and Digital Inclusion (Infrastructure)

Country	Fixed line Service Providers per 100 population	Mobile service providers per 100 population	Cable Service providers per 100 population	Internet service providers per 100 population	Broadband service providers per 100 population
23 ECLAC member Countries					
Weighted Average					
Expected Benchmark					
Country	<i>Cable Service providers per 100 population</i>	<i>International network providers per 100 population</i>	<i>Number of Digital info-communication centers for the visually impaired</i>	<i>Internet cafes per 100 population</i>	<i>Countries that form part of a Regional Internet Exchange Point (RIXP)</i>
23 ECLAC Member Countries					
Weighted Average					
Expected Benchmark					
Country	<i>Domestic Internet Exchange Point (DIXP)</i>	<i>Equitable access to internet addresses</i>	<i>Legislation that provides for a Universal Service Fund</i>	<i>Duty free importation of computers</i>	<i>Provision of computer loan facilities to public sector workers at preferential interest rates</i>
23 ECLAC Member Countries					
Weighted Average					
Expected Benchmark					

Table 24. Access and Digital Inclusion Indicators (Usage)

<i>Country</i>	<i>Fixed Line Subscribers per 100 population</i>	<i>Mobile Subscribers per 100 population</i>	<i>Internet Usage per 100 population</i>	<i>Computers per 100 population</i>	<i>Broadband subscribers per 100 population</i>
23 ECLAC Member Countries					
Weighted Average					
Expected Benchmark					

Table 25. Access and Digital Inclusion indicators (Affordability)

<i>Country</i>	<i>Cost of dial-up internet access as a proportion of per capita Y</i>	<i>Retail Cost of B/band access as a proportion of per capita Y</i>	<i>Spectrum cost for application of W-MAX technologies.</i>	<i>Cost of dial- up internet access as a proportion of per capita Y</i>	<i>Retail Cost of B/band access as a proportion of per capita Y</i>
23 ECLAC Member Countries					
Weighted Average					
Expected Benchmark					

Table 26. Estimated and Expected Regional Access and Digital Inclusion Index

<i>Weighted Average: Regional ICT Infrastructure</i>		
<i>Weighted Average: Regional ICT Usage</i>		
<i>Weighted Average: Regional ICT Affordability</i>		
<i>Regional Access and Digital Inclusion Index</i>		
<i>Expected Benchmark Re: Regional Digital Inclusion Index</i>		

B. Indicators for Assessment of Capacity Building and Knowledge Creation

Basic capacity is defined in terms of the ability of the population in the region to assimilate and use ICT technology as indicated by adult literacy and overall school enrolment. The UNDP defines the adult literacy ratio as: “the percentage of people aged 15 and above who can write a short simple statement related to their everyday life.” Overall school enrolment is

estimated as the number of students in primary, secondary and tertiary schools divided by the population in the age range 5-35.

ICT capacity-building and knowledge creation is disaggregated into sub-parameters namely pro-active capacity to create knowledge, knowledge absorptive capacity and usage confidence.

Pro-active Capacity and Knowledge Creation indicates the capability of a population to provide ICT solutions such as software programming, website building and maintenance and computer hardware maintenance, etc. The proxies for this variable are: the number of persons per 100 with the skills in software programming, including website building and maintenance and ICT network configuration.

Absorptive Capacity and Knowledge Creation is measured in terms of: Number of persons with the basic capability to download information and use it for socio-economic solutions such as e-banking, e-government, e-business, e-health, e-science, etc as denominated by adult literacy, overall school enrolment, national ICT training infrastructure and government expenditure on ICT training and equality in training opportunities for women and the differently able.

User Confidence explains the degree of trust of users in internet privacy and security arrangements as indicated by legislation regarding intellectual property, electronic signature, internet security, Anti-Spam, etc.

**Table 27. Capacity Building & Knowledge Creation Indicators
(Pro-active and Absorptive Human Resource)**

	<i>(1) Computer programmers per 100 population</i>	<i>(2) Computer technicians per 100 population</i>	<i>(3) Proportion of countries with specialized tertiary institution/s providing ICT training and retraining</i>	<i>(4) Adult literacy rate</i>	<i>(5) School enrollment rate</i>
Country					
23 ECLAC					
Member					
Countries					
Weighted Average					
Expected Benchmark					

**Table 28. Capacity Building & Knowledge Creation Indicators
(Pro-active and Absorptive Human Resource)**

	<i>(6) Percentage of government and government- assisted secondary schools with ICT training on their curriculum</i>	<i>(7) Percentage of government and government assisted- primary schools with at least one teacher trained in ICT.</i>	<i>(8) Percentage of government and government- assisted secondary schools with at least one teacher trained in ICT</i>	<i>(9) Female as a percentage of with ICT Training</i>	
Country					
23 ECLAC					
Member					
Countries					
Weighted Average					
Expected Benchmark					
	<i>(11) ICT training opportunities for the differently able</i>	<i>(12) Government expenditure on ICT Training as a proportion of its Budget</i>			
Country					
23 ECLAC					
Member					
Countries					
Weighted Average					
Expected Benchmark					

**Table 29. Capacity Building & Knowledge Creation Indicators
(User Confidence, Legislation)**

	<i>(1) Intellectual Property</i>	<i>(2) Digital/Electronic signature</i>	<i>(3) Internet Security and Privacy</i>	<i>(4) Anti-spam</i>	<i>(4) Cyber crime</i>
Country					
23 ECLAC					
Member					
Countries					
Weighted Average					
Expected Benchmark					

**Table 30. Estimated and Expected values re: Regional Capacity Building
and Knowledge Creation Index**

<i>Weighted Average: Regional ICT Human Resource</i>		
<i>Weighted Average Legislative Provision for ICT Capacity Building and Knowledge Creation</i>		
<i>Regional Index re: ICT Capacity Building and Knowledge Creation</i>		
<i>Expected Benchmark: Regional Index re: ICT Capacity Building and Knowledge Creation</i>		

C. Indicators for Assessment of Public Transparency and Efficiency

Info-communication transparency and efficiency refer to the right, as prescribed in law, of every person to access from public sector institutions information desired (save and except where such information is classified as official secrecy) in a timely manner. Such right is guaranteed, in the main, through Freedom of Information legislation that provides for disclosure and distribution of public sector information to the citizenry within a prescribed time frame and in a particular format which may include electronic request and distribution.

An auxiliary indicator of public transparency and efficiency is the opportunity for on-line access to information from public libraries as well as the print and electronic media. Such may be measured in terms of the percentage of public libraries with digital publication, the percentage of radio and television stations with on-line programmes and the percentage of newspaper publication available on line.

Table 31. Public Transparency and Efficiency Indicators

	<i>(1) Freedom of Information Legislation</i>	<i>(2) Radio stations with on-line programmes as a proportion of total radio stations</i>	<i>(3) Television stations with on line programmes as a proportion of total television stations</i>	<i>(4) Percentage of total daily newspapers available on- line</i>	<i>(5) Percentage of Public Libraries with digital publication</i>
Country					
23 ECLAC Member Countries					
Weighted Average					
Expected Benchmark					

Table 32. Estimated and Expected Value re: Regional Public Transparency and Efficiency Index

<i>Weighted Average: Regional ICT Transparency and Efficiency</i>		
<i>Regional ICT Transparency and Efficiency Index</i>		
<i>Expected Benchmark: Regional ICT Transparency and Efficiency Index</i>		

D. Indicators for Assessment of the Requisite Policy for Creating an Enabling Environment

An ICT enabling environment is predicated on a predictable legal and regulatory infrastructure which engenders confidence in civil society, in particular local and foreign investors that there is a transparent ICT system and attendant operations which are independent of politicization and non-discriminatory. These conditions invariably require:

- a. Telecommunication legislation in place
- b. Independent telecommunications regulatory body in place
- c. The nature of the regulatory body i.e. whether it is collegiate or otherwise
- d. Transparency in selection of staff of regulatory body
- e. Financial independence of the regulatory body
- f. Licensing procedures that meet World Trade Organization (WTO) criteria in terms of transparency and non-discrimination as prescribed in the WTO Reference Paper of the GATS
- g. Existence of regulations/policies regarding:
 - Consumer protection
 - Spectrum fees
 - Quality of service
 - Spectrum management and monitoring
 - Fair competition
 - Interconnection
- h. Government policy on internet governance as regards the management of and supervision of country code and top-level domain name.
- i. Government application of ICT solutions in its day-to-day activities, interface with the public and provision of infrastructure support to facilitate:
 - E-learning
 - On-line access of public service information
 - E-business

- E-health
- E-employment
- E-environment
- E-science
- E-culture
- E-national security

Table 33. ICT Enabling Environment Indicators

	<i>(1) Percentage of countries with telecommunicati on Legislation</i>	<i>(2) Percentage of Countries with independent telecommunicati on regulatory authorities in respect of : Budget, issuance of licences and regulatory decision making</i>	<i>(3) Proportion of regulatory authorities which are independent in terms of recruitment of staff</i>	<i>(4) Percentage of countries with regulatory authorities run by a board of directors</i>	<i>(5) Percentage of Countries committed to the WTO Reference Paper of the GATS</i>
Country					
23 ECLAC Member Countries					
Weighted Average					
Expected Benchmark					
	<i>(6) Percentage of countries with Regulations/ Policies re: Spectrum fees</i>	<i>(7) Percentage of countries with Regulations/Poli cies re: Quality of telecommunicati ons Service</i>	<i>(8) Percentage of countries with Regulations/ Policies re: Spectrum management and monitoring</i>	<i>(9) Percentage of countries with Regulations/Poli cies re: Fair Competition including telecommunicati ons services</i>	<i>(10) Percentage of countries with Regulations/ Policies re: Interconnectio n</i>
Country					
23 ECLAC Member Countries					
Weighted Average					
Expected Benchmark					

Country	<i>(11) Percentage of countries with Regulations/Policies re: Number portability</i>	<i>(12) Percentage of countries with Regulations/Policies re: Equal Access Pre-Selection of Telecom Service provider</i>	<i>(13) Percentage of countries with Regulations/Policies re: national Internet Exchange Point (IXP)</i>	<i>(14) Percentage of countries with Regulations/Policies re: Regional Internet Exchange Point (IXP)</i>	<i>(15) Percentage of countries with government policy on internet governance in terms of the management and supervision of country code and top- level domain name</i>
23 ECLAC					
Member					
Countries					
Weighted Average					
Expected Benchmark					
Country	<i>(16) Percentage of countries Implementing government supported E-learning Programmes</i>	<i>(17) Percentage of Countries Intranet access among government departments</i>	<i>(18) Percentage of Countries with on-line access to public service information i.e. Website for public access to government information</i>	<i>(19) Percentage of Countries with access facilities in the public service that enable on-line submission of information by the public to government departments</i>	<i>(20) Percentage of counties with programmes to promote public awareness re: on-line access to public service information</i>
23 ECLAC Member Countries					
Weighted Average					
Expected Benchmark					

	(21) <i>Percentage of countries with policies that encourage E-business with regard to on-line marketing of goods and services.</i>	(22) <i>Percentage of countries with policies that encourage E-business as regards to On-line sale of goods and services</i>	(23) <i>Percentage of countries with public health institutions with the capacity to provide on-line health care information</i>	(24) <i>Percentage of countries with public health institutions with the capacity to dispense health care on-line</i>	(25) <i>Percentage of countries with public health institutions with the capacity for on-line integration of national and regional health care facilities</i>
Country					
23 ECLAC Member Countries					
Weighted Average					
Expected Benchmark					
	(26) <i>Percentage of countries with policies/systems that provide for E-employment in respect of teleworking of public sector workers away from main offices or at home</i>	(27) <i>Percentage of countries with policies/systems that provide for ICT employment opportunities for persons with disabilities</i>	(28) <i>Percentage of countries with policies/systems that provide for ICT employment opportunities specifically for females.</i>	(29) <i>Percentage of countries which have established E-environment systems to forecast and provide information on-line to the population regarding impending natural disasters</i>	(30) <i>Percentage of countries which have established E-environment systems to monitor and respond to the needs of the citizenry (medical and humanitarian) in times of natural disasters;</i>
Country					
23 ECLAC Member Countries					
Weighted Average					
Expected Benchmark					

	<i>(31) Percentage of countries which have established E-environment systems to coordinate movement of affected persons to disaster centers in times of natural disasters</i>	<i>(32) Percentage of countries which have established E-agricultural systems which provide on-line information on prices and availability of agricultural and fisheries products</i>	<i>(33) Percentage of countries which have established E-agricultural systems which provide on-line information on up-to-date techniques and knowledge in crop and animal husbandry, particularly in rural areas</i>	<i>(34) Percentage of countries with E-culture policies that encourage and promote on-line access to information on local culture</i>	<i>(35) Percentage of countries with policies to encourage and promote development and on-line distribution of local content to national, regional and international markets</i>
Country					
23 ECLAC Member Countries					
Weighted Average					
Expected Benchmark					
	<i>(36) Percentage of countries with policies that encourage affordable high-speed internet access by providing free or reduced cost spectrum to facilitate R&D activities at: Regional Universities</i>	<i>(37) Percentage of countries with policies that encourage affordable high-speed internet access by providing free or reduced cost spectrum to facilitate R&D activities at national Universities</i>			
Country					
23 ECLAC Member Countries					
Weighted Average					
Expected Benchmark					

Table 34. Enabling Environment Index

<i>Regional Enabling Environment Index</i>		
<i>Benchmark: Regional Enabling Environment Index</i>		

It should be emphasized that legislation is a necessary, but not sufficient, requirement for creation of an enabling environment for the enhancement of any information society. For ICT legislation to be effective, it should be supported by programmes that encourage public awareness regarding the existence of such legislation, the manner in which it can be used and the importance of its use in every-day life and business ventures.

E. Outcomes of the ICT Policy Makers Seminar

1. Compiling Quality Information for Benchmarking Developments In Caribbean Information Society (ECLAC ICT Policy Makers Seminar Barbados, September 2006)

As a sequel to the presentation of the findings of the study in this document (at the recently concluded ECLAC ICT Policy Seminar in Barbados), the plenary and group discussions called for the formulation and articulation of a Caribbean ICT philosophy, reflective of the Caribbean value system and culture. The philosophy should serve as a guide for the development of quantitative and qualitative models to be used to assess the impact of the Caribbean information society on human development in the subregion. It should also form the basis for benchmarking future development of the information society in the region.

The lack of information on existing and required ICT human resource capacity and capability in the Caribbean has been hampering optimal exploitation and development of its complement of ICT skills. In order correct this shortcoming, the meeting agreed that ICT information management in the Caribbean should be addressed as a matter of urgency, particularly in terms of identifying a comprehensive matrix of ICT indicators, supported by appropriate data management systems and trained personnel as a means of enabling each country to capture, collate, analyze and disseminate information on the functioning and development of the information society in the Caribbean. Toward this end, it was agreed that a system should be designed to facilitate data collection in each country on ICT indicators including:

(a) Access and Digital Inclusion

- i. ICT Infrastructure as indicated by penetration and usage
 - Private sector
 - Public sector
 - NGOs

- Small businesses
 - Pre-school
 - Primary schools
 - Secondary schools
 - Rural/urban penetration and usage
 - Number of households without access to ICT services
 - Number of persons using the Internet
- ii. Users and Usage Profiles
- Internet users by age groups
 - What are they using Internet for
 - Social / cultural impact
 - Inventory of ICT usage by sector
- iii. Customer Services Profile customers require
- Types of ICT services demanded
 - Prices of narrowband and broadband internet services
 - Expenditure on ICT services as proportion of disposable income
 - Expenditure on universal service and universal access
- iv. Quality of Access
- Bandwidth
 - Shared/dedicated
 - Available Tools used, and those needed, to measure quality of ICT services in the Caribbean

(b) Capacity Building and Knowledge Creation

- i. Human Resource Situation Analysis as indicated by inventory of:
- ICT training courses which are being offered at all levels (pre-school, primary, secondary and tertiary)
 - ICT training courses planned/programmed at all levels (pre-school, primary, secondary and tertiary)
 - National and regional ICT skills compliment and ICT skills requirement in the region
 - Job opportunities in ICT by country and for the Caribbean region as a whole
 - Software development capability in the Caribbean and policies that support innovations in ICT in the Caribbean
 - Inventory of software application in the public sectors in the Caribbean with specific details as to whether such are customized
 - Government incentive programmes to encourage private sector investment in ICT skill development
 - ICT awareness programmes

- Government expenditure on ICT training and development and its priority among of governments expenditure on training
 - Available of skills and methods to design questionnaire as well as collect and manage ICT information, including persons trained to track / measure ICT indicators
 - Physical resources availability for ICT data management.
- ii. ICT Successes
- Details of ICT success stories in the Caribbean
 - Format for replicating such successes among Caribbean countries
- iii. ICT Benchmarks for ICT Outlook
- Required ICT capacity in terms of physical and human resources in the Caribbean
 - Required ICT access in terms of penetration, usage and application
 - Required legislative instruments to create an ICT enabling environment
 - Curriculum reform at pre-primary, primary, secondary and tertiary levels of education
- iv. Identification of relevant areas for ICT use
- Takeup' and use of tools in
- Government
 - Private sector
 - NGOs
- v. Tele-work
- No. of persons (age, gender, salary scale)
 - Type of telework
- (c) Policy/Legislation for Creating an ICT Enabling Environment**
- i. Effects of policy decisions in terms of:
- Benefits to the development of e-systems
 - Enforcement to enable development of e-systems
 - Negative Impact on the development of e-systems
- ii. Caribbean ICT best practices particularly in terms of:
- ICT application in solving problems,
 - Annual report
 - Elements of ICT policy (qualitative and quantitative)
- iii. ICT Expenditure
- Government expenditure on ICT infrastructure development

- Private sector expenditure on ICT infrastructure development
 - Total expenditure on ICT development as a proportion of GDP
 - Government policy on tax/import duties on ICT equipment
- iv. Measurement of monopolization
- Measuring extent of de-monopolization
 - Defining indicators and method of measuring de-monopolization
- v. Private Sector incentives
- vi. Households without enabling environment
- Electricity
 - Connectivity
 - Computers
 - Other (disabled persons, etc)
- vii. Legislation and Awareness Programmes on Consumer issues such as:
- Privacy
 - Security
- viii. E-environment issues
- e-Health issues
 - Dumping, i.e. environmental impact assessment consequent upon disposal of ICT equipment
 - Re-use of ICT equipment
 - Acceptable safety levels of radio frequency emissions from base stations (cell towers).
- ix. Adequate Broadband Standards
- Definition
 - Standards
 - Benchmarks for broadband QOS in the Caribbean
- x. Conventions for Acts / Laws (Regional harmonization)
- Civil Society involvement in ICT development;
 - ICT legislation awareness programmes

(d) Recommendations

The recommendations for initiating the implementation of ICT data management systems in the Caribbean are the following:

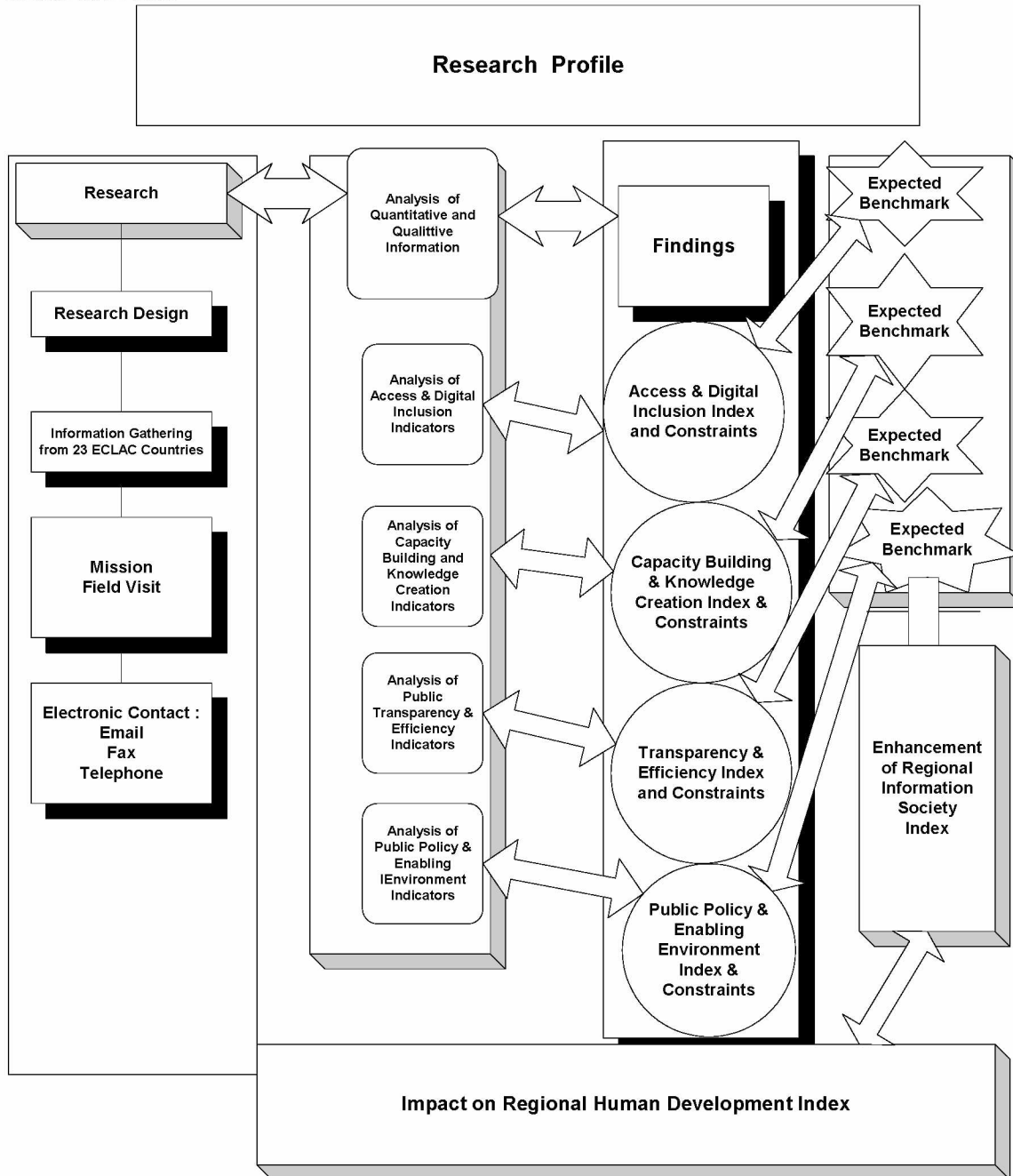
1. Developing a framework to assist with improvement of the capability in each country to systemically collect ICT data using the format of either:-
 - a. A CSO with ICT capability
 - b. An ICT division with CSO capability

2. Whichever format is applied, a contact person to champion the process should be identified in each ICT department.
3. In order to commit required priority to ICT data collection, appropriate awareness programmes should be undertaken involving policy makers and relevant functionaries.
4. As a means of accelerating the establishment of data collection nodes in each country, it is advisable to review national/regional/international ICT data collection models.

F. Draft Information Management Framework

A draft information management framework indicating the main constituents of a generic system to collect and analyze ICT data as well as convert same into information and knowledge is given at Figure 4.

Research Profile



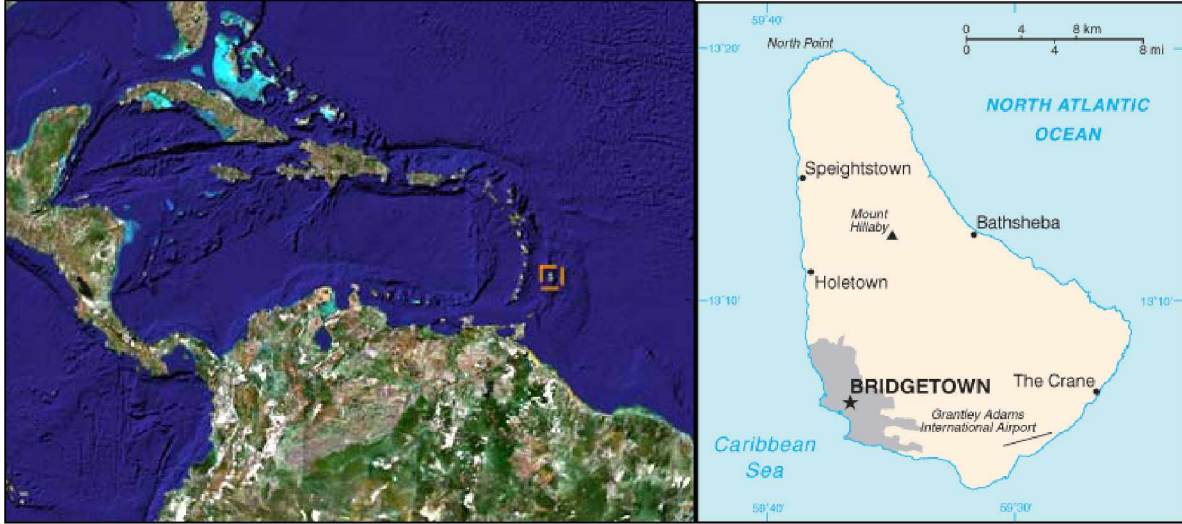
V. Summary Country Profiles

A. Barbados

Barbados Selected Data and Indicators⁸

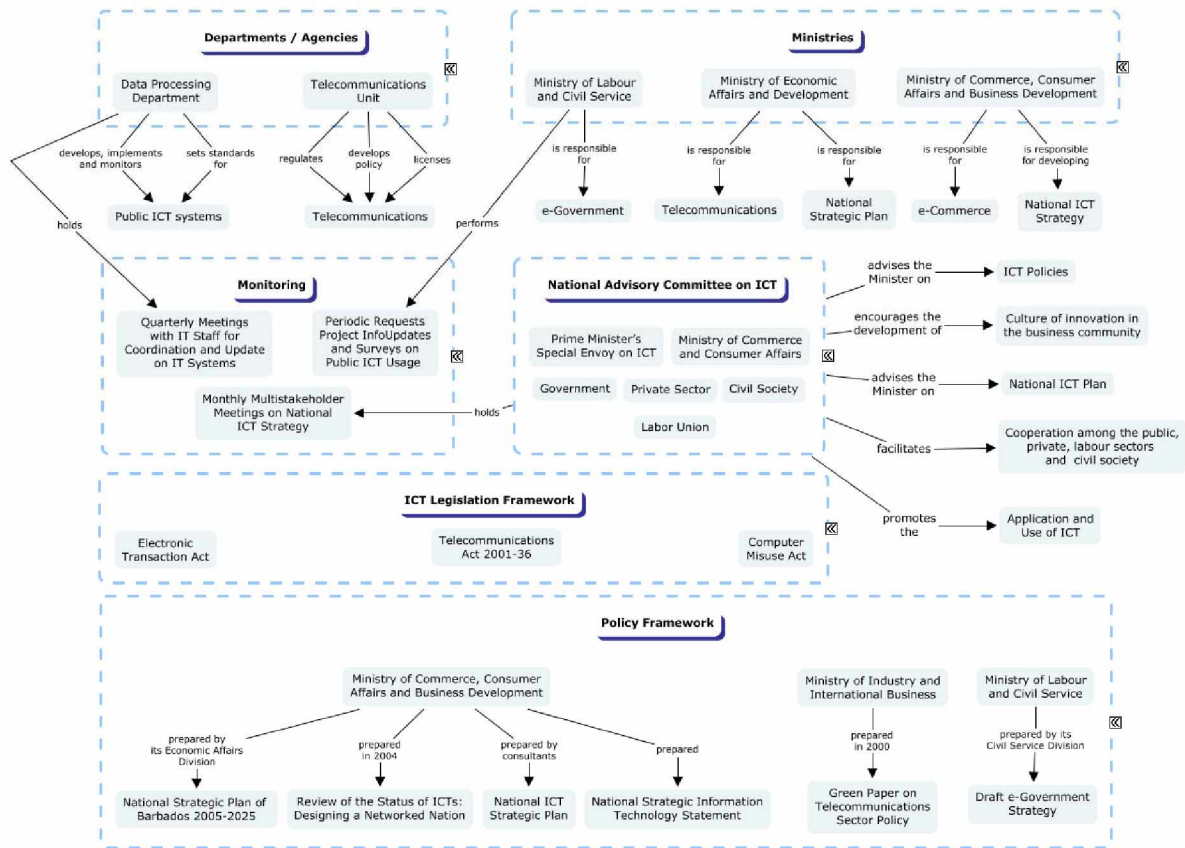
Territorial Extension	166.02 sq miles	Fixed Line Subscribers	134,683
Population	268,881	Fixed Line Subscribers per 100 population	50.09
GDP /GNI		Mobile Subscribers	198,569
GDP /GNI per Capita	9,270 USD	Mobile Subscribers per 100 population	73.85
Urban Population	52%	Population in Largest City	Bridgetown 98,900
Internet Users	148,960	Cost of Dial Up Access	25.9 USD per month
Broadband Internet per 1,000 population	101	Cost of Broadband Access	35 USD per month
Internet Users per 100 population	55.4	No. of Computers	33,745
		Computers per 100 population	12.55
National ICT Strategy	Included within the National Strategic Plan of Barbados 2005-2025. Several other documents, drafts and assessments.		
National ICT Coordinator	National Advisory Committee on ICT chaired by the Prime Minister's Special Envoy on ICT. This Committee is under the responsibility of the Ministry of Commerce and Consumer Affairs		
ICT Legislation	Electronic Transaction Act (2001); Computer Misuse Act (2001); Telecommunications Act (2001); Data Protection Bill, pending approval and enactment. Freedom of Information Act under development.		
Universal Access Fund	No.		

⁸ Sources: Fixed Line and Mobile Subscribers (ITU, 2005); Internet Users, No. of Computers (ITU, 2004).



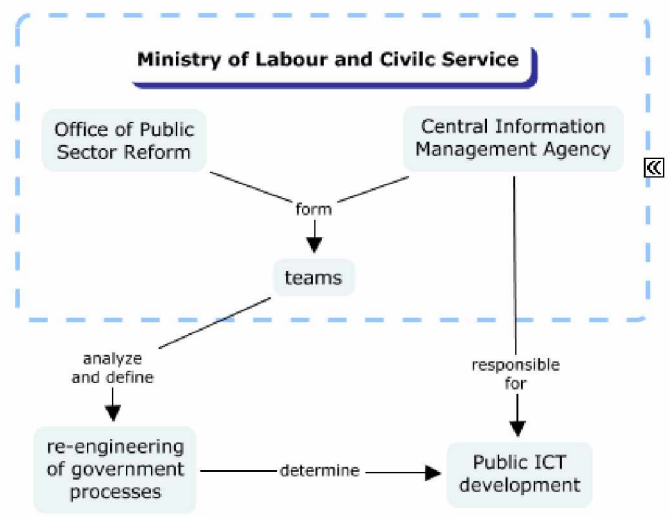
Map of Barbados

Barbados Public ICT Stakeholders



Barbados Public ICT Framework

Proposed e-Government Structure



Barbados Proposed e-Government Structure

Barbados Public ICT at a Glance

Internet Penetration		ICT Legislation	
Population with Internet Access	55%	Electronic Transactions	●
National ICT Strategy		IT Misuse and Cybercrime	●
Strategy formulated and published	◐ ¹	Data Protection	◐ ³
Coordinating Agency appointed	◐ ²	Consumer Protection	●
Backed by Strategy Specific ICT Budget	○	Freedom of Information	◐ ⁴
Being Implemented	○	e-Government Services	
Public Expenditure on ICT		Access to Information	●
Central ICT Budget	○	On-line Transactions	●
Specialized Budget:		On-line Payment of Services	●
National ICT Strategy & Coordination	○	Interconnection of Agencies	●
E-Government Projects	●	To Support Business Sector	○
To Promote Universal Access	○	Top Level Domain Governance	
To Promote IT Industry Development	○	Country Code	.bb
Universal Access Fund Mechanism	○	Price	US\$57/yr
Info on Total Govt. ICT Expenditure	●	On-line Commercialization:	
Coordination of Public ICT Initiatives		Info request	●

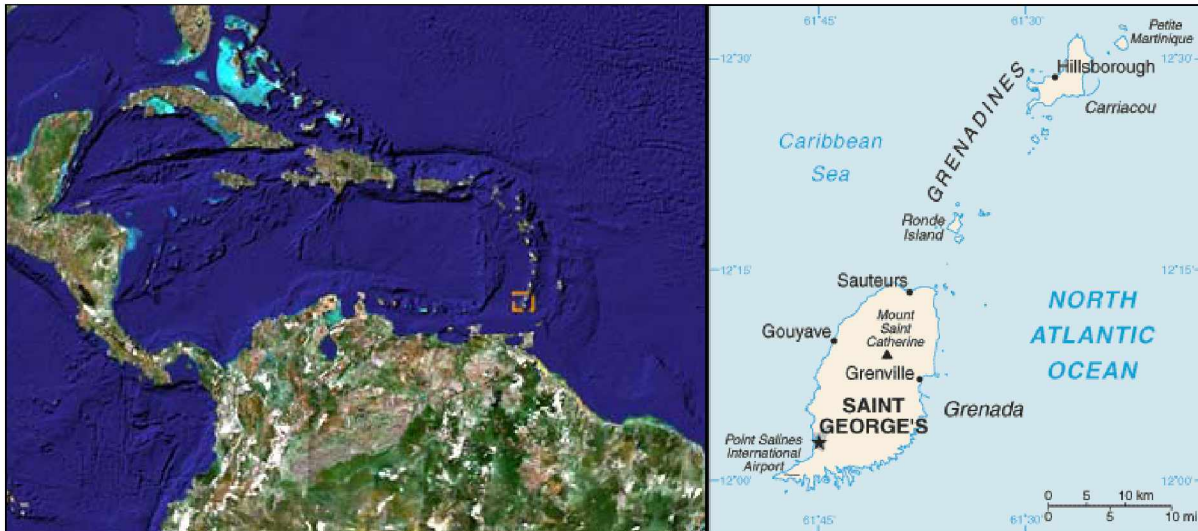
National Coordination Mechanism	●	Availability check	●
Coordination among ICT Strategy and public institutions?	●	Order placement	●
Coordination influences budgets	●	Payment	●
Periodic evaluation of ICT projects	●	Sponsoring Organization	Local
Public Sector Reform Program	●	Administrative Contact	Local
Coordination among ICT and Public Sector Reform Projects	●	Technical Contact	Local
		DNS Servers	Local

1. There is a draft National ICT Strategy. There is also a section on ICT on the National Strategic Plan 2005-2025.
2. There are several coordinating agencies. A new centralized structure has been proposed.
3. Under development, in Bill form.
4. Under development, early stage.

B. Grenada

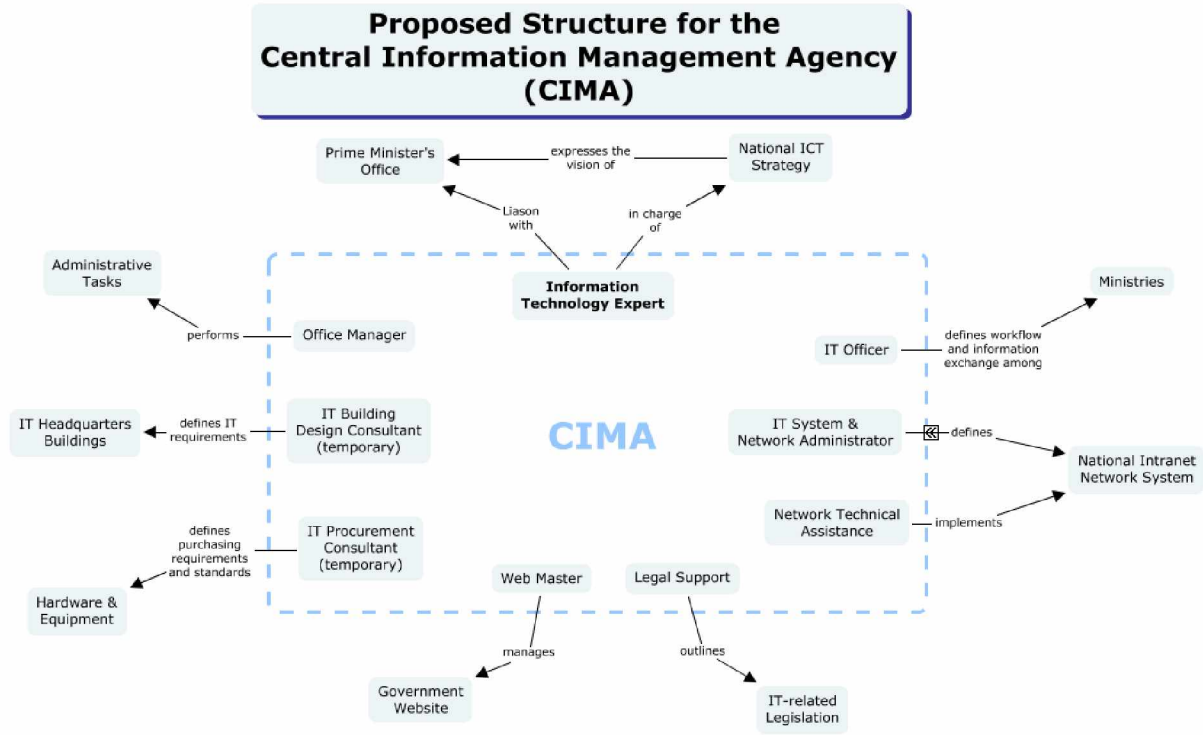
Grenada's Selected Data and Indicators⁹

Territorial Extension	131.27 sq miles	Fixed Line Subscribers	33,575
Population	105,747	Fixed Line Subscribers per 100 population	31.75
GNI	396,546,080 USD	Mobile Subscribers	44,467
GNI per Capita	3,750 USD	Mobile Subscribers per 100 population	42.05
Urban Population	41%	Population in Largest City	St. George 4,300
Internet Users	17,871	Cost of Dial Up Access	22.2 USD per month
Broadband Internet per 1,000 population	11.5	Cost of Broadband Access	40 USD per month
Internet Users per 100 population	16.9	No. of Computers	16,423
		Computers per 100 population	15.53
National ICT Strategy	Information and Communication Technology - A Strategy and Action Plan for Grenada 2001-2005, extended to 2006-2010.		
National ICT Coordinator	The Prime Minister. The Central information Management Agency (CIMA).		
ICT Legislation	No.		
Universal Access Fund	No.		



Map of Grenada

⁹ Sources: Fixed Line and Mobile Subscribers (ITU, 2005); Internet Users, No. of Computers (ITU, 2004).



Proposed Structure for Grenada's Central Information Management Agency

Grenada's Public ICT at a Glance

Internet Penetration		ICT Legislation	
Population with Internet Access	16.9%	Electronic Transactions	○
National ICT Strategy		IT Misuse and Cybercrime	○
Strategy formulated and published	●	Data Protection	○
Coordinating Agency appointed	●	Consumer Protection	●
Backed by Strategy Specific ICT Budget	○	Freedom of Information	◐ ¹
Being Implemented	○	e-Government Services	
Public Expenditure on ICT		Access to Information	●
Central ICT Budget	○	On-line Transactions	○
Specialized Budget:		On-line Payment of Services	○
National ICT Strategy & Coordination	○	Interconnection of Agencies	◐
E-Government Projects	◐ ²	To Support Business Sector	○
To Promote Universal Access	○	Top Level Domain Governance	
To Promote IT Industry Development	○	Country Code	.gd
Universal Access Fund Mechanism	○	Price	US\$100 register US\$50/yr renew
Info on Total Govt. ICT Expenditure	○	On-line Commercialization:	
Coordination of Public ICT Initiatives		Info request	○
National Coordination Mechanism	○	Availability check	○
Coordination among ICT Strategy and public institutions?	○	Order placement	○
Coordination influences budgets	○	Payment	○
Periodic evaluation of ICT projects	○	Sponsoring Organization	Local
Public Sector Reform Program	●	Administrative Contact	Local
Coordination among ICT and	○	Technical Contact	Foreign

Public Sector Reform Projects	n
DNS Servers	Foreign n

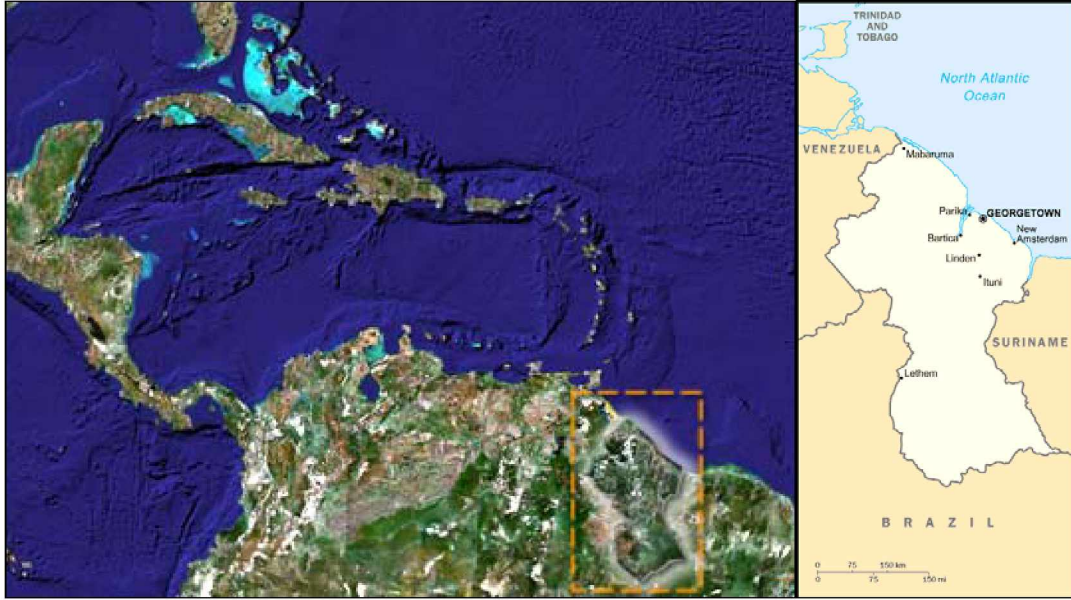
1. Under development, in Bill form.
2. Internal funds allocation within government agencies as opposed to formal allocation in public budget.

C. Guyana

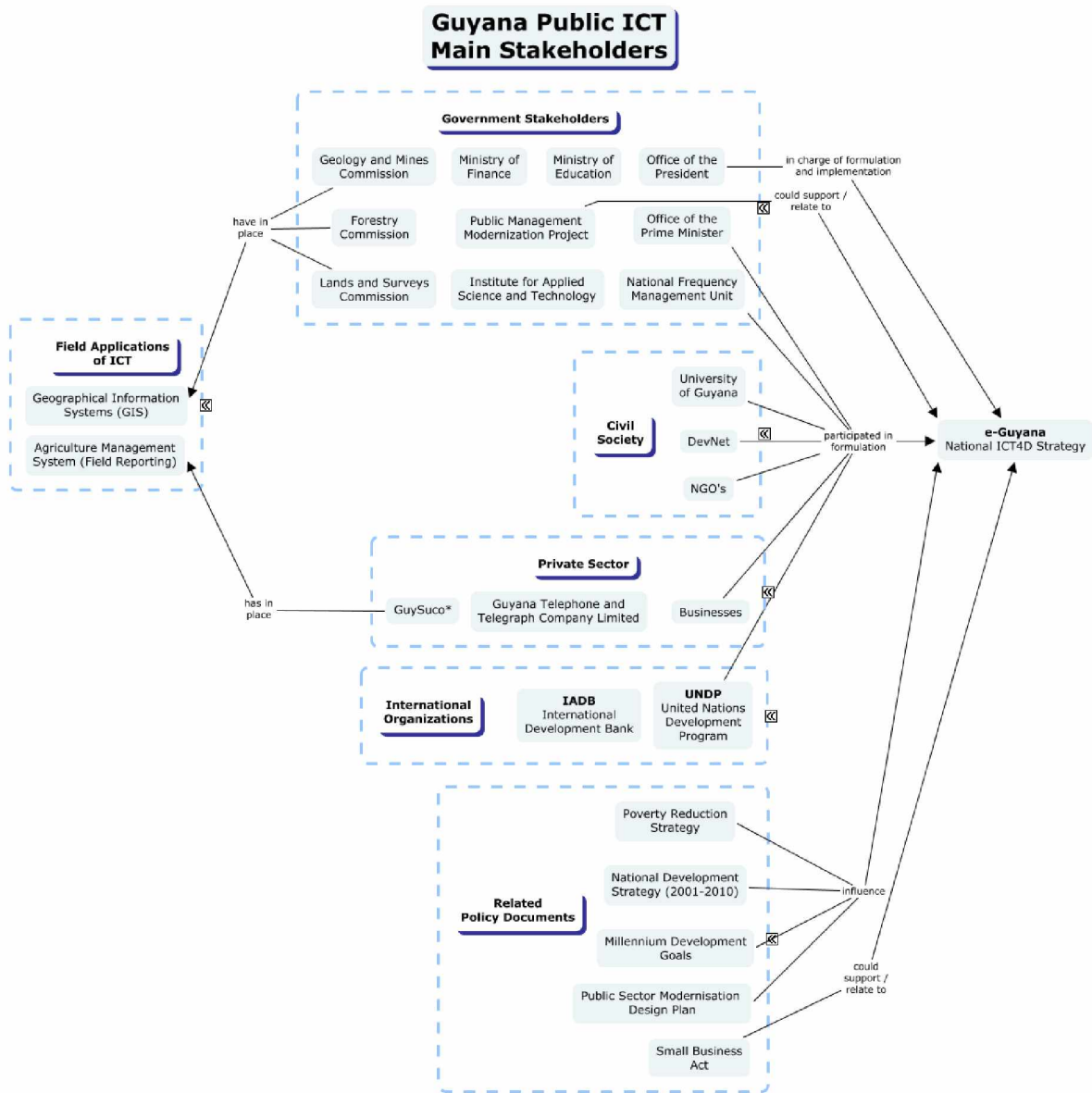
Guyana's Selected Data and Indicators¹⁰

Territorial Extension	83,002 sq miles	Fixed Line Subscribers	110,204
Population	751,223	Fixed Line Subscribers per 100 population	14.67
GDP/GNI	765,392,768 USD	Mobile Subscribers	250,082
GDP/GNI per Capita	1,020 USD	Mobile Subscribers per 100 population	33.29
Urban Population	38%	Population in Largest City	Georgetown 137,330
Internet Users	141,981	Cost of Dial Up Access	20.9 USD per month
Broadband Internet per 1,000 population	101	Cost of Broadband Access	30 USD per month
Internet Users per 100 population	18.9	No. of Computers	26,443
		Computers per 100 population	3.52
National ICT Strategy	ICT4D Guyana, 2006.		
National ICT Coordinator	Office of the President, Information Liaison to the President.		
ICT Legislation	An e-Commerce bill has been drafted and posted online for comment.		
Universal Access Fund	No.		

¹⁰ Sources: Fixed Line and Mobile Subscribers (ITU, 2005); Internet Users, No. of Computers (ITU, 2004).



Map of Guyana



Guyana's Public ICT Main Stakeholders

Guyana's Public ICT at a Glance

Internet Penetration		ICT Legislation	
Population with Internet Access	18.9%	Electronic Transactions	5
National ICT Strategy		IT Misuse and Cybercrime	0
Strategy formulated and published	●	Data Protection	0
Coordinating Agency appointed	●	Consumer Protection	●
Backed by Strategy Specific ICT Budget	0	Freedom of Information	5
Being Implemented	0	e-Government Services	
Public Expenditure on ICT		Access to Information	●
Central ICT Budget	0	On-line Transactions	0
Specialized Budget:		On-line Payment of Services	0
National ICT Strategy & Coordination	1	Interconnection of Agencies	●
E-Government Projects	2	To Support Business Sector	0
To Promote Universal Access	0	Top Level Domain Governance	
To Promote IT Industry Development	0	Country Code	.gy
Universal Access Fund Mechanism	0	Price	US \$2.5/yr
Info on Total Govt. ICT Expenditure	3	On-line Commercialization:	
Coordination of Public ICT Initiatives		Info request	●
National Coordination Mechanism	0	Availability check	0
Coordination among ICT Strategy and public institutions?	0	Order placement	4
Coordination influences budgets	0	Payment	0
Periodic evaluation of ICT projects	0	Sponsoring Organization	Local
Public Sector Reform Program	●	Administrative Contact	Local

Coordination among ICT and Public Sector Reform Projects	○	Technical Contact	Local
		DNS Servers	Local

1. Funds available for IT Strategy formulation.
2. Internal funds allocation within government agencies as opposed to formal allocation in public budget.
3. The Unit to be created within the office of the President is meant to do this estimate.
4. Order can be placed by downloading (or copying and pasting) a text form and submitting by e-mail.
5. Under development, in Bill form.

D. Jamaica

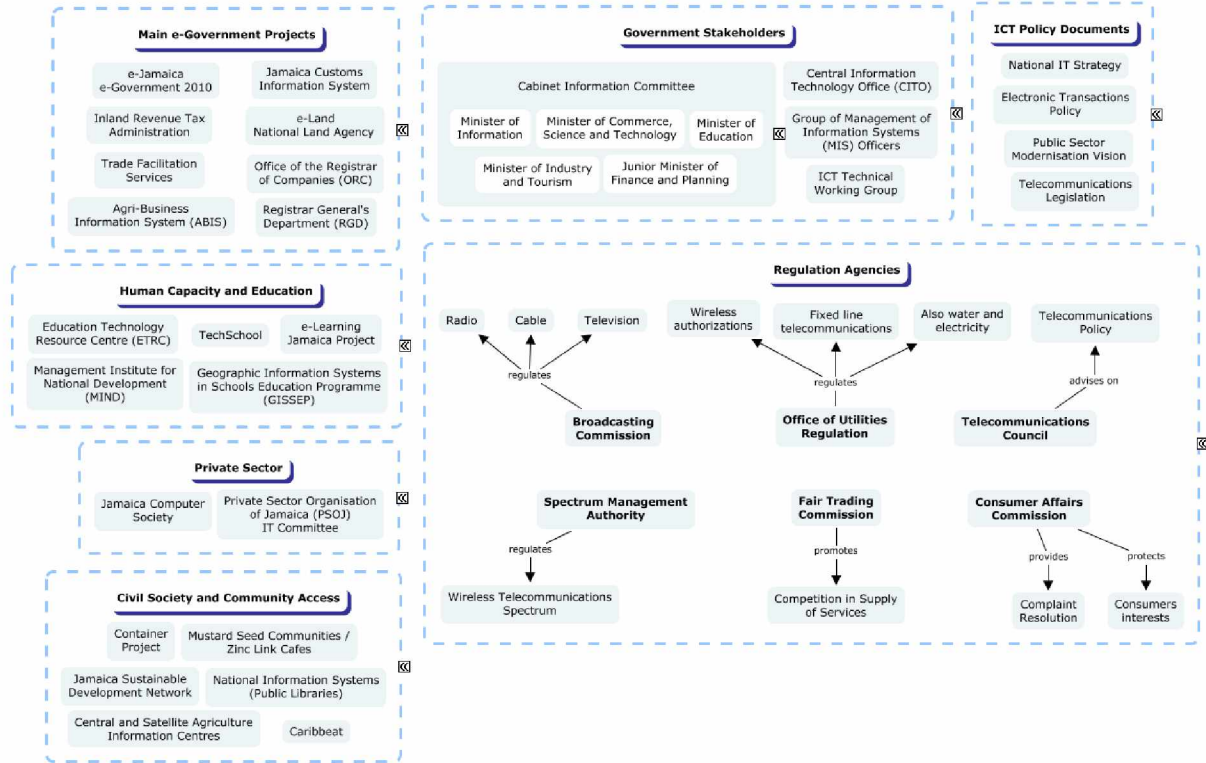
Jamaica's Selected Data and Indicators¹¹

Territorial Extension	4243.34 sq miles	Fixed Line Subscribers	341,153
Population	2,644,593	Fixed Line Subscribers per 100 population	12.9
GDP /GNI	8,719,753,216 USD	Mobile Subscribers	2,693,518
GDP /GNI per Capita	3,300 USD	Mobile Subscribers per 100 population	101.85
Urban Population	52%	Population in Largest City	Kingston 937,700 (Metro area) 590,500 (city proper)
Internet Users	1,054,399	Cost of Dial Up Access	39.8 USD
Broadband Internet per 1,000 population	9.5	Cost of Broadband Access	45 USD
Internet Users per 100 population	39.87	No. of Computers	163,965
		Computers per 100 population	6.2
National ICT Strategy	Strategic Information Technology Plan for Jamaica		
National ICT Coordinator	Cabinet	Information	Committee
ICT Legislation	Central Information Technology Office (CITO)		
Universal Access Fund	None. Being developed.		
	Legally enabled, enforcement resisted by stakeholders.		



¹¹ Sources: Fixed Line and Mobile Subscribers (ITU, 2005); Internet Users, No. of Computers (ITU, 2004).

Map of Jamaica Jamaica's Public ICT Main Stakeholders



Jamaica's Public ICT Main Stakeholders

Jamaica's Public ICT at a Glance

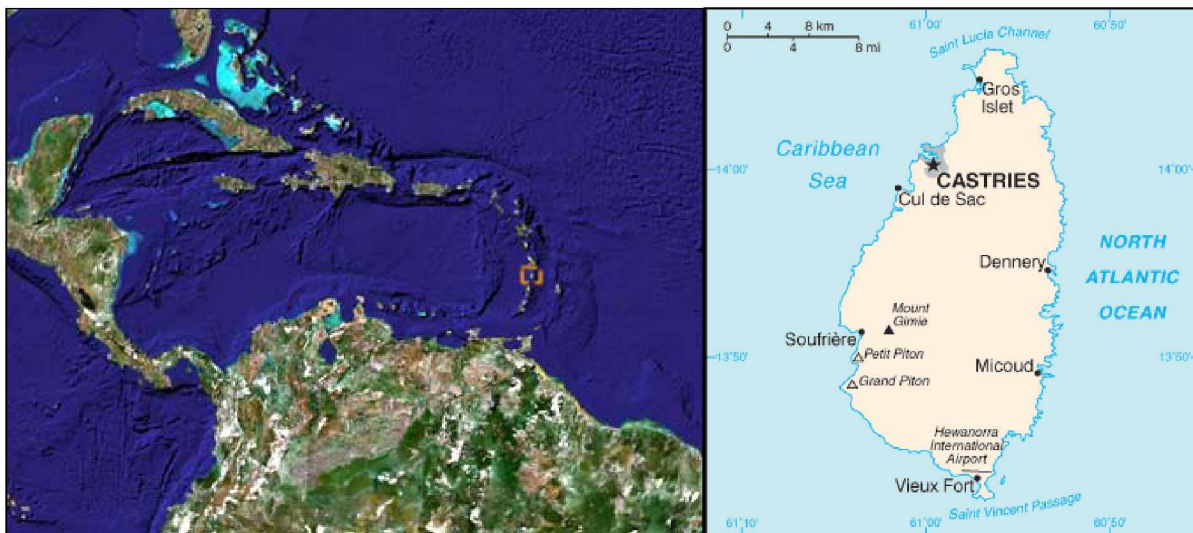
Internet Penetration		ICT Legislation	
Population with Internet Access	39.87%	Electronic Transactions	◐ ¹
National ICT Strategy		IT Misuse and Cybercrime	○
Strategy formulated and published	●	Data Protection	○
Coordinating Agency appointed	●	Consumer Protection	●
Backed by Strategy Specific ICT Budget	●	Freedom of Information	●
Being Implemented	●	e-Government Services	
Public Expenditure on ICT		Access to Information	●
Central ICT Budget	○	On-line Transactions	●
Specialized Budget:		On-line Payment of Services	●
National ICT Strategy & Coordination	●	Interconnection of Agencies	●
E-Government Projects	●	To Support Business Sector	●
To Promote Universal Access	○	Top Level Domain Governance	
To Promote IT Industry Development	○	Country Code	.jm
Universal Access Fund Mechanism	●	Price .com.jm:	intl. US\$29.95/ yr nat.
		.gov.jm, .org.jm: .edu.jm:	US\$19.95/ yr
			US\$9.95/yr free
Info on Total Govt. ICT Expenditure	◐	On-line Commercialization:	
Coordination of Public ICT Initiatives		Info request	●
National Coordination Mechanism	●	Availability check	○
Coordination among ICT Strategy and public institutions?	●	Order placement	◐
Coordination influences budgets	○	Payment	●
Periodic evaluation of ICT projects	●	Sponsoring Organization	Local

Public Sector Reform Program	●	Administrative Contact	Local
Coordination among ICT and Public Sector Reform Projects	●	Technical Contact	Local
		DNS Servers	Local

E. Saint Lucia

Saint Lucia's Selected Data and Indicators¹²

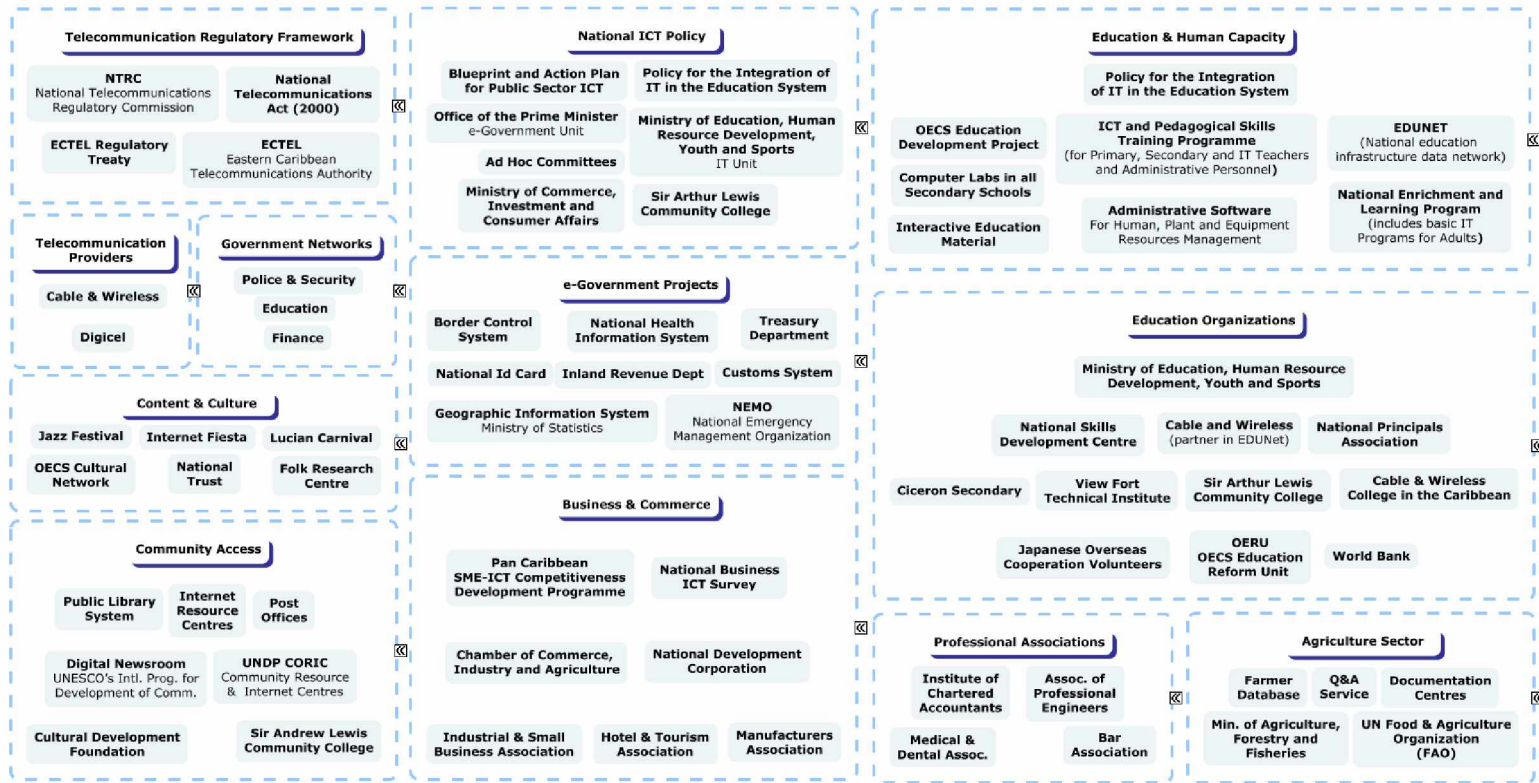
Territorial Extension	239.38 sq miles	Fixed Line Subscribers	52,287
Population	163,651	Fixed Line Subscribers per 100 population	31.95
GDP/GNI	684,369,408 USD	Mobile Subscribers	101,463
GDP/GNI per Capita	4,180 USD	Mobile Subscribers per 100 population	62
Urban Population	31%	Population in Largest City	Castries 60,300
Internet Users	60,011	Cost of Dial Up Access	US\$22.2 p/month
Broadband Internet per 1,000 population	n/a	Cost of Broadband Access	US\$40 p/month
Internet Users per 100 population	36.67	No. of Computers	28,361
		Computers per 100 population	17.33
National ICT Strategy	There is a Blue Print or Draft but No Formal Strategy. Policy for the Integration of IT in the Education System.		
National ICT Coordinator	Prime Minister Office has an e-Government Unit.		
ICT Legislation	None.		
Universal Access Fund	No.		



¹² Sources: Fixed Line and Mobile Subscribers (ITU, 2005); Internet Users, No. of Computers (ITU, 2004).

Saint Lucia's Public ICT Stakeholders

Saint Lucia's Information Society Stakeholders



Map of Saint Lucia

Saint Lucia's Public ICT at a Glance

Internet Penetration		ICT Legislation	
Population with Internet Access	36.67%	Electronic Transactions	○
National ICT Strategy		IT Misuse and Cybercrime	○
Strategy formulated and published	1	Data Protection	○
Coordinating Agency appointed	●	Consumer Protection	● ²
Backed by Strategy Specific ICT Budget	○	Freedom of Information	○
Being Implemented	○	e-Government Services	
Public Expenditure on ICT		Access to Information	●
Central ICT Budget	○	On-line Transactions	○
Specialized Budget:		On-line Payment of Services	○
National ICT Strategy & Coordination	○	Interconnection of Agencies	●
E-Government Projects	3	To Support Business Sector	○
To Promote Universal Access	○	Top Level Domain Governance	
To Promote IT Industry Development	○	Country Code	.lc
Universal Access Fund Mechanism	○	Price	US\$ 75 /yr
Info on Total Govt. ICT Expenditure	○	On-line Commercialization:	
Coordination of Public ICT Initiatives		Info request	●
National Coordination Mechanism	○	Availability check	○
Coordination among ICT Strategy and public institutions?	○	Order placement	●
Coordination influences budgets	○	Payment	○

Periodic evaluation of ICT projects	○	Sponsoring Organization	Foreign
Public Sector Reform Program	●	Administrative Contact	Local
Coordination among ICT and Public Sector Reform Projects	●	Technical Contact	Foreign
		DNS Servers	Foreign

1. There is no National ICT Strategy. There is however an “e-Gov Proposal - Blueprint for ICT in Public Sector”.
2. Under development, in Bill form.
3. Internal funds allocation within government agencies as opposed to formal allocation in public budget.

F. Suriname

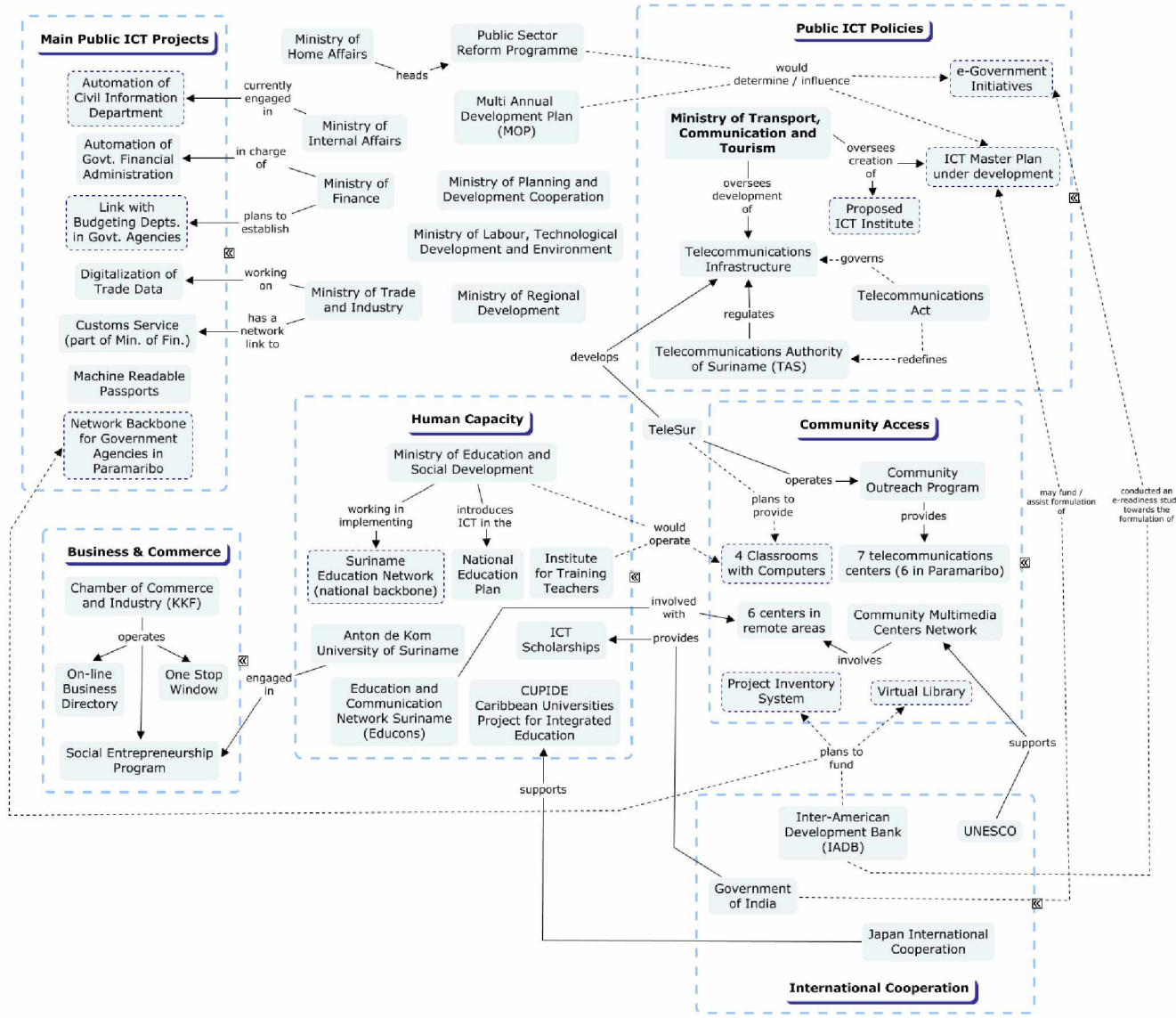
Suriname's Selected Data and Indicators¹³

Territorial Extension	63,040 sq miles	Fixed Line Subscribers	80,586
Population	446,460	Fixed Line Subscribers per 100 population	18.05
GDP/GNI	996,704,512 USD	Mobile Subscribers	231,490
GDP/GNI per Capita	2,230 USD	Mobile Subscribers per 100 population	51.85
Urban Population	77%	Population in Largest City	Paramaribo 217,300
Internet Users	30,493	Cost of Dial Up Access	30.2 USD per month
Broadband Internet per 1,000 population	0.4 (per 1000 hab)	Cost of Broadband Access	82 USD per month
Internet Users per 100 population	6.83	No. of Computers	20,741
		Computers per 100 population	4.7
National Strategy	ICT	No.	
National Coordinator	ICT	Ministry of Labour, Technological Development and Environment. The Ministry of Transport, Communication and Tourism has put together a group to develop an ICT Strategy.	
ICT Legislation		No.	
Universal Access Fund		No.	



¹³ Sources: Fixed Line and Mobile Subscribers (ITU, 2005); Internet Users, No. of Computers (ITU, 2004).

Suriname's Public ICT Stakeholders



Suriname's Main Public ICT Stakeholders
Map of Suriname

Suriname's Public ICT at a Glance

Internet Penetration		ICT Legislation	
Population with Internet Access	68.3%	Electronic Transactions	○
National ICT Strategy		IT Misuse and Cybercrime	○
Strategy formulated and published	○	Data Protection	○
Coordinating Agency appointed	○	Consumer Protection	○
Backed by Strategy Specific ICT Budget	○	Freedom of Information	○
Being Implemented	○	e-Government Services	
Public Expenditure on ICT		Access to Information	●
Central ICT Budget	○	On-line Transactions	○
Specialized Budget:		On-line Payment of Services	○
National ICT Strategy & Coordination	○	Interconnection of Agencies	◐
E-Government Projects	◐ 1	To Support Business Sector	○
To Promote Universal Access	○	Top Level Domain Governance	
To Promote IT Industry Development	○	Country Code	.sr
Universal Access Fund Mechanism	○	Price from registration 1 yr. renewal	U S\$ 25 U S\$
		Locally TeleSur: On-line from Register.sr:	U S\$ 35
			US\$ 299/ yr
Info on Total Govt. ICT Expenditure	○	On-line Commercialization:	
Coordination of Public ICT Initiatives		Info request	●
National Coordination Mechanism	○	Availability check	○
Coordination among ICT Strategy and public	○	Order placement	◐ ²

institutions?			
Coordination budgets	influences	<input type="radio"/>	Payment ²
Periodic evaluation of ICT projects		<input type="radio"/>	Sponsoring Organization Local
Public Sector Reform Program		<input type="radio"/>	Administrative Contact Local
Coordination among ICT and Public Sector Reform Projects		<input type="radio"/>	Technical Contact Local
			DNS Servers Local

1. Internal funds allocation within government agencies as opposed to formal allocation in public budget.
2. On-line order placement and payment available only through register.sr.

G. Trinidad and Tobago

Trinidad and Tobago's Selected Data and Indicators¹⁴

Territorial Extension	1980.74 miles	sq	Fixed Line Subscribers	322,334
Population	1,301,307		Fixed Line Subscribers per 100 population	24.77
GDP/GNI	11,359,835,136 USD		Mobile Subscribers	797,181
GDP/GNI per Capita	8,730 USD		Mobile Subscribers per 100 population	61.26
Urban Population	76%		Population in Largest City	Port of Spain 263,800 (metro area) 45,300 (city proper)
Internet Users	159,280		Cost of Dial Up Access	13.4 USD per month
Broadband Internet per 1,000 population	N/A		Cost of Broadband Access	75 USD per month
Internet Users per 100 population	12.24		No. of Computers	102,803
			Computers per 100 population	7.9
National ICT Strategy	Fast Forward, under its 3 rd yr. of implementation.			
National ICT Coordinator	ICT Division of Ministry of Public Administration and Information. Fast Forward Steering Committee (comprising several Ministers).			
ICT Legislation	Telecommunications Act, Computer Misuse, Electronic Transfer of Funds Crime Act, Freedom of information Act. National Policy on Data Protection, Electronic Transactions Policy, Digital Signatures Bill.			
Universal Access Fund	Exists in the legislation. Has not been implemented/enforced.			

¹⁴ Sources: Fixed Line and Mobile Subscribers (ITU, 2005); Internet Users, No. of Computers (ITU, 2004).



Map of Trinidad and Tobago

Trinidad and Tobago's Public ICT at a Glance

Internet Penetration		ICT Legislation	
Population with Internet Access	1 2 · 2 4 %	Electronic Transactions	● ¹
National ICT Strategy		IT Misuse and Cybercrime	●
Strategy formulated and published	●	Data Protection	● ¹
Coordinating Agency appointed	●	Consumer Protection	●
Backed by Strategy Specific ICT Budget	●	Freedom of Information	●
Being Implemented	●	e-Government Services	
Public Expenditure on ICT		Access to Information	●
Central ICT Budget	○	On-line Transactions	●
Specialized Budget:		On-line Payment of Services	○
National ICT Strategy & Coordination	●	Interconnection of Agencies	●
E-Government Projects	●	To Support Business Sector	●
To Promote Universal Access	●	Top Level Domain Governance	
To Promote IT Industry Development	●	Country Code	.tt
Universal Access Fund Mechanism	●	Nationals:	
		.co.tt	US\$ 50/3 yr
		.tt	US\$ 500/2yr;
			US\$ 500/5yr renew
		Foreigners:	

			co.tt	US\$
			.tt	100/3yr
				US\$
				100
				0/2yr;
				US\$
				100
				0/5yr
				renew
Info on Total Govt. ICT Expenditure	○	On-line Commercialization:		
Coordination of Public ICT Initiatives		Info request		●
National Coordination Mechanism	●	Availability check		●
Coordination among ICT Strategy and public institutions?	●	Order placement		● ³
Coordination influences budgets	●	Payment		○
Periodic evaluation of ICT projects	●	Sponsoring Organization	Local	
Public Sector Reform Program	●	Administrative Contact	Local	
Coordination among ICT and Public Sector Reform Projects	●	Technical Contact	Foreign	
		DNS Servers	Foreign	

1. There is a Policy introduced by the government, but no legislation yet.
2. The definition exists in the Telecommunications Law, but is yet to be implemented and enforced.
3. While an order can be placed on-line, it is only complete with offline payment (via cheque or wire transfer).