Belize National ICT Strategy

2011 ICT Benchmarking Report

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INTRODUCTION

At the World Summit for the Information Society in 2005, countries of the world reaffirmed their commitment to the development of the Information Society and the principles that should underlie its development.

"… improve access to information and communication infrastructure and technologies as well as to information and knowledge; build capacity; increase confidence and security in the use of ICTs; create an enabling environment at all levels; develop and widen ICT applications; foster and respect cultural diversity; recognize the role of the media; address the ethical dimensions of the Information Society; and encourage international and regional cooperation".

(Tunis Commitment: http://www.itu.int/wsis/docs2/tunis/off/7.html)

This benchmarking report presents a Global Benchmarking Study that will assess Belize's propensity to participate in and leverage information and communication technologies for development and growth. It seeks to benchmark Belize against other emerging economies as well as developed economies of similar size and similar economic and political environment.

It uses the latest development figures for 20 key performance indicators such as infrastructure, Internet usage, education, eGovernment, etc gleaned from a variety of international sources namely

- Global competitiveness Report, 2010
- Global Information Technology Report, 2010
- UN e-Government Readiness Report, 2010
- World Bank, Information and Communications for Development Online Database 2010
- ITU Database of Statistics
- Internal survey data from Belize's Census Bureau

Reference is also made to a 2010 eLAC report "Monitoring of eLAC 2010 Progress of ICT Development Caribbean Information Societies".

The following countries are covered in this benchmarking report: Barbados, Belize, Costa Rica, Malta, Mauritius, Panama, Singapore, Trinidad and Tobago.

Section I of this report presents the methodology used and the approach used for the selection of countries and indicators selected for use in the report. Section II contains the benchmarking results for the eight (8) countries. Section III comprises the main conclusions of the benchmark results.

SECTION I: METHODOLOGY

THE BENCHMARKING PROCESS

Benchmarking can be defined as a systematic measurement of performance against outside parties and is thus a practical tool that can be used for facilitating the development of strategies for achieving key goals. As the report can provide a complete picture of the country's readiness in the global context, it is therefore an exercise that can galvanize countries into action by focusing or uncovering new areas or strategies for improving on its targets. In this way, efforts made locally to improve a country's performance can be evaluated and tracked with accountability and transparency and can provide a level of visibility and recognition.

In this report the countries have been selected are those that are similar in demography and geography and represent diverse regions from around the globe:

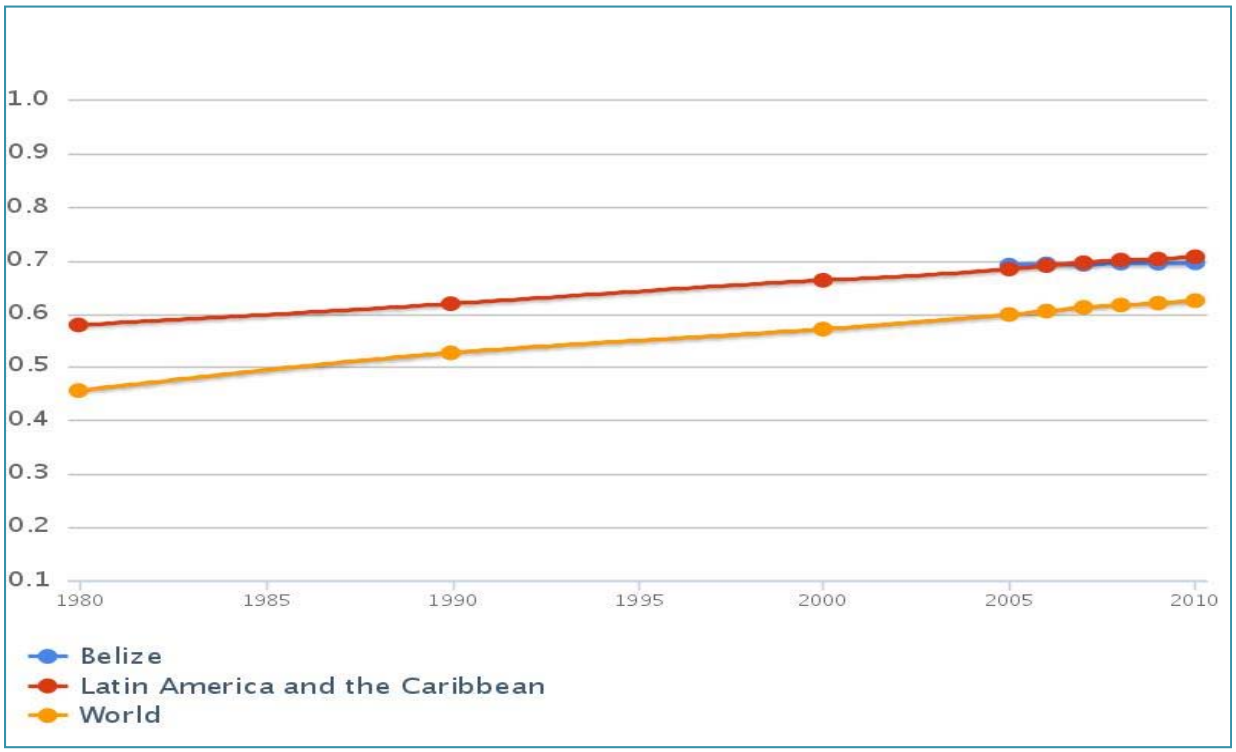
Region	
Latin America and the Caribbean	Barbados, Belize, Costa Rica, Panama, Trinidad and Tobago
Sub-Saharan Africa	Mauritius
Europe and Central Asia	Malta
East Asia and the Pacific	Singapore

COUNTRY PROFILES AT A GLANCE

SOURCE: UNDP HUMAN DEVELOPMENT REPORT 2010

BELIZE

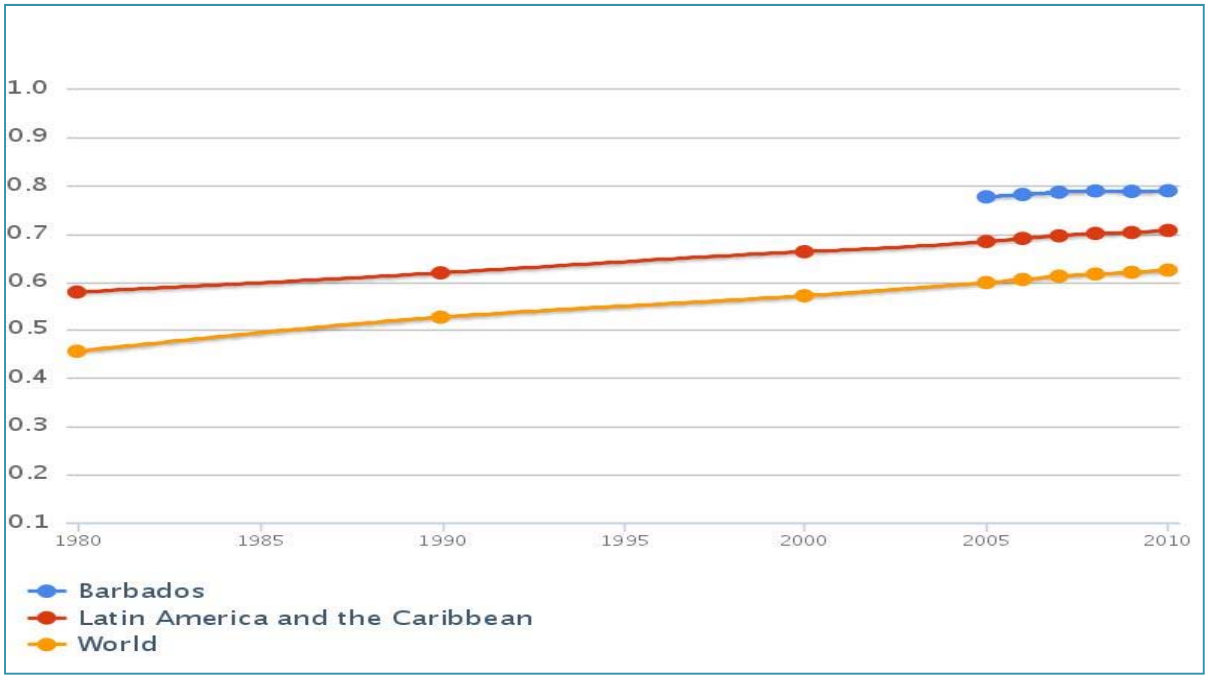
The HDI provides a broader definition of well-being and uses three basic measures of human development: health, education and income. Belize's HDI is 0.694, and is ranked 78 out of 169 countries with comparable data. It is noteworthy that the HDI of Latin America and the Caribbean as a region is 0.706. Belize is therefore below the regional average



Indicator	
Population (thousands)	312.9
Human Development Index	0.694
Life expectancy at Birth (years)	76.9 yrs
Adult Literacy Rate (%aged 15 and above)	75.1%
GDP per capita (PPP US$) 2008	$6,460
Population in poverty (percent)	5.6%
Unemployment (percent)	11%

BARBADOS

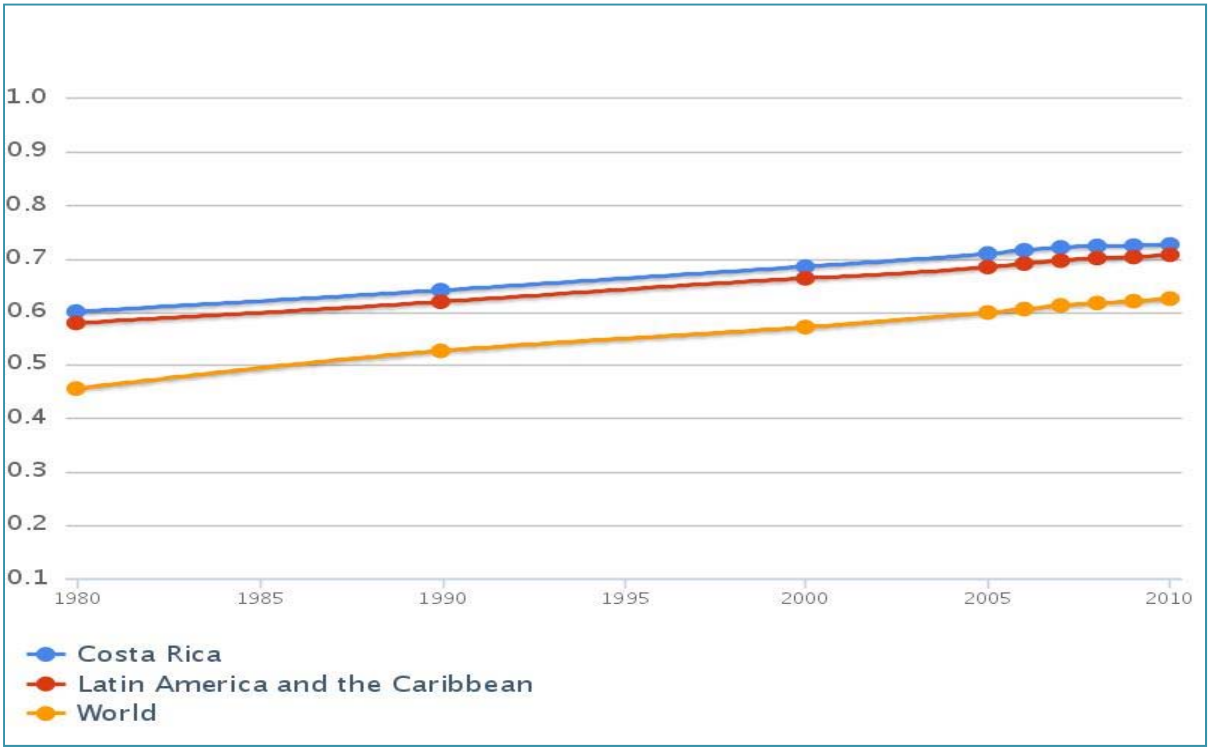
Barbados's HDI is 0.788, which gives the country a rank of 42 out of 169 countries with comparable data. The HDI of Latin America and the Caribbean as a region increased from 0.578 in 1980 to 0.706 today, placing Barbados above the regional average



Indicator	
Population (thousands)	256.6
Human Development Index	0.788
Life expectancy at Birth (years)	77.7 yrs
Adult Literacy Rate (%aged 15 and above)	n/a
GDP per capita (PPP US$) 2008	$22,794
Population in poverty (percent)	n/a
Unemployment (percent)	9.3%

COSTA RICA

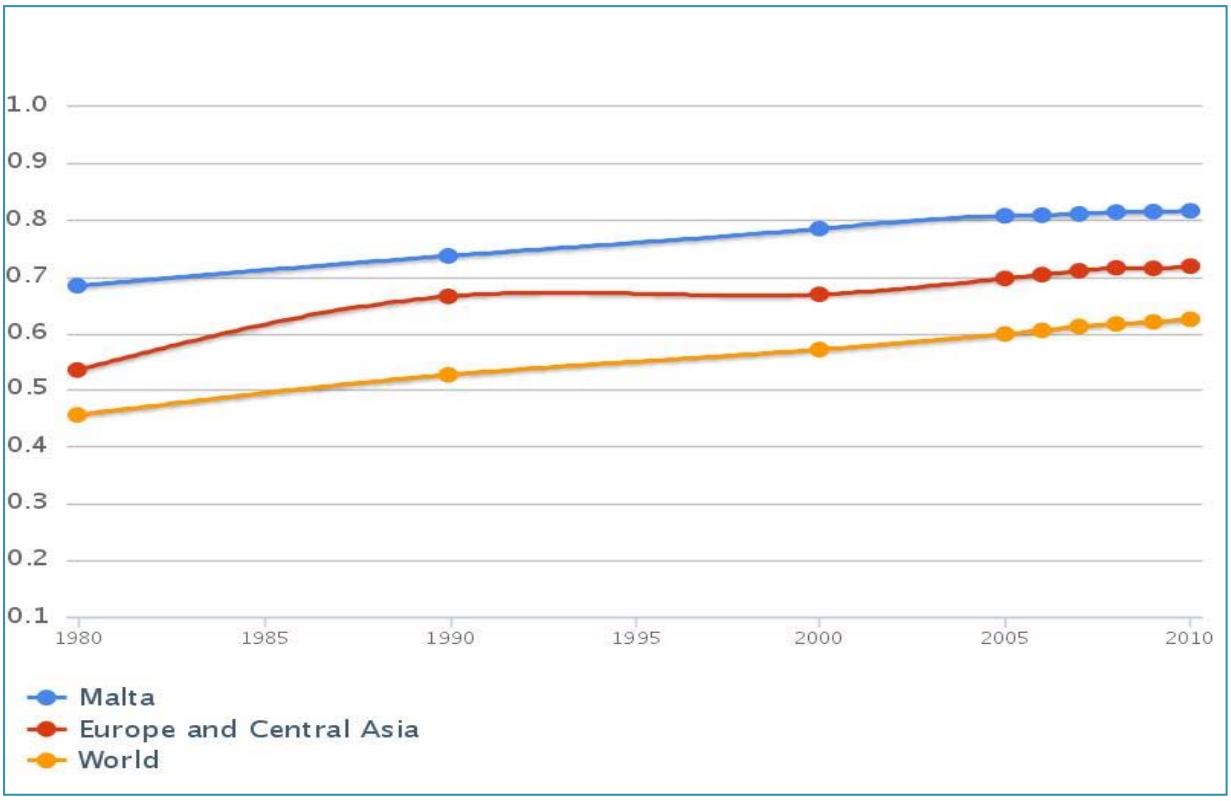
Between 1980 and 2010 Costa Rica's HDI rose by 0.6% annually from 0.599 to 0.725 today, which gives the country a rank of 62 out of 169 countries with comparable data. The HDI of Latin America and the Caribbean as a region increased from 0.578 in 1980 to 0.706 today, placing Costa Rica above the regional average.



Indicator	
Population (thousands)	4,639
Human Development Index	0.725
Life expectancy at Birth (years)	79.1
Adult Literacy Rate (%aged 15 and above)	96.3%
GDP per capita (PPP US$) 2008	$11,143
Population in poverty (percent) 2001-2003	n/a
Unemployment (percent)	4.6%

MALTA

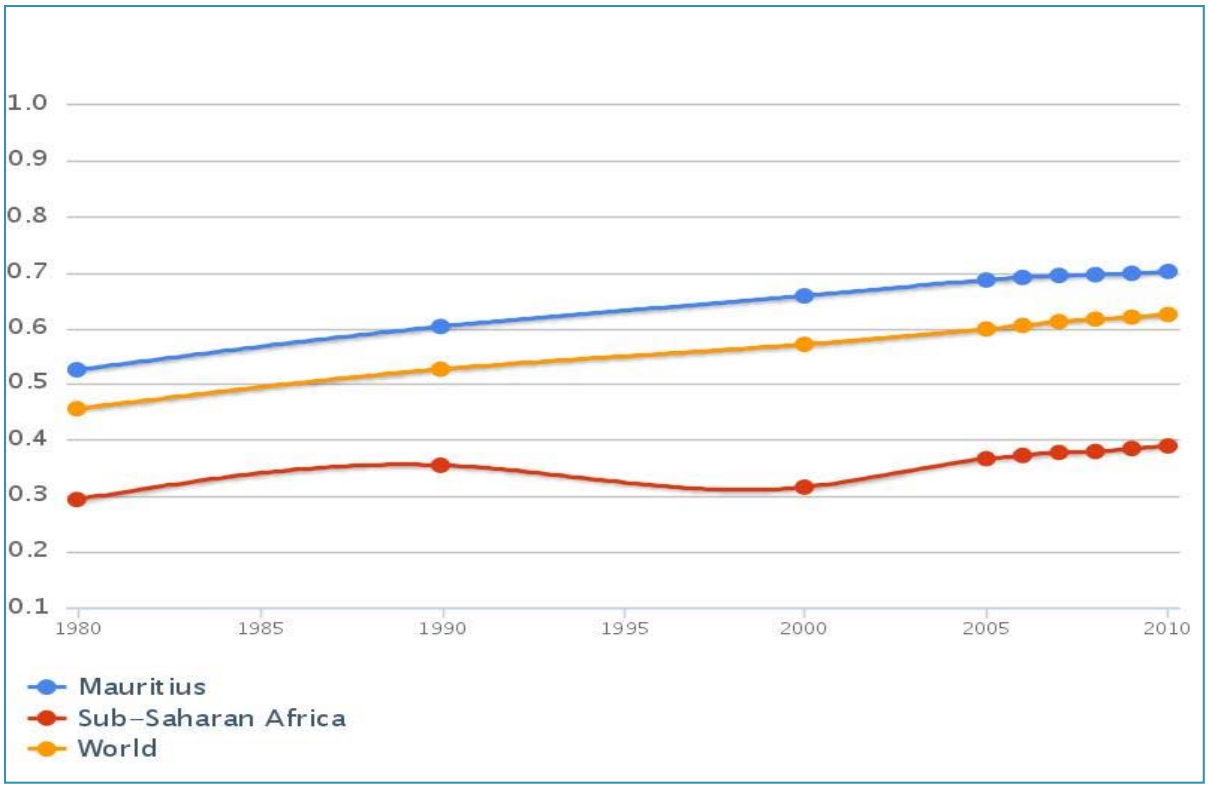
Between 1980 and 2010 Malta's HDI rose by 0.6% annually from 0.683 to 0.815 today, which gives the country a rank of 33 out of 169 countries with comparable data. The HDI of Europe and Central Asia as a region increased from 0.534 in 1980 to 0.717 today, placing Malta above the regional average.



Indicator	
Population (thousands)	410
Human Development Index	
Life expectancy at Birth (years)	80.0 yrs
Adult Literacy Rate (%aged 15 and above)	92.4
GDP per capita (PPP US$) 2008	21,581
Population in poverty(percent)	n/a
Unemployment (percent)	6%

MAURITIUS

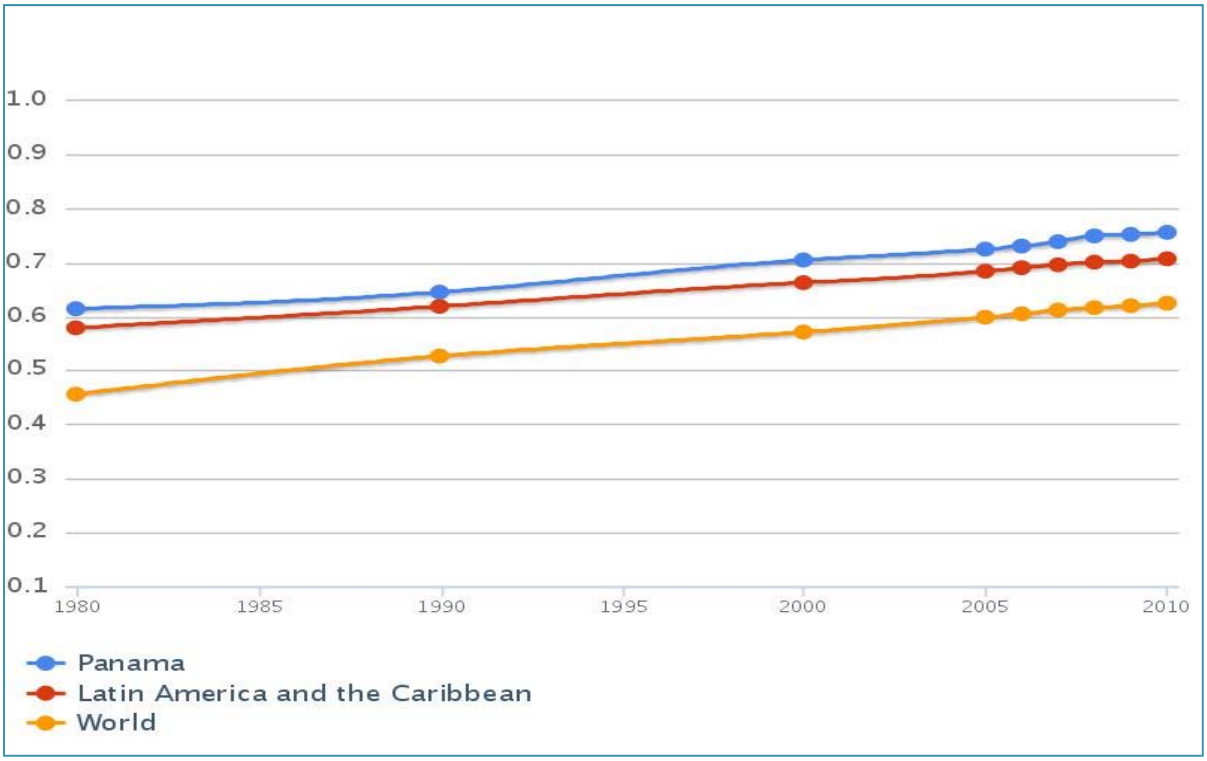
Between 1980 and 2010 Mauritius's HDI rose by 1.0% annually from 0.525 to 0.701 today, which gives the country a rank of 72 out of 169 countries with comparable data. The HDI of Sub-Saharan Africa as a region increased from 0.293 in 1980 to 0.389 today, placing Mauritius above the regional average



Indicator	
Population (thousands) 2009	1,296.6
Human Development Index	
Life expectancy at Birth (years)	72.1 yrs
Adult Literacy Rate (%aged 15 and above)	88.6%
GDP per capita (PPP US$) 2008	13,101
Population in poverty (percent)	n/a
Unemployment (percent)	7.3

PANAMA

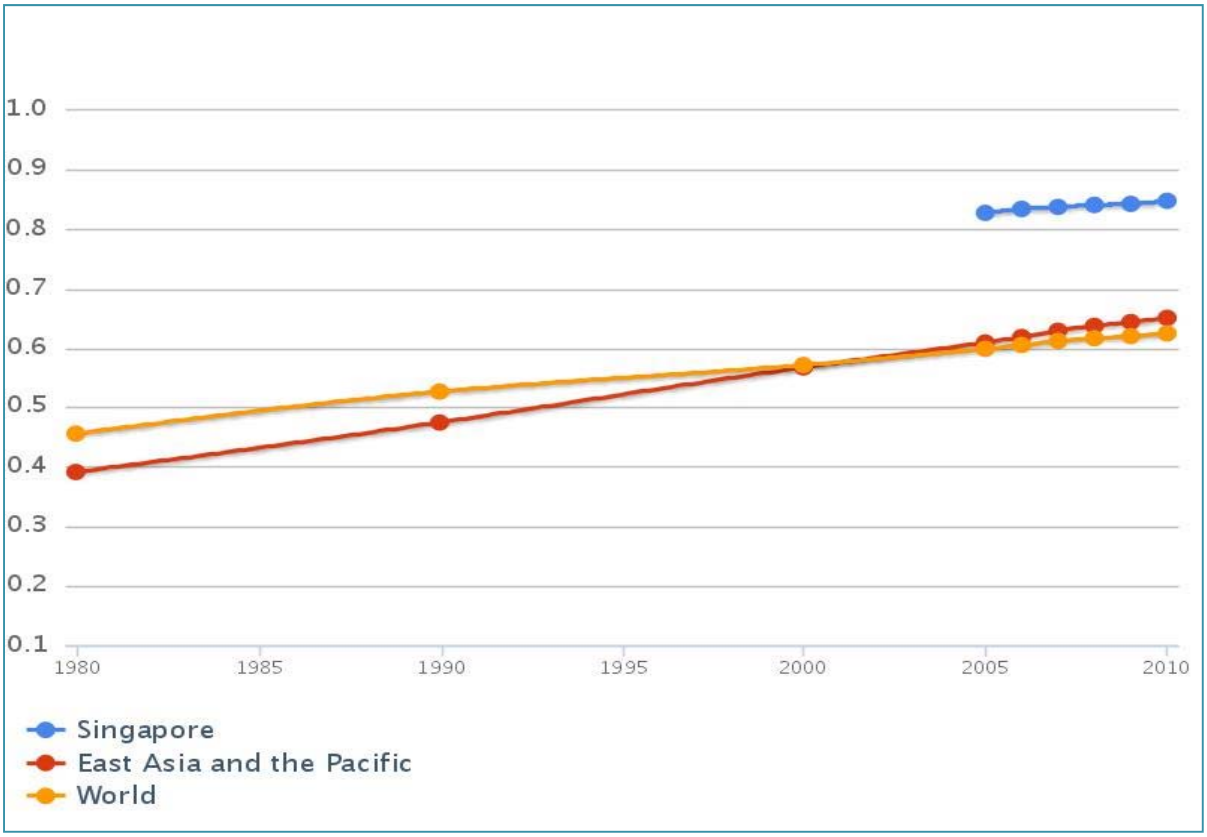
Between 1980 and 2010 Panama's HDI rose by 0.7% annually from 0.613 to 0.755 today, which gives the country a rank of 54 out of 169 countries with comparable data. The HDI of Latin America and the Caribbean as a region increased from 0.578 in 1980 to 0.706 today, placing Panama above the regional average.



Indicator	
Population (thousands) 2009	3508.5
Human Development Index	
Life expectancy at Birth (years)	76.0 yrs
Adult Literacy Rate (%aged 15 and above)	93.9%
GDP per capita (PPP US$) 2008	$13,210
Population in poverty (percent)	n/a
Unemployment (percent)	6.8%

SINGAPORE

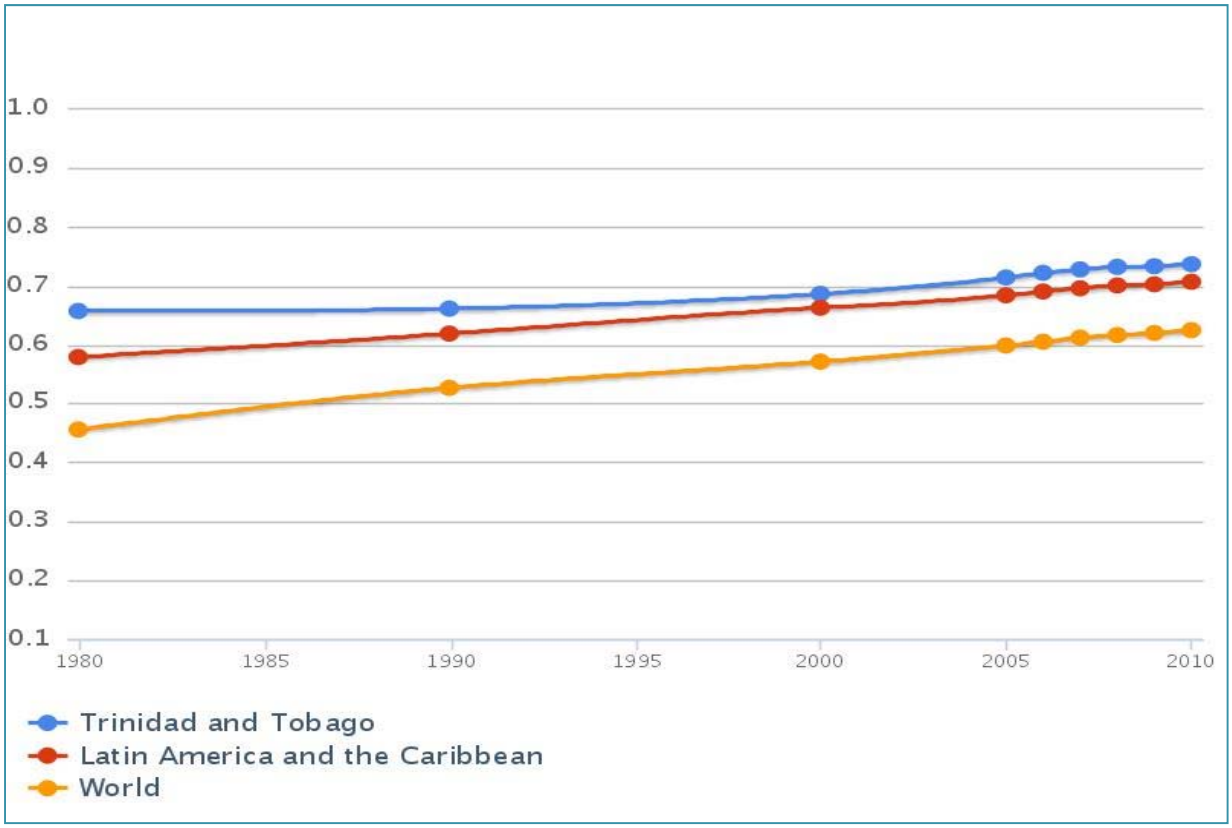
Singapore's HDI is 0.846, which gives the country a rank of 27 out of 169 countries with comparable data. The HDI of East Asia and the Pacific as a region increased from 0.391 in 1980 to 0.650 today, placing Singapore above the regional average



Indicator	
Population (thousands) 2009	4,836
Human Development Index	
Life expectancy at Birth (years)	80.7 yrs
Adult Literacy Rate (%aged 15 and above)	95.2%
GDP per capita (PPP US$) 2008	50,266
Population in poverty (percent)	n/a
Unemployment (percent)	3.2%

TRINIDAD AND TOBAGO

Between 1980 and 2010 Trinidad and Tobago's HDI rose by 0.4% annually from 0.656 to 0.736 today, which gives the country a rank of 59 out of 169 countries with comparable data. The HDI of Latin America and the Caribbean as a region increased from 0.578 in 1980 to 0.706 today, placing Trinidad and Tobago above the regional average



Indicator	
Population (thousands) 2009	1343.7
Human Development Index	
Life expectancy at Birth (years)	69.9
Adult Literacy Rate (%aged 15 and above)	98.9
GDP per capita (PPP US$) 2008	$25,162
Population in poverty (percent)	5.6%
Unemployment (percent)	6.5%

SELECTION OF INDICATORS

The Belize ICT benchmarking study utilizes data from three main sources:

- The World Economic Forum (WEF) Global Competitiveness Report 2010-2011
- The World Economic Forum (WEF Global Information Technology Report 2010-2011
- The UN Global E-Readiness Report of 2010

The indicators that have been selected probe various aspects of readiness and comprise four different categories:

- Infrastructure indicators
- Legal and Regulatory Indicators
- Human Development Indicators
- Industry Indicators

It should be noted however that current ICT readiness data from Belize is not readily available from the World Economic Forum reports. To address this, data from the 2011 eReadiness assessment carried out as part of the national ICT Strategy development process and data from World Bank Development Indicators online are included in some of the selected tables and graphs as indicated.

INFRASTRUCTURE INDICATORS aid in assessing the existing infrastructural landscape of countries. The availability of adequate communications network infrastructure is a key indicator, especially for developing economies where affordable access to technology is viewed as a barrier to development.

Access to all forms of ICT, radio, television, fixed and mobile telephones, personal computers, broadband Internet are therefore important tools for delivery of e-business and e-commerce, egovernment, e-health on a national level. Limited infrastructural capacity impacts the cost of access, making it more expensive, since only a small segment of the population are able to utilize the variety of ICT services that exist today.

In this benchmarking report, attention is therefore placed on the following indicators:

- Telecommunications infrastructure index
- # of Secure Internet servers
- Mobile Cellular Subscribers
- Ratio of mobile cellular subscriptions to fixed telephone lines

- Internet usage
- Internet Tariffs
- # of Personal Computers
- Broadband subscribers
- # of Television Sets

LEGAL AND REGULATORY INDICATORS assess the enabling environment upon which countries can build its ICT infrastructure, expand its ICT sector and increase confidence in the use and takeup of ICT by individuals, businesses and government. Legislation that covers electronic transactions, electronic signatures and authentication, data protection and privacy, consumer protection, and computer crime provide the legislative guidance to the rapidly expanding ICT sector in the region, protecting consumer rights and laying down set procedures for industry growth that are sure to boost investor confidence. It is therefore important that with the growing adoption of new technologies, the legal and regulatory environment keep up with the shifting tides in countries.

The indicators below will therefore show the effectiveness of the regulatory environment for developing and sustaining ICT development:

- Laws relating to ICT
- Effectiveness of law making bodies
- Intellectual property protection

HUMAN RESOURCE DEVELOPMENT INDICATORS assess the integration and adoption of ICTs in a country. They measure the level of human resources skills required to develop and sustain an information society by looking at the extent to which technology has been adopted. Key measurement s include among others, levels of computing skills and e-literacy rates, and availability of tertiary education.

Indicators are:

- Human Capital
- Tertiary Education Enrollment
- Availability of Scientists and Engineers
- Quality of Math and Science Education

SECTION II: BENCHMARKING RESULTS

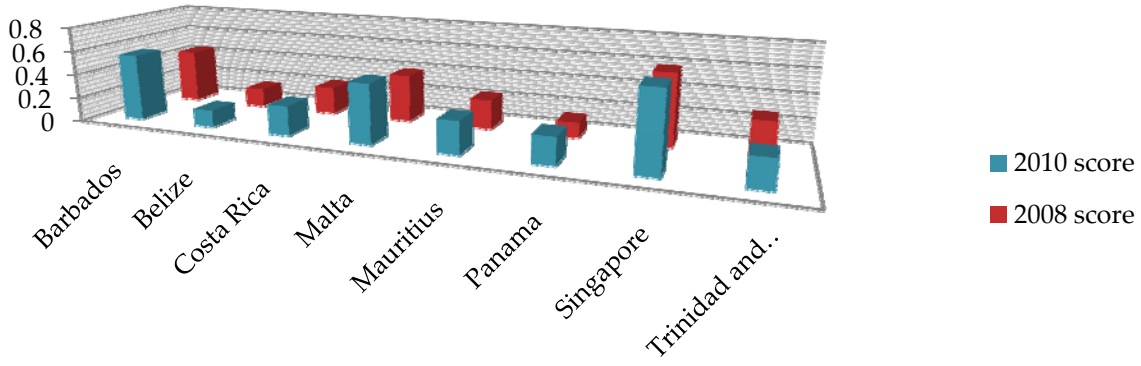
INFRASTRUCTURE INDICATORS

TELECOMMUNICATIONS INFRASTRUCTURE INDEX

The Global e-Government Readiness Report of 2010 from the UN, uses a composite telecommunications index comprising:

- Internet per 100 users,
- PCs per 100 users,
- Cellular subscribers per 100 users
- Main telephones lines per 100 users,
- Broadband per 100 users

In 2010, Belize ranks the lowest in the eight countries in this report. It should be noted however that although in the 2008 report, the score of 0.1561 relegated Belize to second to last place; the score in 2010 was actually lower. Belize therefore decreased in relative terms between 2008 and 2010. The top performers among the eight countries are Singapore, Barbados and Malta scoring 0.6386, 0.5513 and 0.4863 respectively.



	Telecommunications Infrastructure Index		Rank
Country	**2010 score**	**2008 Score**	**2010 Rank**
Barbados	0.5513	0.4464	24
Belize	0.1400	0.1561	103
Costa Rica	0.2424	0.2283	74
Malta	0.4863	0.3911	33
Mauritius	0.2647	0.2423	67
Panama	0.2202	0.1246	80
Singapore	0.6386	0.5853	14
Trinidad and Tobago	0.2304	0.2781	78

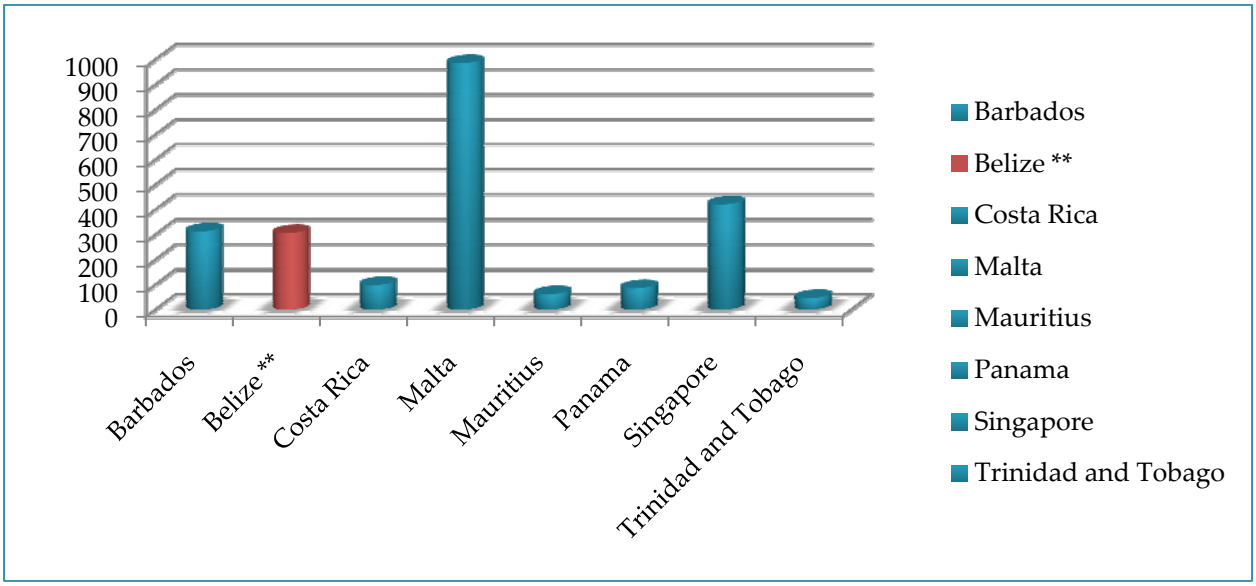
Source: United Nations Global e-Government Readiness Report 2010, Data 2009

SECURE INTERNET SERVERS

This indicator assesses the number of secure servers using encryption technology in internet transactions. The data is presented for every 1 million in population. It is therefore noted that the larger the number, the more likely there is an environment of safe and secure internet usage. This is therefore an enabling factor for the development of ecommerce transactions.

Of the eight, Malta ranks the highest with 985.6. Belize ranks fourth highest with Costa Rica, Panama, Mauritius and Trinidad and Tobago being ranked lower than Belize. This shows commendable performance by Belize.

Table 2: Secure Internet Servers per million population, 2009



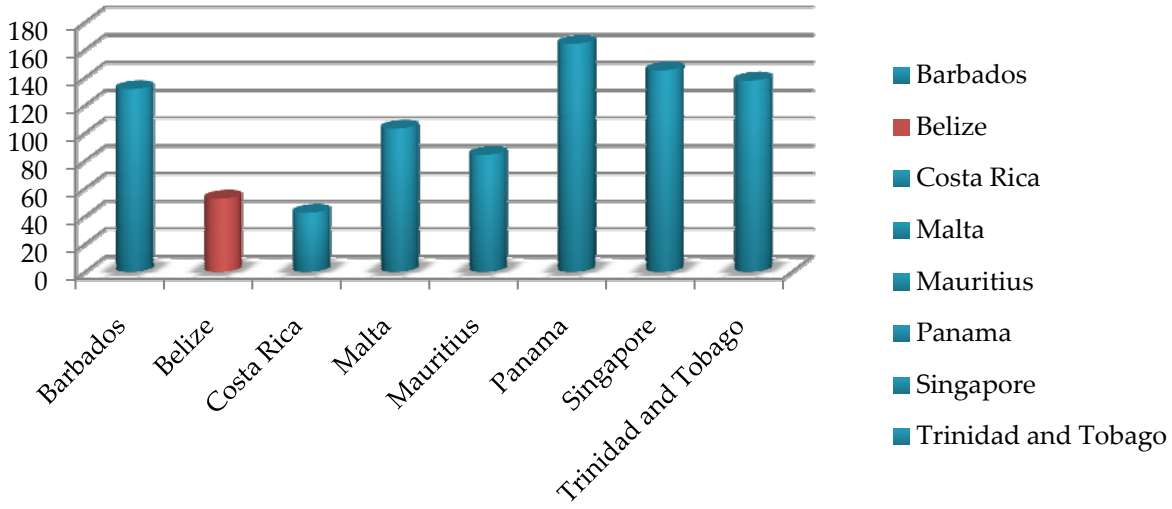
Country	Secure Internet Servers per million population, 2008	
	Hard Data	Rank
Barbados	312.7	25
Belize **	306	N/A
Costa Rica	98.3	40
Malta	985.6	10
Mauritius	61.9	48
Panama	85.7	42
Singapore	420.8	22
Trinidad and Tobago	46.3	50

Source: Global Information Technology Report 2010, Data 2009
* * World Bank Development Indicators Online

MOBILE CELLULAR SUBSCRIBERS

This measures the availability of mobile services, both post-paid and pre-paid subscription services in countries. With the growth of mobile technology as a world wide phenomenon, the Latin American and Caribbean region account for the third highest level of mobile usage in the world. World wide, access to mobile networks in available to 90% of the world's population with increasing movements from 2G to 3G platform services.

Among the eight countries benchmarked, Belize however is ranked second to last, higher than its Central American neighbor, Costa Rica. It should be noted however that Panama tops this list, followed by Singapore and Trinidad and Tobago. Whilst these countries have over 100% penetration of mobile phones, Belize averages 53% ownership.



Country	Mobile Cellular subscribers per 100 inhabitants (2009)
Barbados	131.73
Belize	52.74
Costa Rica	42.59
Malta	103.27
Mauritius	84.36
Panama	164.37
Singapore	145.24
Trinidad and Tobago	137.93

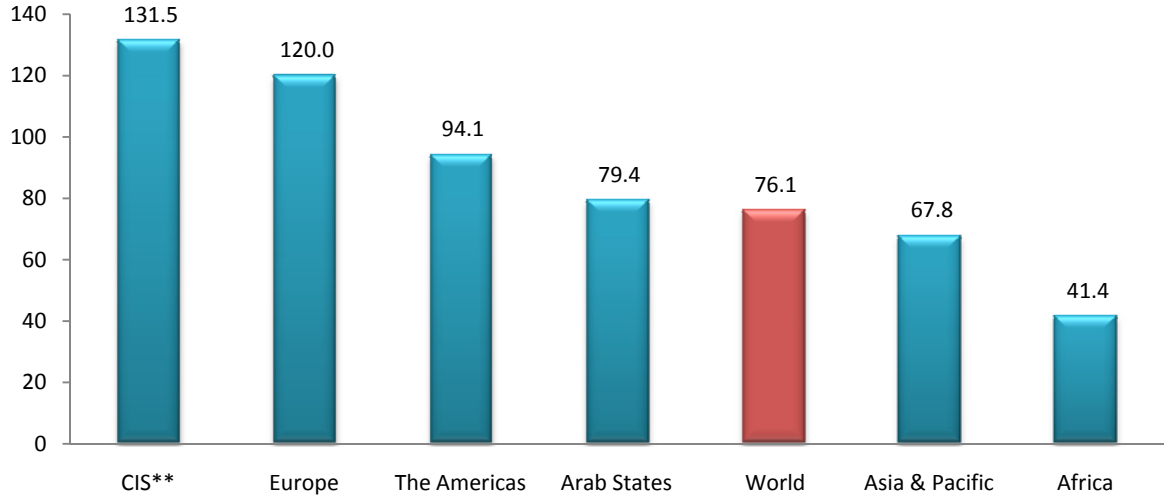
Source: ITU Statistics 2010,

It should be noted however, from National Consensus of 2011, that 19.8% of Belizean households do not own a mobile phone.

HOUSEHOLDS MOBILE PHONE OWNERSHIP BY DISTRICT, PERCENT								
		District						
		CZ	OW	BZ	CY	SC	TO	Total
NUMBER OF PHONES OWNED		2.0%	1.5%	.5%	2.2%	1.0%	.5%	1.3%
	0	22.2%	23.3%	12.2%	14.8%	24.2%	44.3%	19.8%
	1	28.4%	27.1%	33.3%	28.8%	34.8%	29.4%	30.6%
	2	26.8%	26.9%	29.2%	28.6%	22.7%	15.3%	26.5%
	3	11.2%	11.8%	13.5%	13.3%	9.3%	5.8%	11.8%
	4	9.4%	9.4%	11.4%	12.3%	8.0%	4.7%	10.1%
Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Data for penetration rates by region has shown that the Latin American and Caribbean region account for a significant proportion of mobile ownership globally.

Mobile cellular subscriptions per 100 inhabitants, 2010*



Region	2010*
Commonwealth of Independent States (CIS)**	131.5
Europe	120.0
The Americas	94.1
Arab States	79.4
World	76.1
Asia & Pacific	67.8
Africa	41.4

Source: ITU World Telecommunication /ICT Indicators database

This can also be attributed to the liberalization of telecommunications sector and the extent of investment in telecommunications by service providers. Also accounting for this is the development of specific policies on universal access by nation states.

RATIO OF MOBILE CELLULAR SUBSCRIPTIONS TO FIXED TELEPHONE LINES

This is another interesting indicator provided by ITU and shows the extent to which mobile phones surpass fixed telephone lines in countries. As shown in the table, Panama has the highest ratio followed by Trinidad and Tobago and Belize. Belize is placed third among benchmarked countries.

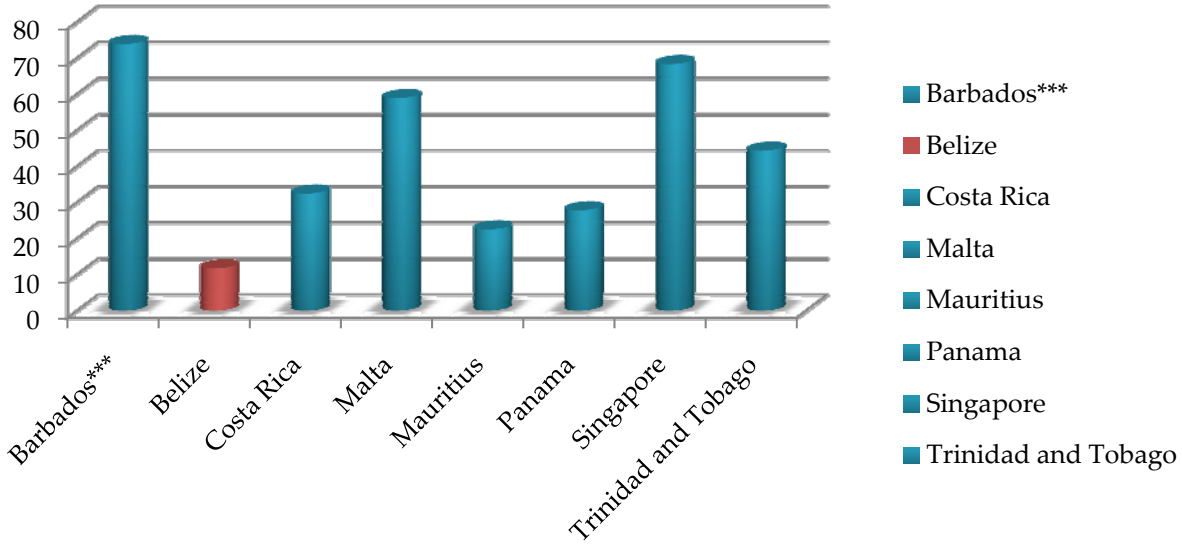
Country	Ratio of mobile cellular subscriptions to fixed telephone lines
Barbados	2.5:1
Belize	5.2:1
Costa Rica	1.3:1
Malta	1.7:1
Mauritius	2.9:1
Panama	10.6:1
Singapore	3.6:1
Trinidad and Tobago	6.1:1

Source: ITU Statistics 2010

INTERNET USAGE

It is now estimated that there are over two billion Internet users worldwide of which 1.2 billion will be in developing countries. Although growth rates have doubled between 2005 and 2010, only 21% of the population in developing countries is online.

The table below shows Internet usage per hundred inhabitants. In this group Barbados leads the way, followed by Singapore and Malta. Belize has the lowest internet users among all countries benchmarked. Whilst this is indeed an improvement in 2007 ad 2008 figures, there have been larger growth rates in internet usage from the other seven countries benchmarked. Belize has therefore a significant amount of work to do to increase this ranking.



Country	Estimated Internet Users per hundred inhabitants (2009)
Barbados* **	73.86
Belize	11.73
Costa Rica	32.42
Malta	58.86
Mauritius	22.51
Panama	27.79
Singapore	68.29
Trinidad and Tobago	44.30

Source: ITU Database 2010

*** UN Global e-Readiness Report, 2010

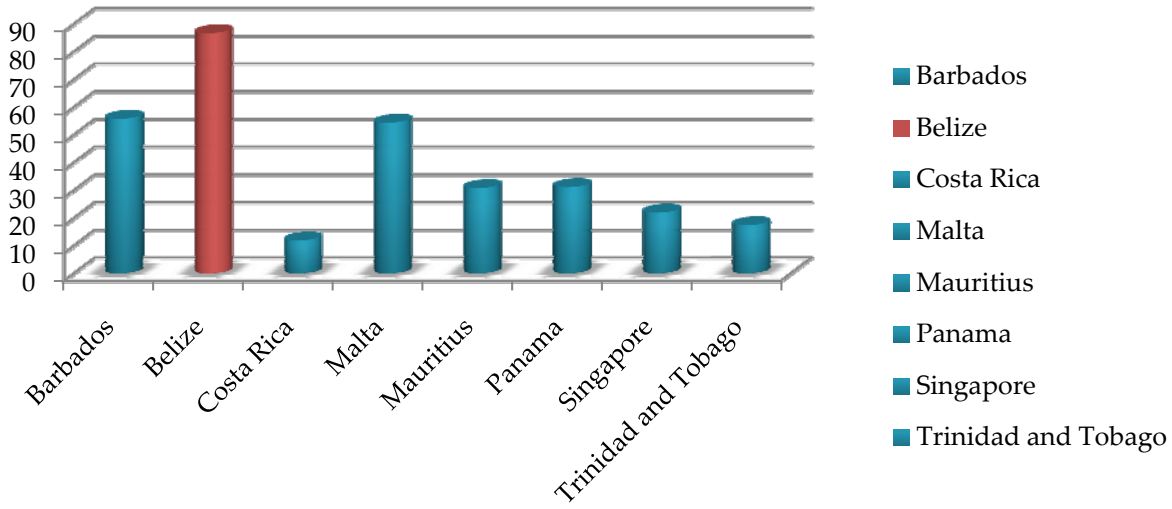
The Belize national census 2011 for Belize however, yields the following:

PERCENTAGE OF HOUSEHOLDS WITHIN INTERNET ACCESS WITH HOME BY DISTRICT							
	% within District						
	District						
	CZ	**OW**	**BZ**	**CY**	**SC**	**TO**	**Total**
	1.5%	1.1%	.3%	2.0%	.6%	.4%	1.0%
Don't know	.2%	.0%	.1%	.1%		.1%	.1%
No	89.3%	90.6%	78.5%	85.5%	88.5%	96.1%	85.8%
Yes	9.0%	8.2%	21.1%	12.3%	10.9%	3.4%	13.1%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

INTERNET TARIFFS

The table below shows Fixed Broadband Tariffs for 2009 and measures the monthly subscription charge for fixed (wired) broadband Internet service, in US$ (adjusted for purchasing power parity). It is to be noted that this is a dedicated connection to internet at downstream speeds greater than or equal to 256Kb per second. Availability and affordability of internet act as enablers for proliferation and uptake of ICT in a country. This indicator therefore has a direct impact on the penetration rates for internet.

It can be shown in the table below that the lowest monthly internet fee is US$11.89 per month from Costa Rica who ranked in the top ten of least expensive countries surveyed in the ITU 2010 report.

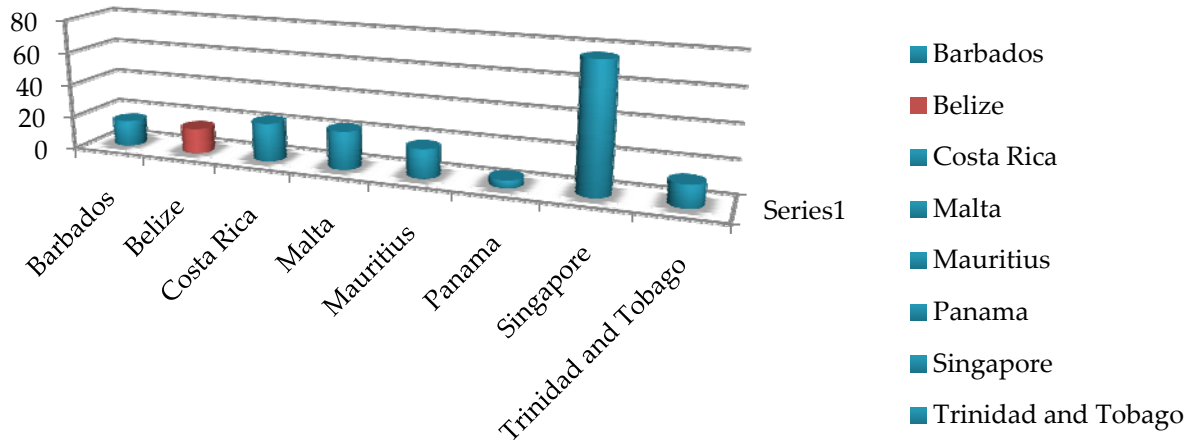


Country	Fixed Broadband Tariffs Residential Monthly Fee (PPP$)(2009)
Barbados	55.79
Belize	86.71
Costa Rica	11.89
Malta	54.39
Mauritius	30.77
Panama	31.16
Singapore	21.98
Trinidad and Tobago	17.41

Source: ITU Measuring the Information Society 2010

NUMBER OF PERSONAL COMPUTERS

This measures the number of households with a desktop or laptop computers. The data presented does not include mobile phones or personal digital assistants (PDAs). From the data provided, Singapore leads the group with almost three times as much in ownership as its Central American neighbour Costa Rica. It is to be noted that Belize is third to last in the eight benchmarked countries. Only Panama and Trinidad and Tobago have lower scores. It is to be noted that whilst Belize enjoyed increases in ownership of personal computers over 2007 to 2009 period, the growth in mobile phones has surpassed the growth in ownership of PCs.



Country	Personal Computers per 100 inhabitants
Barbados	15.79
Belize	15.28
Costa Rica	23.10
Malta	22.99
Mauritius	17.43
Panama	4.56
Singapore	76.04
Trinidad and Tobago	13.21

Source: UN Global e-Readiness Report 2010

A further investigation into PC ownership in Belize by District will reveal that to a very large extent there are significant proportions of Belizeans who do not own PCs. Only 21% of the population own 1 PC per household. This statistic is in line with the world average of 21% of developing world being online. (ITU).

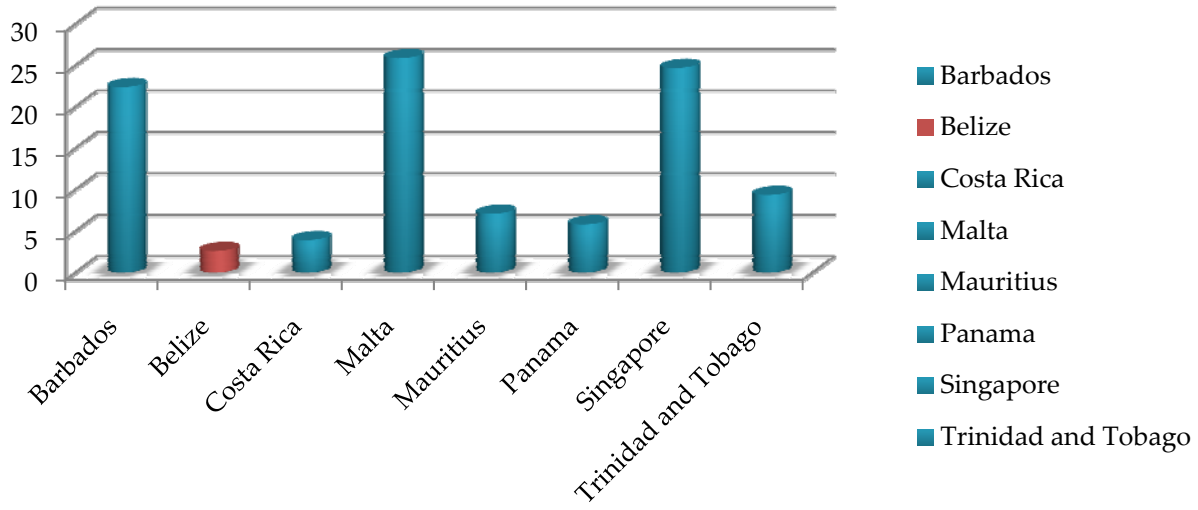
		District						Total
		CZ	OW	BZ	CY	SC	TO	
NUMBER OF COMPUTERS OWNED		1.6%	1.1%	.4%	2.1%	.6%	.3%	**1.1%**
	0	77.5%	77.6%	66.5%	67.9%	76.8%	84.8%	**72.5%**
	1	17.8%	18.1%	26.9%	23.2%	18.3%	12.0%	**21.4%**
	2	2.4%	2.3%	4.2%	4.6%	3.1%	2.0%	**3.5%**
	3	.5%	.6%	1.3%	1.4%	.7%	.5%	**1.0%**
	4	.3%	.3%	.6%	.8%	.4%	.2%	**.5%**
Total		**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Source: National Statistics of Belize for 2011

BROADBAND SUBSCRIBERS

Broadband is defined as speeds in excess of or equal to 256 kb per second. In the developing world, DSL (Digital Subscriber Line) technology is the most commonly used technology. Where there is growth in internet usage, this is due to the growth in demands for higher speeds.

Of the benchmarked countries, Malta has the highest percentage, followed by Singapore and Barbados. Belize is in last position among the group with 2.61% subscribing to broadband. Given the percentages produced in the last e-readiness report, it can therefore be shown that broadband subscription has exploded and has grown at a faster rate in other countries than in Belize.



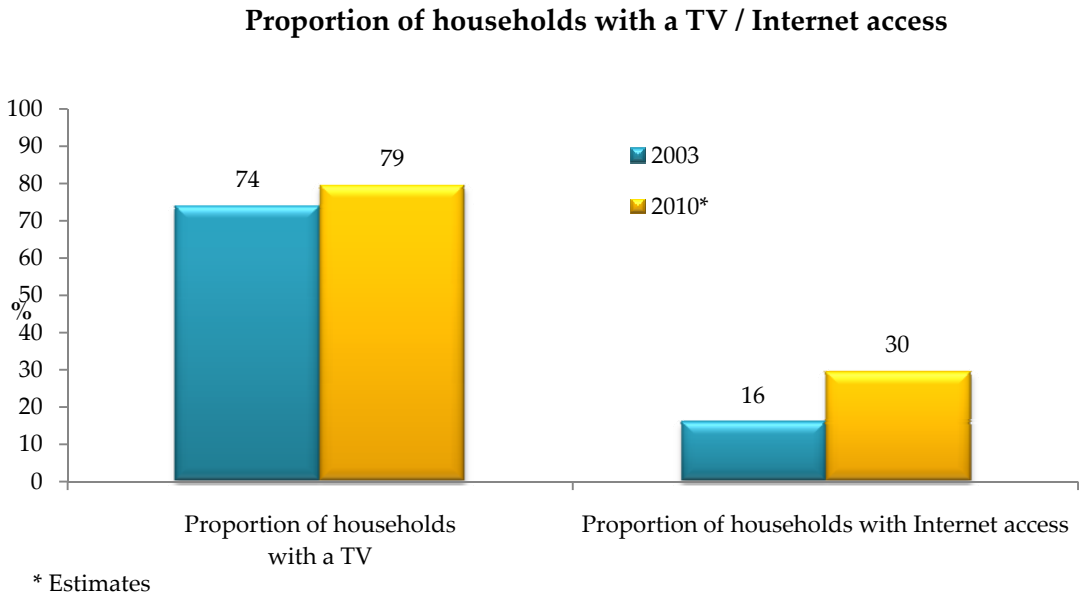
Country	Fixed Broadband subscriptions	
	Total (000s) 2009	Per 100 Inhabitants 2009
Barbados	57.3	22.4
Belize	8.0	2.61
Costa Rica	179.8	3.93
Malta	105.8	25.89
Mauritius	91.5	7.11
Panama	201.1	5.82
Singapore	1'170.7	24.71
Trinidad and Tobago	125.6	9.38

Source: ITU Statistics, 2010

TELEVISION

Used as a measurement to assess the digital divide, the numbers of television sets in a country measure the extent of traditional broadcasting in countries. As one of the most widely used forms of broadcasting, this indicator is a clear target for the World Summit of the Information Society (WSIS) referenced as Target 8: **"Ensure that all of the world's population have access to television and radio services".** It is to be noted however that Radio and television programmes are a principal source of news and information for illiterate segments of the population. They complement the printed media and are particularly important in countries where few people use the Internet, or where local online content and content in local languages are limited. Moreover, since broadcasting constitutes an important part of ICT infrastructure, widespread access to broadcasting services is fundamental for reducing the digital divide. This measure therefore shows how countries can have available and adequate affordable ICT equipment, given that radio and TV sets are needed in order to use broadcasting services.

By definition, Proportion of households with a TV defines a TV as a standalone device capable of receiving broadcast television signals, using popular access means such as over-the-air, cable and satellite. It excludes TV functionality integrated with another device, such as a computer or a mobile phone.



Updated comparative data for benchmarked countries is not readily available, however for Belize the following was noted in the 2010 Census:

PERCENTAGE OF HOUSEHOLDS WITH CABLE TV SERVICE BY DISTRICT

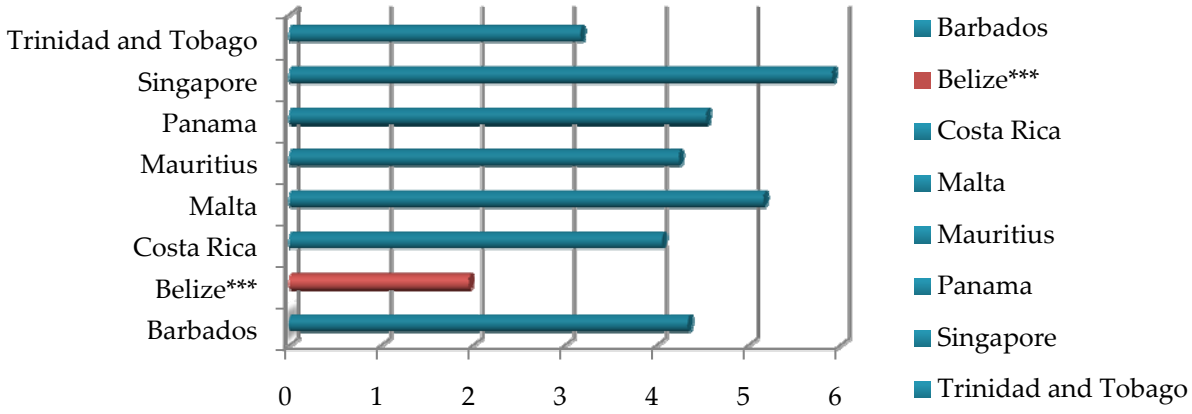
	District						Total
	CZ	OW	BZ	CY	SC	TO	
	1.4%	1.0%	.2%	2.0%	.5%	.4%	**.9%**
Don't know	.1%	.0%	.0%	.1%	.0%	.0%	**.1%**
No	57.6%	51.6%	24.9%	50.0%	48.9%	81.0%	**46.0%**
Yes	40.9%	47.3%	74.9%	47.9%	50.6%	18.5%	**53.0%**
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

LEGAL & REGULATORY INDICATORS

LAWS RELATING TO ICT

In the developing region, countries rely on legislation that was conceptualised before many of the technologies that are in wide use today. Consumers use services without adequate protection, businesses operate in blind conditions and the courts are unable to rely on legal documents in the event that cases are filed. The Global Information Technology Report of 2010-2011, assessed laws relating to ecommerce, digital signatures and consumer protection on a scale of 1-7 from non-existent to well developed.

From the table below, the country with the highest score among benchmarked countries is Singapore. This is followed by Malta and Panama. Based on data from 2007 eReadiness Assessment, Belize as well as Trinidad and Tobago are below the global average for all countries surveyed.



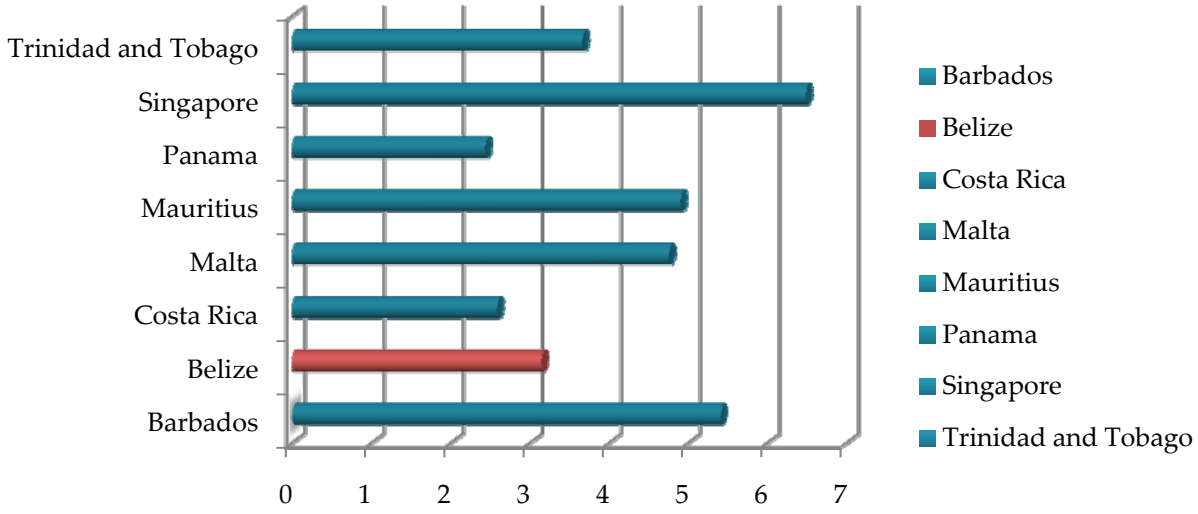
Country	Score 2010	Rank
Barbados	4.34	47
Belize* **	1.95	n/a
Costa Rica	4.06	58
Malta	5.16	23
Mauritius	4.24	53
Panama	4.54	41
Singapore	5.91	2
Trinidad and Tobago	3.17	108

Source: Global Information Technology Report 2010-2011, World Economic Forum, 2009-2010 weighted average; WEF Executive Opinion Survey, 2009, 2010
*** Data for Belize taken from 2007 eReadiness Assessment

Effectiveness of Law Making Bodies

The law making process is a complex process undertaken by parliaments. The question posed in the Global Information Technology Report 2010-2011, assesses the effectiveness of law-making institutions to address the issues and laws that are required to develop and support countries' ICT agendas. This score ranges from 1-7 from very ineffective to very effective

The country with the most effective law making bodies among the benchmarked countries is Singapore with a score of 6.49 out of 7. This is followed by Barbados and Mauritius. Belize in this indicator is quite effective. Although it is below the global average, Belize can be ranked at 88. It is noted however that for the Latin American and Caribbean region, Belize is third among the five countries benchmarked.



Country	Score	Rank
Barbados	5.41	7
Belize	3.15	88
Costa Rica	2.59	114
Malta	4.76	19
Mauritius	4.91	17
Panama	2.44	121
Singapore	6.49	1
Trinidad and Tobago	3.67	60

Source: Global Information Technology Report 2010-2011, World Economic Forum, 2009-2010 weighted average; WEF Executive Opinion Survey, 2009, 2010
*** Data for Belize taken from 2007 eReadiness Assessment

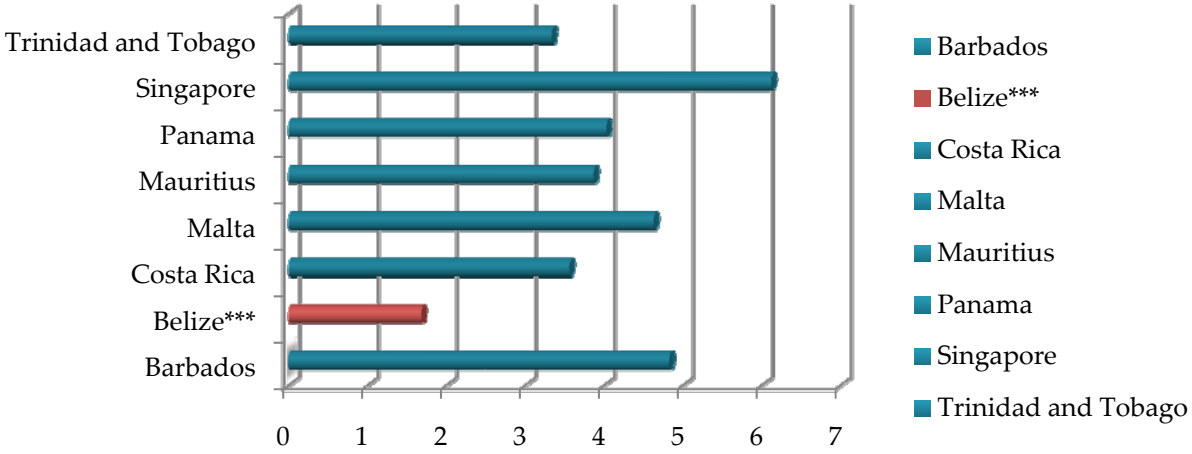
INTELLECTUAL PROPERTY PROTECTION

In this new information age, countries have been grappling with the problems of intellectual property theft, and commerce in counterfeit and pirated goods. This has become a global phenomenon and has powered a new kind of "black market" industry largely in today's digital assets. Intellectual property protection covers copyrights and trademarks and protects individuals, businesses and government against unauthorized use of these assets.

The survey question posed in the GITC 2010-2011 report, assesses the strength of intellectual property protection with scores ranging from 1, weak or non-existent, to 7, equal to the worlds most stringent.

According to the Belize 2007 eReadiness Report, Belize is below the global average and has the lowest score among the eight countries benchmarked. Singapore is first in the group, followed by Barbados and Malta with scores of 4.83 and 4.63 respectively.

Intellectual Property Protection



Country	Score	Rank
Barbados	4.83	29
Belize* **	1.68	n/a
Costa Rica	3.56	67
Malta	4.63	36
Mauritius	3.87	53
Panama	4.03	47
Singapore	6.12	3
Trinidad and Tobago	3.34	72

Source: Global Information Technology Report 2010-2011, World Economic Forum, 2009-2010 weighted average; WEF Executive Opinion Survey, 2009, 2010
*** Data for Belize taken from 2007 eReadiness Assessment

HUMAN RESOURCE DEVELOPMENT INDICATORS

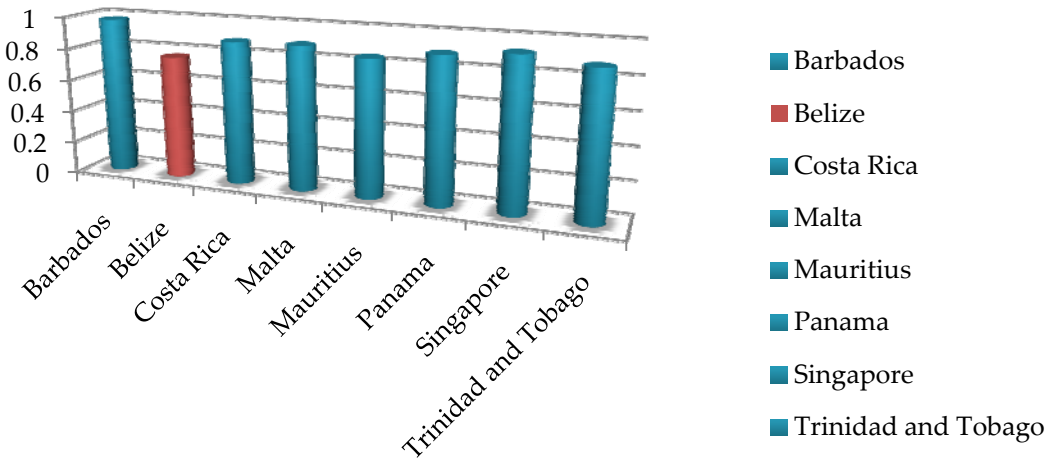
HUMAN CAPITAL INDEX

People are the engine of national development. The extent to which people play a part in the development agenda of the country is measured by the human capital index.

The human capital index is a composite of the adult literacy rate and the combined primary, secondary and tertiary gross enrolment ratio, with two thirds weight given to the adult literacy rate and one third to the gross enrolment ratio.

Barbados and Singapore lead the group in human capital development, followed by the rest of the group. Belize is ranked last in the group with a large disparity to the leader Barbados indicating major differences in human development.

Human Capital Index



	Human Capital Index		Rank
Country	2010 score	2008 Score	2010 rank
Barbados	0.9743	0.9609	16
Belize	0.7609	0.7735	129
Costa Rica	0.8826	0.8757	85
Malta	0.8870	0.8556	80
Mauritius	0.8388	0.8132	104
Panama	0.8884	0.8778	76
Singapore	0.9203	0.9080	48
Trinidad and Tobago	0.8761	0.8720	89

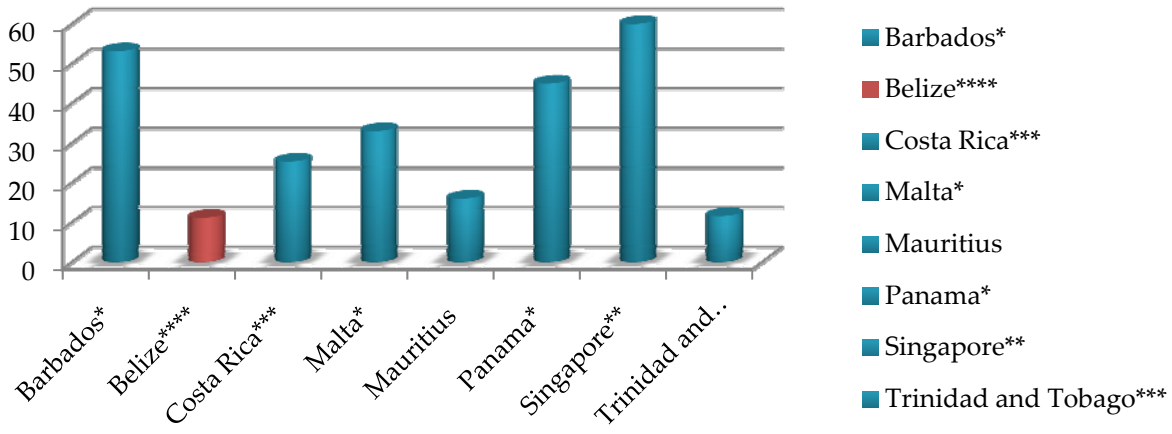
Source: Global eGovernment Readiness Report 2010, United Nations

GROSS TERTIARY EDUCATION ENROLLMENT

Higher education (universities and other institutions) play a critical role in promoting and sustaining ICT growth and development. A country's proportion of tertiary education graduates is an indication of the overall ability of the population to fully develop the specialty skills, knowledge and abilities necessary to fully participate in the Information Society.

Singapore is the highest ranked in tertiary education enrollment followed by Barbados, Panama, Malta and Costa Rica. The lower end of the ranking show that Mauritius, Trinidad and Tobago and lastly Belize are significantly below the other countries in their tertiary education enrollment.

Gross Tertiary Education Enrollment



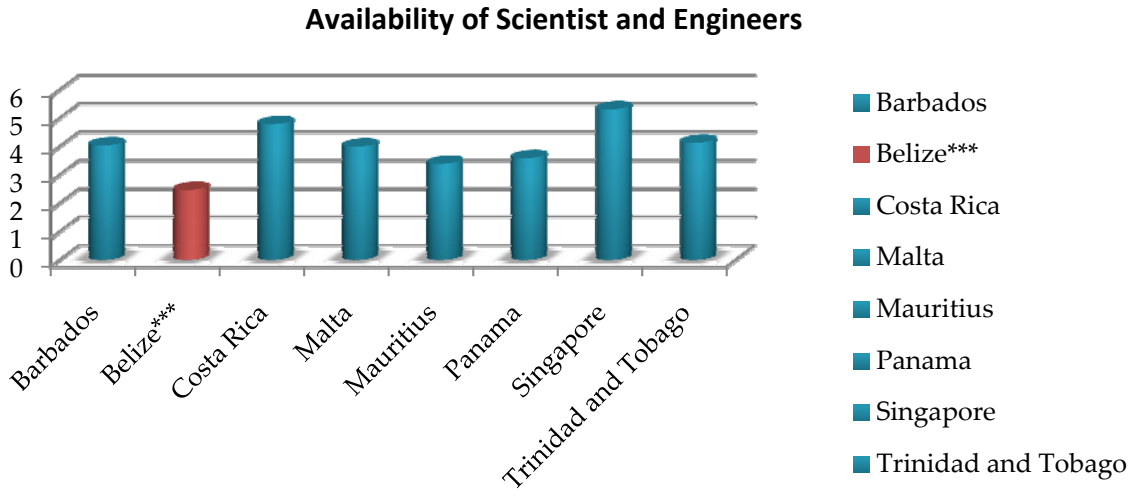
Country	Gross Tertiary Education Enrollment Rate (2008)	Rank
Barbados*	53.13	41
Belize****	11.2	106
Costa Rica***	25.34	82
Malta*	33.0	72
Mauritius	16.0	96
Panama*	45.0	52
Singapore**	60	30
Trinidad and Tobago***	11.6	104

Source: Global Information Technology Report 2010, WEF 138countries ranked;
World Development Indicators Online (2009)
* 2007 data ** 2009 data *** 2005 data
**** 2010 Statistical Yearbook for Latin America and the Caribbean" indicates the 2009 data for Belize at 11.2

AVAILABILITY OF SCIENTISTS AND ENGINEERS

The application of scientific and engineering knowledge drives ICT development at the national level and is vital in addressing national development basic human needs, poverty reduction, promoting secure and sustainable development, emergency and disaster prevention, response and reconstruction, bridging the knowledge divide and promoting intercultural cooperation. Countries with high availability of scientist and engineers have been able to leverage this knowledge to advance their participation in the information society.

Singapore leads the ranking on the availability of scientists and engineers and is followed by Costa Rica, Trinidad and Tobago and Barbados. The middle of the group finds Malta, Panama and Mauritius. Belize's ranking is slightly lower than Mauritius however the range of difference between Belize and the leading countries indicate that there is a great need for improvements in this area.



Country	Availability of Scientists and Engineers (2009)	Rank
Barbados	4.04	69
Belize* **	2.47	137
Costa Rica	4.79	28
Malta	4.00	74
Mauritius	3.39	111
Panama	3.59	99
Singapore	5.31	10
Trinidad and Tobago	4.13	65

Source: Global Information Technology Report 2010-2011, WEF 138 countries ranked;
Executive Opinion Survey 2009,2010 *** Data for Belize taken from 2007 eReadiness Assessment

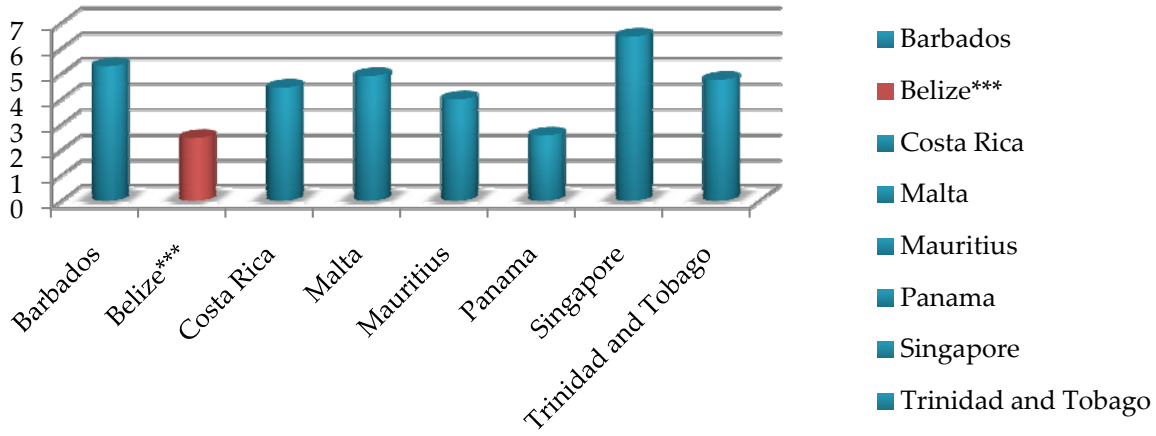
Quality of Math and Science Education

The quality of math and science education are critical to a courtiers ability to participate and contribute to the information society in that it contribute to the national capacity to carry out key ICT building block activities such as research and development and analytics.

ICT research and development requires the ability to absorb and process complex information. This entails a sound understanding of mathematics and science subjects.

In the benchmarked countries there is great disparity in the quality of math and science education. Singapore leads the world in the quality of math and science education while Belize is ranked at 132 out of 138 countries globally.

Quality of Math and Science Education



Country	Quality of Math and Science Education (2009)	Rank
Barbados	5.29	123
Belize* **	2.47	132
Costa Rica	4.45	50
Malta	4.91	23
Mauritius	3.99	67
Panama	2.57	128
Singapore	6.46	1
Trinidad and Tobago	4.76	32

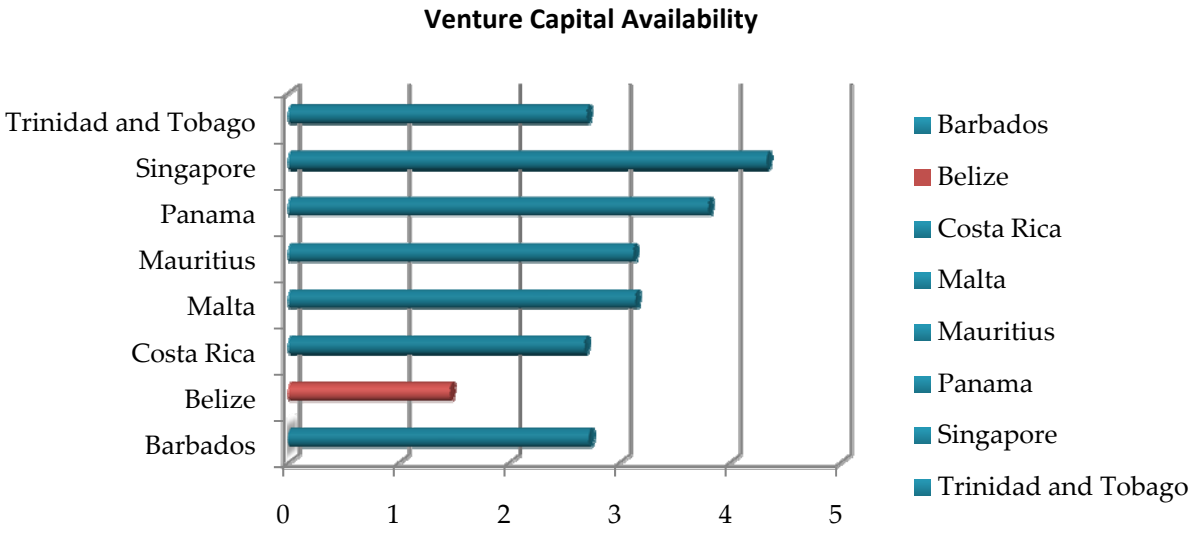
Source: Global Information Technology Report 2010-2011, WEF 138 countries ranked;
Executive Opinion Survey 2009,2010 ** Data for Belize taken from 2007 eReadiness Assessment

INDUSTRY INDICATORS

VENTURE CAPITAL AVAILABILITY

Technological advancement depends on capital investment to build a competitive local industry and for organizations across Belize to access the various layers of technological capabilities. The ease of obtaining finance to support these ventures, directly contributes to the level of innovation and development within a country.

The availability of venture capital in Belize is ranked lowest in the group and below the mean globally.



Country	Venture Capital Availability (2008)	Rank
Barbados	2.72	69
Belize	1.46	n/a
Costa Rica	2.68	72
Malta	3.14	43
Mauritius	3.12	45
Panama	3.80	16
Singapore	4.33	3
Trinidad and Tobago	2.70	70

Source: Global Information Technology Report 2010, WEF 133 countries ranked; Executive Opinion Survey 2008,2009

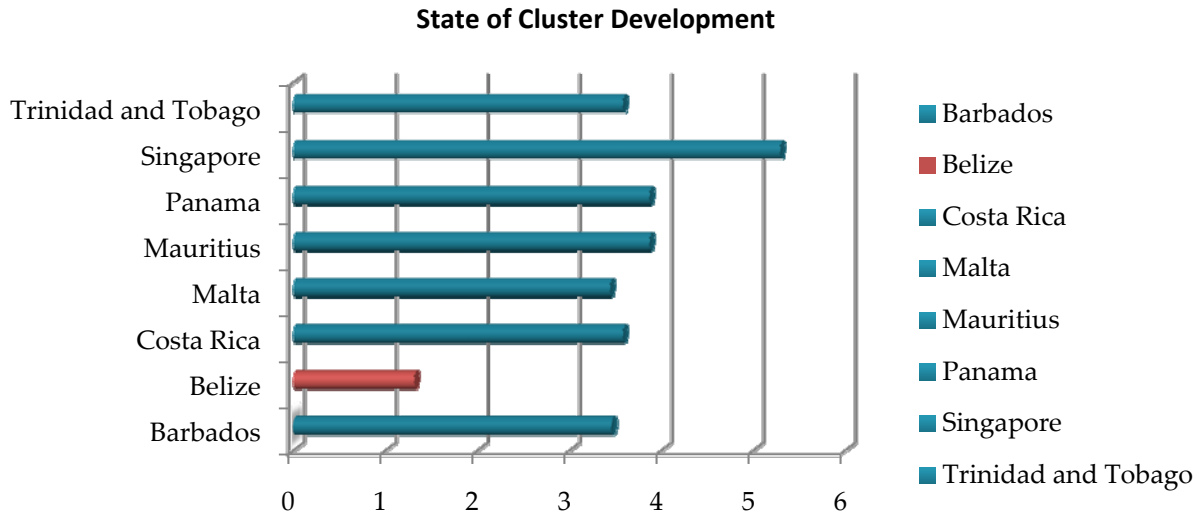
*** Data for Belize taken from 2007 eReadiness

State of Cluster Development

ICT & business clusters have proven to be key in advancing a countries participation and contribution to the information society. Business clusters are groups of businesses and organizations involved in related industries that network and collaborate with each other for the growth and expansion of their firms and of the industry as a whole.

Cluster development is an effective tool for economic development as the cooperation among firms allows for greater competitive ability and provides shared benefits in training, infrastructure and procurement.

Belize has been rated significantly lower than the group in cluster development indicating that there is a need and an opportunity to focus on the development of clusters to boost the ICT development of the country.



Country	State of Cluster Development (2008)	Rank
Barbados	3.46	66
Belize	1.31	n/a
Costa Rica	3.58	60
Malta	3.44	68
Mauritius	3.87	44
Panama	3.87	43
Singapore	5.29	5
Trinidad and Tobago	3.58	61

Source: Global Information Technology Report 2010, WEF 133 countries ranked; Executive Opinion Survey 2008,2009

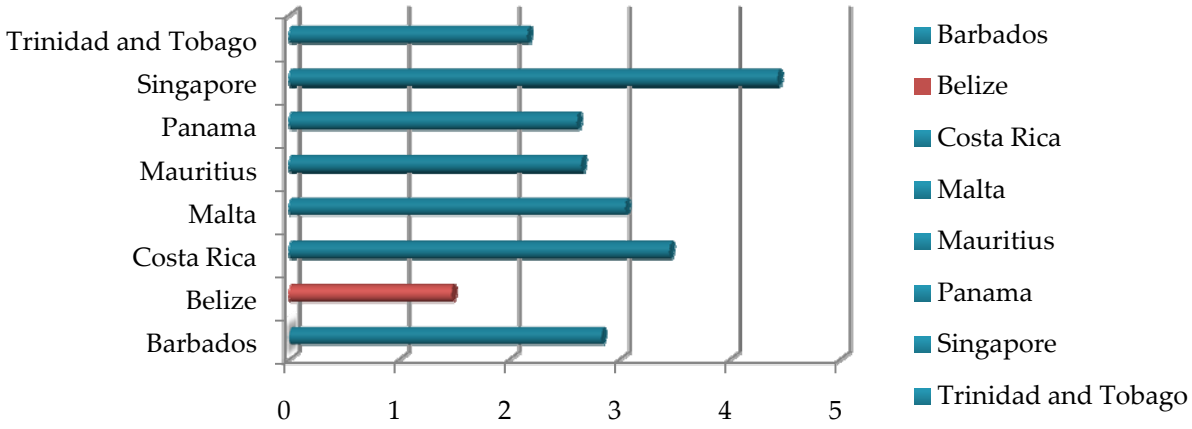
*** Data for Belize taken from 2007 eReadines

CAPACITY FOR INNOVATION

Innovation is a key ingredient in an economy's ability to increase the standard of living for residents. Innovation can result in the introduction of new or better goods and services and is manifest in adopting new technologies and processes that increase productivity or lower costs. Adopting a new technology makes production more efficient. Adopting new business models and organizational structures improve how firms meet consumer needs, process information or make decisions. As a result, innovation reduces costs and increases profitability

Belize has been rated significantly lower than the group in cluster development indicating that there is a need and an opportunity to focus on developing the capacity for innovation to boost its participation in the information society and ICT development.

Capacity for Innovation



Country	Capacity for Innovation (2009)	Rank
Barbados	2.83	77
Belize	1.47	n/a
Costa Rica	3.45	41
Malta	3.05	61
Mauritius	2.65	94
Panama	2.61	100
Singapore	4.43	18
Trinidad and Tobago	2.16	131

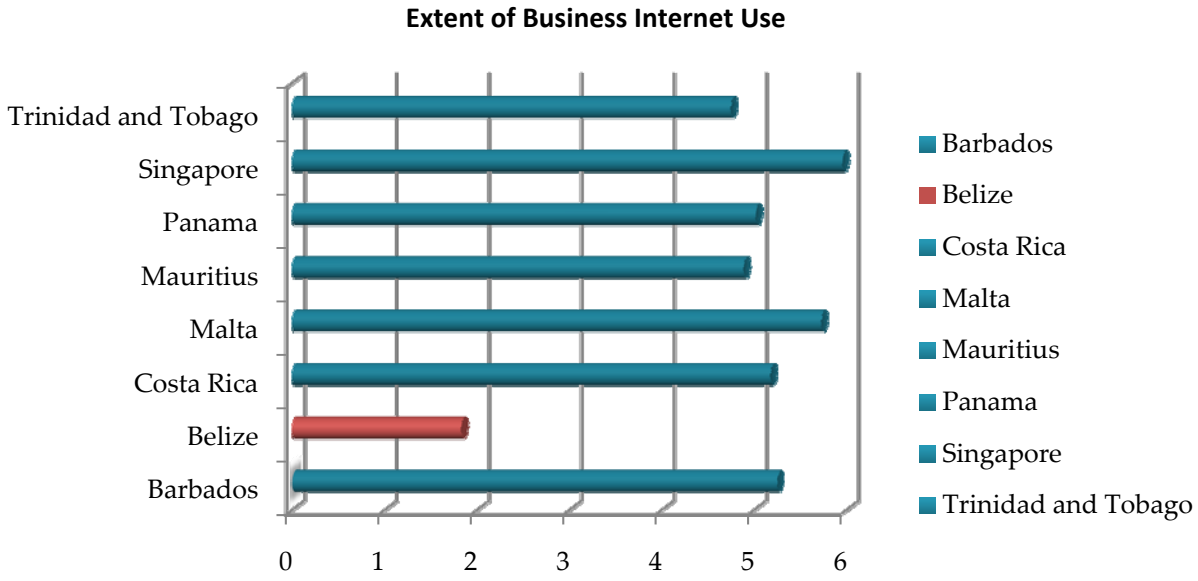
Source: Global Information Technology Report 2010-2011, WEF 138 countries ranked; Executive Opinion Survey 2009,2010

*** Data for Belize taken from 2007 eReadiness Assessment

Extent of Business Internet Use

The advent of the Internet has transformed business relationships and processes and provides unlimited opportunities for businesses worldwide. Studies show that countries, advanced in ICT development, have higher levels of B2B and B2C transactions online. A major factor in the uptake of e- Commerce is the availability of broadband.

Belize has been rated significantly lower than the group in cluster development indicating that there is a need and an opportunity to focus on raising the extent of business Internet usage to access the global opportunities provided by participation in the information society.



Country	Extent of Business Internet Use (2009)	Rank
Barbados	5.25	44
Belize* **	1.83	n/a
Costa Rica	5.18	48
Malta	5.73	26
Mauritius	4.89	68
Panama	5.02	57
Singapore	5.96	18
Trinidad and Tobago	4.75	73

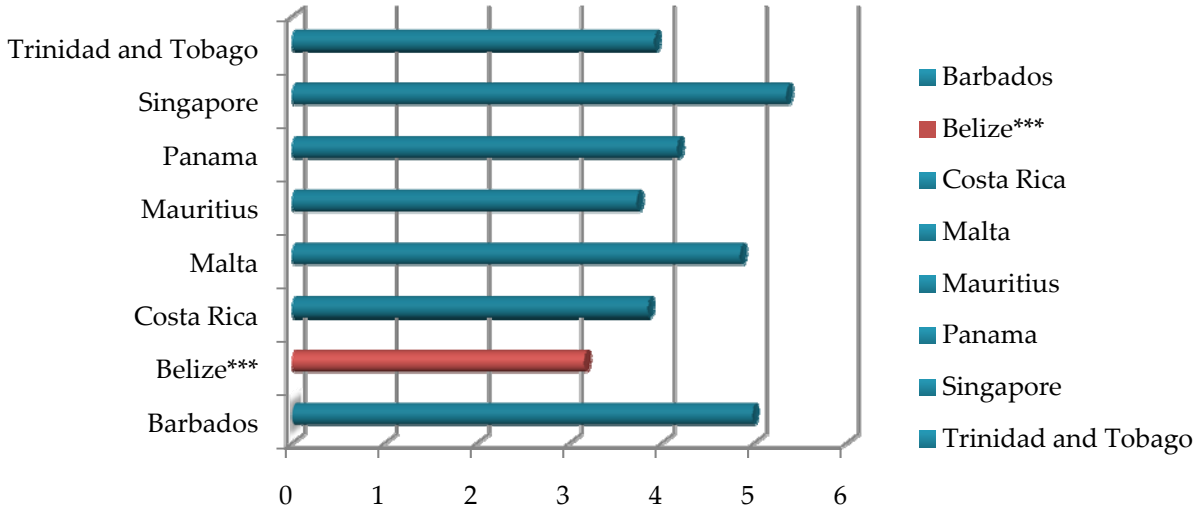
Source: Global Information Technology Report 2010-2011, WEF 138 countries ranked;
Executive Opinion Survey 2009,2010
*** Data for Belize taken from 2007 eReadiness Assessment

TECHNOLOGICAL READINESS

In today's globalized world, technology has increasingly become an important element for firms to compete and prosper. Technological readiness measures the agility with which an economy adopts existing technologies to enhance the productivity of its industries, with specific emphasis on its capacity to fully leverage information and communication technologies (ICT) in daily activities and production processes for increased efficiency and competitiveness.

Belize's performance in technology readiness although last in the group is not drastically different form other countries in the group including Costa Rica and Mauritius indicating that there is a fair level of technological readiness in industry however there is certainly room for improvement.

Table Technological Readiness



Country	Technological Readiness (2009)	Rank
Barbados	4.98	22
Belize* **	3.16	n/a
Costa Rica	3.85	57
Malta	4.85	29
Mauritius	3.73	61
Panama	4.17	41
Singapore	5.35	11
Trinidad and Tobago	3.92	53

Source: Global Competitiveness Report 2010-2011, WEF 133 countries ranked; Executive Opinion Survey 2008,2009; Criteria: Efficiency Enhancers – Technological readiness pillar

*** Data for Belize taken from 2007 eReadiness Assessment

SECTION III: SUMMARY

It is a widely held view that for many developing countries around the world, ICTs can open up new ways for individuals, firms and governments to achieve their goals. Indeed, for countries seeking long-term sustainable development, there is little argument that through the empowerment of users, ICTs can give rise to long-term social transformational change. For countries that have managed to succeed in this effort, innovations associated with technological development have played an important role.

This Benchmarking study allows Belize to analyze uptake and use of technology in the global and regional context. Therefore, this study is intended to identify not only "good performers" in isolation but to provide a framework against which success and failure of different strategic and policy approaches can be understood.

In the face of a global economic downturn, Belize, despite its high level of unemployment and low-income levels is a developing nation that has performed above the regional average for the Latin America and Caribbean region. However, to ensure that there are improvements in this performance the current benchmarking results must be understood.

Overall, Belize needs to improve in all areas surveyed. Belize needs to focus policy attention particularly on the infrastructural environment and individuals and his/her readiness for ICTs. Although mobile cellular ownership has increased over the years and PC ownership is average as compared to other benchmarked countries, Internet usage and broadband usage is significantly low. This may be attributed to the high price for high-speed access to Internet. Belize has the highest cost for broadband for all benchmarked countries. This may be a deterrent for increasing home ownership and usage by individuals. To address this, some focus should therefore be placed on the legal and regulatory environment, so as to encourage more competition in the market and so reduce prices to levels that can be afforded by the average Belizean citizenry. Policy decisions that address universal access provisions by players in the market can assist in this regard.

Strategic policy decisions are also needed to address the low levels of human resource skills and capacity for ICT in Belize. This can also be said for the Caribbean region in particular. An eLAC 2010 report cites that whilst there are computing facilities in secondary schools, the levels of access have been found to be inadequate across the region. It is therefore important for Belize to adopt a variety of ICT based initiatives at both the primary and secondary levels so as to improve the technological readiness of citizens and to produce a skilled workforce for the economy.

This technological readiness will also need to be significantly improved in the business and government sector. There is a lot of room for improvement in capacity for innovation and extent of Internet usage by businesses and this means greater focus and attention in respect of the technological sophistication of businesses. Significant upgrading of infrastructure will therefore provide the environment so that there are increases in uptake, and so propel Belize along a growth path. Indeed, such efforts can support the key sectors of the economy, agriculture, tourism and construction.

One implication for all of the above, is for Belize to embark upon a plan for regular and consistent collection of data so that both quantitative and qualitative analysis can be done to support policy development and implementation. It is hoped that Belize develops a benchmarking culture in this regard with a consistent methodology so that over time, the country can learn from past experiences. The importance of regular, updated and consistent data cannot be underscored and can act as a rallying point and a call to action for the entire country as greater visibility and recognition is given to successes of ICT plans and initiatives.