

ICTs in the Eastern Caribbean: Saint Lucia Case Study



International Telecommunication Union

ICTs IN THE EASTERN CARIBBEAN: SAINT LUCIA CASE STUDY

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Views expressed in this report are those of the authors and may not reflect the opinions of the Government of St. Lucia or the International Telecommunication Union.

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Preface

This study looks at the diffusion of information and communication technologies (ICTs) in Saint (St.) Lucia. It touches on issues such as isolation and undersized markets that St. Lucia and other small island developing states (SIDS) face in adopting ICTs.¹ The study also examines how St. Lucia is evolving into an information society, particularly relevant in the context of the World Summit on the Information Society (WSIS), the first phase of which was held in Geneva, Switzerland in December 2003.²

The organization of this report is based on a framework developed by the Mosaic Group³ for characterizing the state of the Internet in an economy. The scope has been widened to incorporate telecommunication infrastructure such as the fixed-line and mobile telephone networks. Mosaic considers six factors as follows:

- **pervasiveness:** a measure based on users per capita and the degree to which non-technicians are using the Internet.
- **geographic dispersion:** a measure of the concentration of the Internet, from none or a single city to nationwide availability.
- **sector absorption:** a measure of the degree of utilization of the Internet in the education, commercial, health care and public sectors.
- **connectivity infrastructure:** a measure based on international and domestic backbone bandwidth, exchange points, and user access methods.
- **organizational infrastructure:** a measure based on the state of the Internet Service Provider industry and market conditions.
- **sophistication of use:** a measure characterizing usage from conventional to highly sophisticated and driving innovation.

The report also considers other factors not included in the above framework such as the evolution towards an information society, pricing, and government policies.

¹ The ITU notes, that "small island nations and communities face particular problems in bridging the digital divide." See Resolution 129 (Marrakesh, 2002) in ITU. 2003. *Final Acts of the Plenipotentiary Conference (Marrakesh, 2002)*. Small island developing states (SIDS) form an official grouping in the UN system. For a list of the 45 SIDS see <http://www.un.org/special-rep/ohrls/sid/list.htm>. [Accessed 9 June 2004].

² The second phase of the Summit will be held in Tunisia, in 2005. For more on WSIS see the web site at: <http://www.itu.int/wsis/index.html>. [Accessed 9 June 2004].

³ Since the Global Diffusion of the Internet (GDI) project's inception in 1997, the Mosaic Group has studied the Internet in nearly 30 countries. See <http://mosaic.unomaha.edu/gdi.html>. [Accessed 9 June 2004].

1. Background

*"To St Lucia's complex cultural mosaic, the British contributed their language, educational system, and legal and political structure. French culture is more evident in the arts—music, dance, and Creole patois, which stands alongside the official language of English.... African culture was becoming established through the arrival of slaves for European plantations and, later, indentured labourers"*¹

1.1 Geography²

St Lucia is located midway down the Eastern Caribbean chain, about

2'100 kilometres southeast of Florida, between Martinique and St Vincent, and north of Barbados. It is part of the West Indian archipelago, which stretches for more than 3'200 kilometres from Cuba southwards to the northern coast of South America (Figure 1.1). Next to Dominica, St Vincent and the Grenadines, and Grenada, St Lucia is one of the four Windward Islands. It is 43 kilometres long and 23 kilometres wide, covering an area of 616 square kilometres. Administratively it is divided into ten districts and its capital city is Castries (Figure 1.2).

Figure 1.1: Map of St Lucia



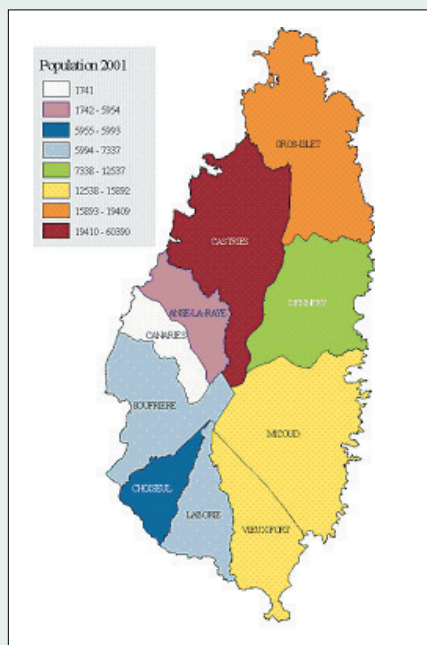
Source: <http://www.saint-lucia.com/caribbean-st-lucia-map.html>.

Like other Caribbean islands St Lucia was first inhabited by Arawak Indians from South America and then by Caribs. Europeans tried establishing a foothold from early in the 17th century but the Caribs hampered settlement until 1651, when the French arrived. Ownership disputes between the French and English dominated the island for some 150 years. After the island had changed hands 14 times, St Lucia became a British Crown colony in 1814.³ From the 1760s onwards, sugar plantations, built on African slave labour, dominated the economy. When slavery was abolished in 1843, many East Indians came to St Lucia as indentured servants. Although they never attempted to colonize the island, the Spaniards have been credited for giving it its modern day name, St Lucia, which was first used in the late sixteenth century and derived from St Alousie, the Virgin Martyr of Syracuse.⁴ St Lucia became independent in 1979.

1.2 Population⁵

According to the May 2001 Population and Housing Census, St Lucia had a population of 156'635, indicating a population growth rate of 1.24 over the previous year. The island has a relatively young population, with over 31 per cent under the age of 15 and only 7.6 per cent over the age of 65 (Table 1.1).

Figure 1.2: Population by district



Source: 2001 Census.

The 2001 Census reported 47'541 households, with an average size of 3.3 people. The capital, Castries, was home to 60'390 people, 39 per cent of the total population. The island wide population density is 281 people per square kilometre.

History has left St Lucia a cultural mosaic. Although the French left at the beginning of the nineteenth century, French culture remained influential and English only became the island's official language in 1842. Most St Lucians also speak French patois.

Today the majority, about 90 per cent, of the population is of African descent. Six per cent are of mixed origin, three per cent are East Indian, and one per cent are white. According to the 2001 Census the large majority,

Table 1.1: Population indicators

Item	
Total population	156'635
Growth over last year (%)	1.24
Population Density (per/km2)	281
Age distribution (%):	
0-14	31.2
15-64	61.2
65+	7.6

Note: All data refer to May 2001.
Source: 2001 Population and Housing Census.

Table 1.2: Ranking St Lucia's human development

Based on 2001 data

St Lucia Human Development Indicators			Ranking within groups					
			Caribbean		Middle income		Small Island States	
Rank	Indicator	Value	Rank	Country	Rank	Country	Rank	Country
71	Overall		27	Barbados	52	Cuba	49	Bahamas
63	Life expectancy	72.2	51	St Kitts & Nevis	71	St Lucia	62	Mauritius
66	Literacy	90.2	71	St Lucia	96	Turkey	71	St Lucia
40	School enrolment	82	78	Jamaica	103	Cape Verde	81	Fiji
88	GDP per capita	5'260	94	Dom. Rep.	118	Gabon	86	Maldives

Source: United Nations Development Programme (UNDP).

over 90 per cent of the population, are Christians.

1.3 Quality of Life

The United Nations Development Programme (UNDP) ranked St Lucia 71st out of 175 countries in its 2003 *Human Development Report*.⁶ The ranking is based on a composite of four indicators: life expectancy, literacy, school enrolment and GDP per capita. The position of St Lucia, which places the country in the top quarter of the Medium Human Development group, is 17 points above its GDP per capita rank, suggesting that it is doing well relative to its income. The country is doing particularly well in the school enrolment category, where — at 40th — it ranks substantially higher compared to its overall rank (Table 1.2).

1.4 Economy⁷

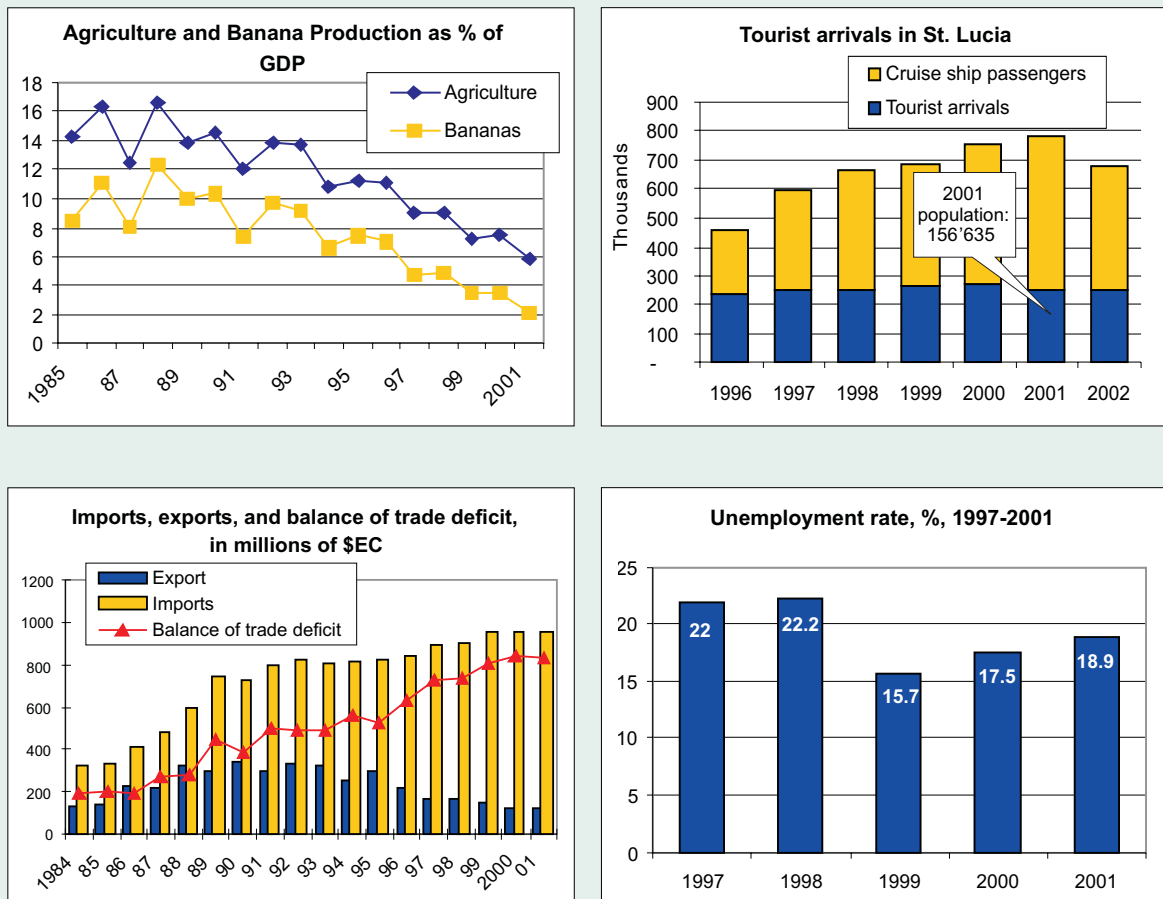
Since St Lucia stopped producing sugar cane in the 1960s, its economy has been heavily dependent on banana production. Due to preferential trade agreements, which gave St Lucia access to the EU banana market, the 1980s were characterized by economic growth, low inflation and a relatively strong balance of

payments position. Globalization and liberalization trends have since confronted St Lucia with new economic challenges. European preferential trade agreements have largely come to an end and competition from Latin America has increased.⁸ The agricultural sector is also vulnerable to natural disasters and in 2001 bad weather cut the banana crop output by about 50 per cent. Consequently, the agricultural sector, which used to be almost entirely dominated by banana production, has declined steadily, from a high 17 per cent of GDP in 1988 to less than six per cent in 2001 (Figure 1.3 top left).

Efforts to promote economic diversification through sectors such as offshore banking and particularly tourism, are starting to bear fruit. Tourism is now the largest contributor to GDP, reaching 13.3 per cent in 2000. The number of tourist arrivals has increased from some 450'000 in 1996 to 780'000 in 2001 (Figure 1.3 top right). While the number of tourists decreased slightly, following the global economic downturn as well as the repercussions of September 11 in 2001, the sector still represented 12.7 per cent of national output

Figure 1.3: St Lucia's challenges to the economy

St Lucia: Agriculture and banana production as percentage of GDP, 1985-2001 (top left), the number of tourist arrivals, 1996-2002 (top right); Import, exports, and balance of trade, 1984-2001 (bottom left), and St Lucia's unemployment rate, 1997-2001



Note: Top right chart: The term "tourist" refers to any person normally resident abroad who enters the island and remains for not less than twenty-four hours. Generally a cruise ship passenger spends less than twenty-four hours on shore and returns to the ship for sleeping purposes.
Source: ITU adapted from St Lucian Statistics Department.

in 2001.⁹ St Lucia is the number one tourist destination within the eight Eastern Caribbean Currency Union members.¹⁰

St Lucia has always been highly dependent on imports, which have steadily risen over the last two decades. The reduction of banana exports have impacted the balance of trade (Figure 1.3, bottom left).

Like other countries in the Caribbean, St Lucia suffers from high unemployment. Between 1997 and 2001, the percentage of the population without a job has varied between a high 15 and 22 per cent (Figure 1.3 bottom right).

In 2002 Gross National Income per capita stood at US\$ 3'840, some 20 per cent higher than the Latin

America and Caribbean average. The World Bank classifies St Lucia as an Upper Middle Income economy.¹¹

As a member of the Eastern Caribbean Currency Union (ECCU) St Lucia's monetary policy is regulated by the Eastern Caribbean Central Bank (ECCB), which oversees the common currency for all members of the ECCU.¹²

1.5 Government

St Lucia has a parliamentary democracy based on the British model

with Queen Elizabeth II, represented by a Governor General, as the head of state. St Lucia became independent from Britain in 1979 and is a member of the Commonwealth. Prime Minister Kenny Anthony, leader of the St Lucia Labour Party (SLP), won elections in 1997 and in 2001. This was the first time since independence that the SLP replaced the United Workers Party (UWP). St Lucia is a member of the Caribbean Community and Common Market (CARICOM) and the Organization of Eastern Caribbean States (OECS).¹³

- ¹ Quoted from the St Lucia Tourist Board, at: <http://www.st-lucia.com/lccul01.htm>. [Accessed 9 June 2004].
- ² Much of this section is adapted from the official St Lucia Tourist Guide. Volume 14. 2004.
- ³ A more recent school of thought believes that the island changed hands many more than 14 times.
- ⁴ From: http://www.stlucia.gov.lc/saint_lucia/the_name_saint_lucia.htm. [Accessed 9 June 2004].
- ⁵ Much of this section is adapted from the 2001 Population and Housing Census, as well as from the St Lucia Tourist Board's website, at: <http://www.st-lucia.com/>. [Accessed 9 June 2004].
- ⁶ UNDP. *Human Development Report 2003*. <http://hdr.undp.org/reports/global/2003/>. [Accessed 9 June 2004].
- ⁷ Much of this section was adapted from the St Lucian Statistics Department, at: <http://www.stats.gov.lc/>. [Accessed 9 June 2004]. Other sources include the BBC Country Profile on St. Lucia, at: http://news.bbc.co.uk/1/hi/world/americas/country_profiles/1210491.stm [Accessed 9 June 2004] and the International Monetary Fund's World Economic Outlook 2001, at: <http://www.imf.org/External/Pubs/FT/weo/2001/03/pdf/chapter3.pdf>. [Accessed 9 June 2004].
- ⁸ Following the decision of the World Trade Organisation (WTO) that the EU's trade agreements breach international free-trade rules, the European Union is phasing out preferred access to its markets by Windward Island bananas by 2006. For a detailed discussion on the banana war and the consequences for the Caribbean states, see: http://www.oxfam.org.uk/what_we_do/issues/trade/wto_bananas.htm. [Accessed 9 June 2004].
- ⁹ 2002/2003 Prime Minister's budget address, at: http://www.stlucia.gov.lc/primeminister/budgetaddresses/2002_-_2003_budget_address.htm. [Accessed 9 June 2004].
- ¹⁰ International Monetary Fund, Public Information Notice, (PIN). No. 03/61. *IMF concludes 2002 Article IV Consultation with St Lucia*. May 9, 2003. The eight member territories of the ECCU are: Anguilla, Antigua and Barbuda, Commonwealth of Dominica, Grenada, Montserrat, St Kitts and Nevis, St Lucia, as well as St. Vincent and the Grenadines.
- ¹¹ For an overview of all World Bank classifications, see: <http://www.worldbank.org/data/countryclass/classgroups.htm>. [Accessed 9 June 2004]. For a discussion and comparative study on economic developments in the region, see: World Bank, *Caribbean Economic Overview 2002*, at: http://wbln0018.worldbank.org/LAC/lacinfoclient.nsf/Date/By+Author_Country/F9F791C1416D4A3985256BCF004CB5E6?OpenDocument. [Accessed 9 June 2004].
- ¹² The eight members of the ECCU are: Anguilla, Antigua and Barbuda, Commonwealth of Dominica, Grenada, Montserrat, St Kitts and Nevis, St Lucia, as well as St Vincent and the Grenadines. See: <http://www.eccb-centralbank.org/About/members.asp>. [Accessed 9 June 2004].
- ¹³ CARICOM stands for Caribbean Community and includes 15 member states and 5 associate members. For a list, see: <http://www.caricom.org/members.htm>. [Accessed 9 June 2004]. See Annex 2 (Acronyms) for an overview of the OECS members.

2. Pervasiveness

" Each St Lucian must have affordable access to all the modern telecommunication services available today. Every family that needs a telephone to be able to call a relative in another community or overseas should be able to do so with little difficulty and at an affordable rate...The most fascinating development in information technology has been the popularization of the information superhighway yet it remains an absolute luxury in St Lucia because of the high cost of access. There is no reason why every family in St Lucia that has a computer cannot be offered Internet services at very affordable rates."¹

2.1 Telephony

St Lucia made large progress during the 1990s in home fixed telephone line penetration. The rate more than doubled from 28.7 per cent of households in 1991 to 60.2 in 2001 (Figure 2.1, left).² The level of fixed telephones in St Lucian homes is almost the same as the average for Upper Middle Economies.

However growth in fixed telephone household penetration has been flat for the last few years. One reason is that demand has been met in terms of those that can afford fixed service; there is no waiting list and fixed service is theoretically available on demand. Therefore some households without a fixed telephone line are unable to pay for service. The fixed telephone line monthly rental is EC\$ 22 (US\$ 8.24) while the cost of a peak time national call is EC\$ 0.08 (US\$ 0.03) per minute (the night rate is 0.07 and the weekend rate is 0.05). The monthly rental alone amounts to 2.5 per cent of per capita income. Given that the per capita income is an average figure, there would be many individuals that earn considerably less than that. In addition the level of unemployment was put at 18.9 per cent in 2001 and the number of poor households has been estimated at 18.7 per cent. Therefore it seems likely that at least twenty per cent of the population cannot afford fixed telephone service.

Another reason that household fixed telephone penetration has not grown the last few years is mobile. Though the number of households with a mobile telephone only stood at 13.7 per cent in 2001, this has changed dramatically. In late 2002, the incumbent operator began heavily promoting mobile service in anticipation of competition. Two additional mobile operators launched in 2003 and there were 132'700 subscribers by September 2003. This would include inactive subscribers and customers with multiple subscriptions. Nevertheless, the corresponding household rate has exploded. By December 2003, 60 per cent of St Lucian homes had a mobile telephone, the same rate as for fixed (Figure 2.1, right). One reason is that there are relatively low barriers to entry with subsidized

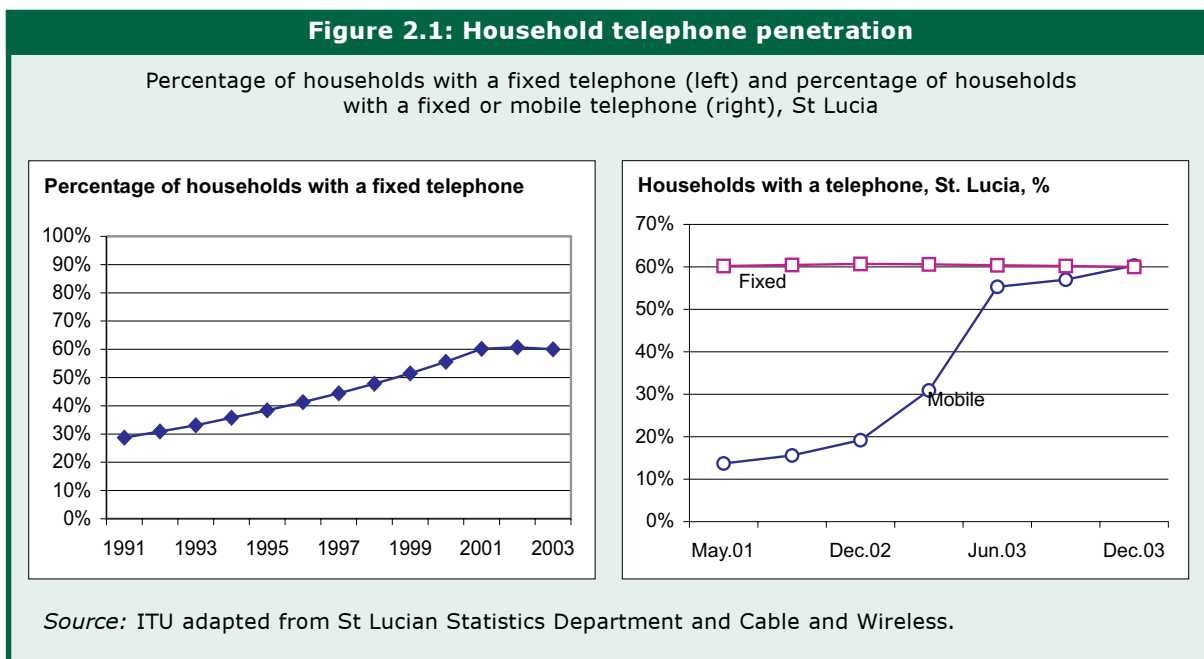
Table 2.1: One month of phoning

Price of telephone service with 20 minutes of telephone calls, EC\$

Description	Mobile	Fixed line
Monthly subscription	0	22.00
Usage charge		
—Per minute	0.75	0.08
—Per 20 minutes	15.00	1.60
Total	15.00	23.60

Note: The example is based on the least expensive mobile prepaid card (EC\$15) with a one-month validity. At the price of mobile-mobile calls, this would include 20 minutes of calls. The example shows what the equivalent would cost for a month's fixed line service. Calls for fixed-line are national fixed-fixed at peak time.

Source: ITU adapted from C&W, Digicel.



handsets and a prepaid card available for EC\$ 15 (US\$ 5.62) (with one month validity). Thus considering the minimum outlay for monthly telephone access, prepaid mobile is a cheaper proposition without the commitment that having a fixed line requires (e.g., regular monthly payments whether phone is used or not, credit qualification, connection charge) (Table 2.1). Given the rapid increase in mobile telephony, it is certain that future increases in universal telephone service will come from mobile phones.

St Lucia has a high level of universal access. Mobile competition has led to over 90 per cent of population being covered by cellular signal. Furthermore, the small size of the island—about one hour from north to south by automobile—suggests that no one is that far from a telephone (whether a relative’s, a friend’s or a public phone).

2.2 Computers and Internet

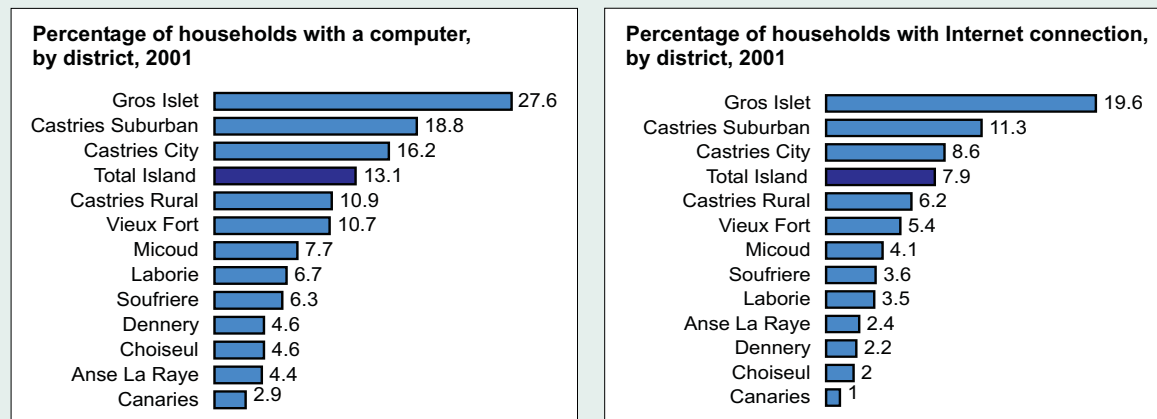
The 2001 Census queried households about the availability of personal computers with 13.1 per cent reporting having a PC. Households were also asked about the availability

of Internet access and 7.9 per cent reported having an Internet connection (some 60 per cent of those with a PC). There is a significant geographical digital divide in St Lucia. While 28 per cent of households in the district of Gros Islet reported having a computer in 2001, the corresponding figure for Canaries was just three (Figure 2.2, left). The same gap extends to Internet access where district household access ranges from 20 to one per cent (Figure 2.2, right). Affordability would explain part of the divide with the best-connected districts also the most affluent. Another barrier could be electricity; 14 per cent of households reported not having electricity in 2001.

There is no official survey on the number of individual Internet users in St Lucia. There were 6’032 subscribers in 2002 and based on that, the Internet Service Provider (ISP) estimates some 16’000 users or ten per cent of the population. This is relatively low compared to other countries of similar income level (Figure 2.3, right). However unless a survey is carried out, estimating the level of individual Internet access is essentially guesswork. In the absence of a survey,

Figure 2.2: The St Lucian Digital Divide

Percentage of households with a computer and with Internet connection, by district, 2001



Source: ITU adapted from St Lucia Central Statistical Office.

a more reliable comparison would be the level of household Internet connections. Here also, the level in St Lucia is relatively low compared to peer countries (Figure 2.3, left).

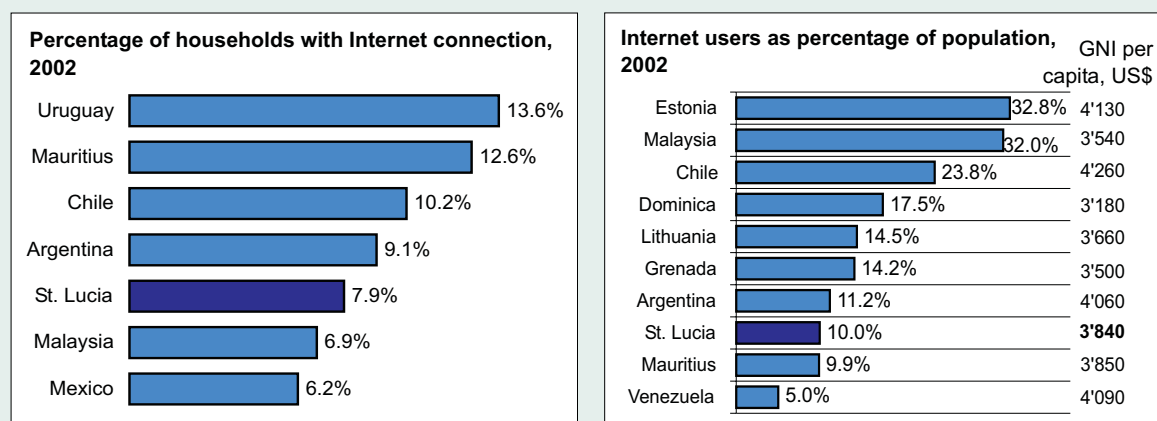
There are a number of public outlets for Internet access. This includes some 20 Internet cafés as well as two post offices in the capital, Castries. The incumbent telecommunication

operator, Cable & Wireless, has also connected the two main libraries and some one and half dozen smaller ones to the Internet. Thus it would appear that there are a reasonable number of outlets for accessing the Internet and more significant barriers would be awareness and affordability.

In terms of consumer Internet pricing, Cable & Wireless (C&W) has five

Figure 2.3: Internet comparisons

Households with Internet access, selected countries, 2001 (left) and Internet users per 100 inhabitants, 2002 (right)



Source: ITU World Telecommunication Indicators Database.

packages for dial-up. In addition, there is a pay-as-you-go tariff and four broadband ADSL packages. Four of the dial-up packages are based on hours of use while one is for unlimited access. Telephone usage charges are not charged separately except that for the unlimited access package there is a charge of EC\$ 0.75 per session. The cheapest dial-up package, for ten hours of use is EC\$ 35 (US\$ 13.11) (each hour beyond that is charged at EC\$ 4 (US\$ 1.50)). A ten-hour monthly dial-up Internet package is equivalent to 4.1 per cent of per capita income and 6.7 per cent if the monthly telephone line rental is included. Considering that the per capita income is an average figure, dial-up Internet access would be expensive for some portion of households. Broadband ADSL access would also be expensive for a significant number of households. The cheapest entry-level subscription is EC\$ 179 (US\$ 67) or 21 per cent of per capita income.

Dial-up Internet prices in St Lucia are comparable to other OECS countries. Therefore dial-up Internet access is relatively more expensive in St Lucia than those OECS countries that have a higher per capita income (Antigua

and Barbuda and St Kitts and Nevis). When compared to countries of similar income level, St Lucia's dial-up Internet prices are in the mid-range; that is not as expensive as some but more expensive than others (the cheapest peer country is Malaysia where 20 hours of dial-up access is US\$ 8.42 compared to US\$ 22.22 in St Lucia).

2.3 Mass media

According to the 2001 Census, 93 per cent of households had a radio and 79 per cent had a television. Though the increase over the last decade was not as dramatic as that for fixed telephones, household penetration for both grew about ten per cent. This suggests that in another decade all households in St Lucia would have both radio and television. In addition to terrestrial-based television, there is also pay television via cable television service offered by Cable & Wireless. In 2001, over half of all TV homes subscribed to cable television (56 per cent). As Cable & Wireless states that over 90 per cent of homes are passed by cable television, affordability would seem to be a barrier to higher penetration of cable.

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- ¹ The St Lucia Labour Party as quoted in *Caribbean Policy Response to the Information Age: A Review of Government Information and Communication Technology Policy and Services in Selected Caribbean Countries*. 30 November 2001. Available at: <http://unpan1.un.org/intradoc/groups/public/documents/CARICAD/UNPAN008500.pdf>. [Accessed 9 June 2004].
- ² The Central Statistical Office asked households about the availability of a radio, television and fixed telephone line in the 1991 and 2001 census. In the 2001 Census, households were also asked if they had a mobile phone, PC, Internet access and cable television. The results are used throughout this section. See *2001 Population and Housing Census: Preliminary Report*. Available at: <http://www.stats.gov.lc/cenpub.pdf>. [Accessed 9 June 2004].

3. Absorption

"Most established enterprises have high computerisation and are using Internet and websites."¹

"In fact, a Labour Party, as a matter of policy, will ensure that each secondary school is provided with access to the information superhighway."²

3.1 Business

There are no official statistics regarding availability and use of ICT across the business sector. There is also no official report about the size and structure of business establishments. According to the 2001 Census, there are 7'465 "business places" in St Lucia. Data on tax filings from 1995 report 4'752 traders/professionals and 1'263 companies as registered taxpayers.

The general perception is that most companies have computers and Internet access. A perusal of the membership contact details of the Chamber of Commerce shows that almost all have email addresses. Some industries such as banking would undoubtedly have high use of ICT. For example most of the banks operating in St Lucia have web sites. In the tourism sector there are many web sites but most are hosted abroad—partly due to the lack of support for electronic payments over the Internet in St Lucia.

3.2 Education

In collaboration with C&W, the Ministry of Education, Human Resource Development, Youth and Sports (hereafter referred to as Ministry of Education, MoE, at <http://www.education.gov.lc>) has developed a private Wide Area Network (WAN) known as EDUNET for connectivity of the pre-tertiary

educational system. EDUNET connects 18 secondary schools via fibre optic 128 kbps frame relay or ISDN while 73 (out of 82) primary schools have dial-up access. The nine primary schools that are not connected lack the prerequisite infrastructure (either the telephone line or electricity). One school has a cellular phone booth because it does not have a fixed line. Eventually all primary schools will be connected.

The Ministry has an E1 connection via C&W to the Internet. Primary and secondary schools access a server at the ministry to get Internet access. C&W provided all of the networking equipment (routers, hubs) for free, donated 25 computers, a consultant for one year, and also provides discounts for connectivity charges.

About 80 per cent of Ministry staff already have PCs and Internet connections. Teachers and other education personnel can also purchase PCs at reduced prices with six months of free Internet access.³ There is a plan to connect the administrative offices of secondary schools to support videoconferencing.

Every secondary school has a computer lab with around 20 personal computers. The ratio of computers to students in secondary schools has improved from 1:93 in 1999/2000 to 1:35 in 2002/2003. In urban areas, many students also have access to computers at home. Two secondary schools have web sites. The new Ciceron secondary school has been built as a flagship ICT school.⁴

3.2.1 Post-secondary

Sir Arthur Lewis Community College (SALCC) (<http://www.salcc.edu.lc>) provides tertiary education on the island. Named after the St Lucian

Nobel Prize winner for Economics in 1979, the college offers two-year Associate Degrees as well as a continuing education program for adults. It was created in 1985 by integrating three existing higher education institutions.

SALCC has three computer labs for general use as well as two labs for specialist areas such as Computer Aided Design. The total number of PCs available in the labs is around 150 for an enrolment of 1'395 for the 2001/02 academic year (not including 1'291 in the continuing education programme), a student to PC ratio of about 9/1. All students have their own email address and can use the labs. Many SALCC students also have access to the Internet away from the college. A system is being planned that would allow students to log in and check their grades and timetable over the Internet.

The Information Technology Services, with a staff of five, is in charge of ICT at the college. SALCC has a 256 kbps fibre connection to the Internet from C&W but is negotiating for two 1.5 Mbps ADSL lines since Internet access is slow. SALCC currently pays EC\$ 5'000 a month for its Internet connection whereas the ADSL lines would cost about EC\$ 2'000. There is a fibre optic based Local Area Network but Wi-Fi is not available.

3.3 Government

Government ICT connectivity varies. Some ministries are well endowed with ICT while others are lagging behind. The lack of coordinated policy to date has meant that initiatives are user driven and the best connected ministries are those most keen about ICT. For example, the Ministries of Finance, Education and Agriculture are online and pro-

IT ministries while the Ministries of Health and Communications do not have web sites or dedicated IT staff. Nonetheless all ministries are interconnected to exchange financial information and this is the most successful application and example of ICT use in government (Box 3.1).

All ministries have computers and access to the Internet, either through the Ministry of Finance or through their own dial-up or ADSL connection. There are around 400 government employees using the network provided by the Ministry of Finance. A number of government offices are located along the waterfront the capital, Castries. Most of these are interconnected through the Cable & Wireless fibre ring from which the government rents capacity. Other offices are linked by a 64 kbps leased line connection for which the government pays EC\$ 1'000 per month. Agencies with their own Internet connection add to overall costs since it would be cheaper if they all used the government network. On the other hand, some ministries argue that it is cheaper and the quality is better if they procure their own Internet connection. Another situation adding to higher costs is that most government websites are hosted in the US, increasing the use of bandwidth. In an effort to reduce costs, the government is looking at using wireless technology (a microwave network in the 2.5 GHz spectrum) to interconnect agencies and has obtained approval from NTRC.

FINMAN, the Financial Management Reform of the Public Service, would like to introduce a document management system next year where faxes and other paper documents are scanned and emailed instead of sending the paper version. This requires everyone to have a standard email account and to be using it.

Box 3.1: FINMAN

The financial systems of all government agencies are computerized and interconnected as a result of the Financial Management Reform of the Public Service project, known as FINMAN. The objective of FINMAN is to enhance financial management and planning. Standard accounting systems have been introduced across government agencies and are updated using electronic forms. Built-in controls prevent agencies from exceeding their budgets.

FINMAN dates back to 1995 when the government introduced the financial management project as part of the Eastern Caribbean Economic Management Programme (ECEMP) with funding from the Canadian International Development Agency (CIDA).⁵ Building on financial systems developed for the Inland Revenue Department and Customs and Excise Department, the project got a big boost when the government introduced a new budget system in 1997. This obligated all government offices responsible for finance to get connected to FINMAN.

There were a number of problems that had to be overcome including some agencies' resistance to changing their processes and learning a new system. There were also bugs in the software and at times, inadequate support. The latter was often related to losing skilled staff to higher paying jobs

in the private sector. However these teething problems have been worked out and St Lucia is today recognized as leading the way in public sector financial computerization in the Caribbean region. The system has resulted in efficiency, reducing the time to analyze and produce budgets as well as to make payroll and other payments to creditors. Because all government agencies were required to use the FINMAN system, it accelerated computerization and networking, at least for financial applications. In addition, the system minimized exposure to the Year 2000 problem for government financial systems.

The FINMAN Information Technology Unit, part of the Ministry of Finance, has unofficially become an IT department for the government. FINMAN also provides email services for ministries that need this service. Another service FINMAN provides is consultancy, helping departments and ministries to get connected, computerize and adapt ICT. It has some dozen staff (including a system analyst, a technician, a system administrator, an IT manager and a financial system specialist) and also runs a helpdesk. In an effort to retain skilled people, the FINMAN staff are not civil servants but contractors. Therefore their salaries are not limited to government scale.

3.4 Health

According to the Ministry of Health, the health sector has not responded adequately to the possibilities offered by new technologies. Only a very small percentage of ministry employees—mainly senior officials—has access to the Internet and email and most correspondence is still by fax. Only the Ministry's Account Department is on the government network and the ministry does not have a web site. There is a commitment towards creating an IT unit but for the moment it is the least connected ministry.

A Health Management Information System (HMIS) is planned as part of a Caribbean Development Bank (CBD) US\$ six million Economic Reconstruction Programme "Rehabilitation of Primary Schools and Health Centres."⁶ The ICT component is US\$ 800'000.

There are six hospitals, 36 health centres and one polyclinic (a facility

between a hospital and a health centre with emergency services but no beds). No health centre has Internet access or PCs though all have telephones. Their monthly reports are sent manually. The planned HMIS would connect all health centres and health related agencies and would automatically feed locally collected health information into Ministry databases. This would enhance analysis through more timely and improved data. With better data, life style changes could be tracked and diseases related to these changes treated early on.

Although there are no telemedicine projects, it could be beneficial since cases that cannot be treated locally must be sent abroad at considerable expense.

Health records are currently not computerized. There are plans for a pilot project with doctors transmitting records electronically so that patients do not have to carry them around.

Box 3.2: Radio and health

Between 1995 and 1998 an entertainment-education radio soap opera, called Apwe Plezi, was broadcast in St Lucia to promote family planning, and increase HIV awareness. Based on the idea of combining education and information with entertainment, the soap opera was able to discuss topics otherwise taboo. The experiment was based on a social cognitive theory according to which people adapt the thinking or behaviour of role models – such as the actors in the soap opera. The fact that others are able to do or think certain things, helps observers believe that they can, too.

Apwe Plezi was designed to address a total of 37 didactic issues, including gender equality, HIV prevention, and domestic violence. This was done through the experiences of a number of characters in which those with “good” behaviour are rewarded and those with “bad” behaviour are punished. Leona, for example, *“is a well-educated woman of 23 who wants to delay childbearing until she is financially secure. Leona suspects that her*

boyfriend, Marcus, has other sexual partners, and she decides to break up with him because of her fear of contracting HIV from him. Leona eventually takes a job and marries Marcus, after he reforms.”

A total of 400 15-minute episodes were broadcast between 1996 and 2000. Out of 1’200 surveyed persons, some 35 per cent had listened to the soap opera, and twelve per cent had listened at least once per week. The evaluation of the project, based on qualitative and quantitative surveys and data analysis, highlighted a number of effects. The soap opera had indeed changed the way listeners thought about family planning. For example only 14 per cent of respondents thought it acceptable for husbands to have extramarital partners, compared to 27 per cent before the soap opera. The program also increased the number of people who trust family planning workers, and reduced the number of children that listeners ideally wanted to have. Also, condom imports rose 143 per cent after the program was aired.⁷

The European Union (EU) has made health the focus of its latest country programme for St Lucia. Two ICT-related EU-funded projects are envisioned. One is a hospital information system for Victoria Hospital, the country’s primary health care facility. The second is a computerized national child registry.

Radio can be an important vehicle to improve awareness about the prevention of deadly diseases, particularly in St Lucia where radio is the most popular ICT installed in 93 per cent of households. The Bureau of Health Information in the Ministry of Health uses radio advertisements to spread health messages (Box 3.2).

- ¹ <http://unpan1.un.org/intradoc/groups/public/documents/CARICAD/UNPAN008510.pdf>. [Accessed 9 June 2004].
- ² <http://unpan1.un.org/intradoc/groups/public/documents/CARICAD/UNPAN008500.pdf>. [Accessed 9 June 2004].
- ³ http://www.education.gov.lc/digital_divide_initiative.htm. [Accessed 9 June 2004].
- ⁴ http://www.stlucia.gov.lc/pr2003/more_school_places_as_ciceron_secondary_opens.htm. [Accessed 9 June 2004].
- ⁵ http://www.acdi-cida.gc.ca/cida_ind.nsf/0/bd8e8d95e3d8117b85256a08005b8003?OpenDocument. [Accessed 9 June 2004].
- ⁶ <http://www.caribank.org/Projects.nsf/ApprovedProjects?OpenPage&ExpandSection=33>. [Accessed 9 June 2004].
- ⁷ P. Vaughan, A. Regis, E. St Catherine. (2000, December). "Effects of an Entertainment-Education Radio Soap Opera on Family Planning And HIV Prevention in St Lucia." *International Family Planning Perspectives*. Available from: <http://www.agi-usa.org/pubs/journals/2614800.html>. [Accessed 9 June 2004].

4. Connectivity

*"The fact that power companies worldwide already have access to millions of homes has not been lost on managers in the industry. Services to customers will be a keenly contested area, be it for power or communications in a world where information and access will be critical."*¹

4.1 International connectivity

St Lucia connected to the Internet in August 1995 via a connection to Antigua.² Cable & Wireless initiated this as interest from the academic sector and general public was limited at that

time. Today St Lucia has half a Digital Signal 3 (DS3) connection (44.736/2 = 22 Mbps) to Barbados and half a DS3 to Antigua via the Eastern Caribbean Fibre System (ECFS). The undersea ECFS was launched in 1995 and connects all of the eastern Caribbean; owners are France Telecom, Cable & Wireless and AT&T. ECFS in turn connects to other fibre cable systems destined to the United States. Satellite is not used and is maintained only as a backup in case there is a cable break.

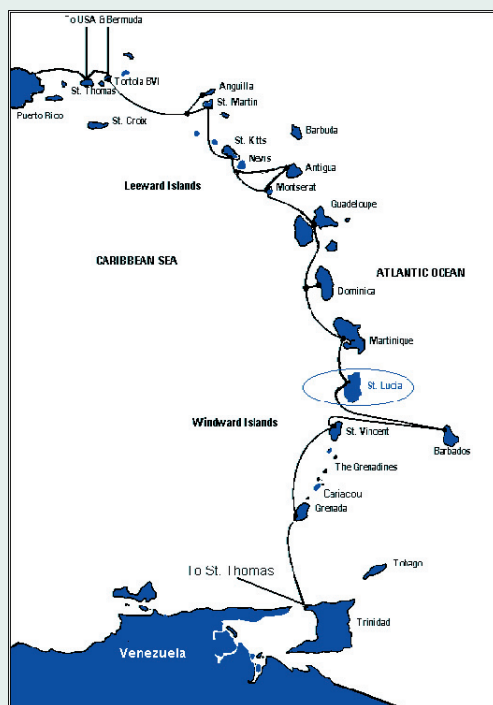
Although total international Internet bandwidth is 22 Mbps, traffic is distributed over the two halves so more than this amount is available. Only about half the bandwidth is utilized. One measure used to determine if there is ample international Internet capacity is the Bit Minute Index (BMI). The index measures "underlying demand within any country to communicate with the outside world."³ BMI is calculated by dividing total bits of international bandwidth by the total volume of international incoming and outgoing telephone traffic (in minutes). A value less than one suggests that there is insufficient bandwidth. St Lucia's BMI is 0.4 (22'000'000 / 60'833'000).

The new mobile operators are allowed to have their own international connectivity for voice calls as part of their licenses. Digicel uses VSAT while Wireless Ventures leases capacity over ECFS from Cable & Wireless.

4.2 National connectivity

There is an island-wide fibre optic network using frame-relay that connects some government offices, businesses and secondary schools. Digicel and AT&T also have microwave backbone networks for interconnecting their mobile base stations. In addition, the national electricity company, LUCELEC, has fibre running along its transmission network.

Figure 4.1: Eastern Caribbean Fibre-Optic System



Source: Cable and Wireless.

4.3 User access methods

Eighty per cent of Internet subscriptions are dial-up. Additionally, there were 41 leased line, 179 ISDN and 979 ADSL subscriptions at March 2003. ISDN has never been

strongly marketed and it is likely that with the advent of other broadband technologies it will be phased out. ADSL was launched in late 2001. Cable & Wireless offers four different ADSL packages ranging in speed from 128 kbps to 1.5 Mbps. Pricing is

Box 4.1: An alternative network to the home

One problem many countries that have liberalized their telecommunication markets face is attracting entrants to the fixed line market. Potential investors are reluctant to spend the sums required to put in fixed lines and are often more attracted to the mobile market. One alternative is to use wireless technology that has fixed line functionality. This is the case in St Lucia where one company has plans to set up a wireless broadband network using MMDS (Multipoint Microwave Distribution System, also known as Multi-channel Multi-point Distribution System).⁴ MMDS operates in 2.1-2.6 GHz and 2.5-2.7 GHz frequencies. Although primarily used for television, current systems can provide up to 50 Mbps of shared bandwidth for Internet access. The range of the antenna is about 15 miles, which has to be line of sight.

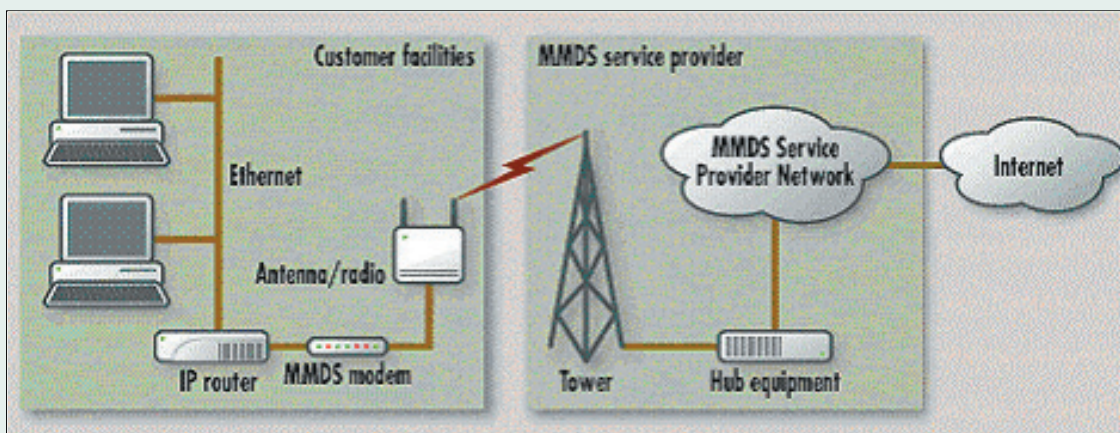
The plan anticipates either building a backbone microwave network or leasing fibre optic capacity from the electric company, St Lucia Electricity Services Limited (LUCELEC), www.lucelec.com). Another advantage would be using LUCELEC's sites to install equipment, especially because these sites are usually located on high points (to have as few masts as possible) and since line-of-sight is needed. It is estimated that the entire network would cost around EC\$ 17 million.

Initially, the digital system would offer multi-channel television and exploit areas where the current cable TV service operated by Cable & Wireless (Cable Vision) is perceived as weak. For example while Cable Vision offers around 40 channels the proposed system would start with about 80 channels. Also the existing cable network has just one tariff (EC\$ 55) and one package whereas the proposed system would provide greater flexibility by offering tiered packages (starting at EC\$ 20 per month) and more varied programming.

The proposed system would not only support broadband Internet access but Voice over Internet Protocol (VoIP) as well, effectively providing an alternative to existing fixed line and mobile services. Another potential revenue source is leasing backbone capacity to other market entrants. At the user end, the system provides Internet access through a MMDS modem that connects to the antenna. Customers connect their PC to the modem through either their USB or Ethernet port.

The plan has the approval of the Ministry of Broadcasting but is waiting for frequency approval from the NTRC.

Box Figure 4.1: MMDS architecture



Source: http://www.networkcomputing.com/1222/1222f3.html?ls=NCJS_1222rt.

considered too expensive for the general public and will probably be lowered. So far seven exchanges have ADSL covering most areas in the north and the major populated areas. It is economical to install once there are around 20 customers.

Cable & Wireless also offers cable television services and had some 19'000 subscribers in 2002. It is looking at offering cable modem services as this may be more cost effective than ADSL in less populated areas (some 90 per cent of households are passed by cable television). They are also testing iTV, a television with a wireless keyboard that supports online access and which is one-fourth the price of a PC.⁵

Mobile data access is a relatively new development in St Lucia. Cable & Wireless launched Short Messaging Service (SMS) over its TDMA network in 2002 and take-up has been lukewarm (an average of about one SMS per subscriber per month). However this is partially due to the novelty of the service and the fact that not all subscribers have SMS-ready handsets. C&W forecasts a doubling of SMS use in 2003. Over 50 per cent of Digicel's subscribers use SMS; the number of messages per subscriber per month is four (or eight per

subscriber if only those using the service are considered). The price of an SMS is EC\$ 0.25 (9.3 US cents), in the mid range of what it costs in other Caribbean nations and one third the price of a mobile call.

All three mobile operators had launched General Packet Radio Service (GPRS) by the end of 2003. They were offering it for free pending the decision about whether AT&T and Digicel require ISP licenses to formally offer the service. Digicel's mobile Internet portal is provided through a server in Jamaica. AT&T offers its m-mode portal but this is presently only available for roamers (local users would thus only be able to use GPRS to access the Internet from PCs rather than the handset). There is small but growing interest in using Multimedia Message Service (MMS) such as sending pictures as well as accessing email from mobile phones.

Public Wireless Local Access Networks (WLAN or Wi-Fi hotspots) are not currently available. The mobile operators seem likely to concentrate on mobile Internet offerings such as GPRS rather than providing Wi-Fi. As competitive ISPs have yet to launch, this is likely to delay the roll-out of Wi-Fi services.

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- ¹ As quoted from the St Lucia Electricity Services Limited web site. <http://www.lucelec.com>. [Accessed 9 June 2004].
 - ² <http://www.nsrc.org/db/lookup/operation=lookup-report/ID=890202428550:497434941/fromPage=LC>. [Accessed 9 June 2004].
 - ³ http://www.band-x.com/en/press_release/story.php?news_id=1283. [Accessed 9 June 2004].
 - ⁴ From Finline Technologies. <http://www.finline.com>. [Accessed 9 June 2004].
 - ⁵ <http://www.compucable.com/itv/index.htm>. [Accessed 9 June 2004].

5. Market

"Cable & Wireless today is not what we were yesterday."¹

"Digicel's strategy is to enter the market as a second operator, market its services thoroughly, and rapidly become the largest operator."²

"With a second mobile operator, you get competitive prices, but with a third operator, you get innovation."³

5.1 Overview

St Lucia with a population of approximately 158,000 is one of five countries comprising the Eastern Caribbean Telecommunications Authority (ECTEL). ECTEL itself is an institution of the Organization of Eastern Caribbean States, which is an alliance of nine countries in the Eastern Caribbean forming an economic union and sharing a single currency, the Eastern Caribbean dollar. The other members of ECTEL are the Commonwealth of Dominica, Grenada, St Kitts & Nevis and St Vincent & the Grenadines.

The process of establishing ECTEL started with the OECS Telecommunications Reform project, a joint World Bank and OECS activity, which began in 1998. The main objective was liberalizing the telecommunication sector of OECS members. The World Bank provided US\$ six million, while US\$ four million was provided through counterpart funding. Preliminary activities involved the engagement of consultants to prepare draft legislation and technical and administrative recommendations. The project was also responsible for informing the public of its activities and bringing together various interest groups in the five countries in order to hear their views on telecommunication issues.

ECTEL was created through the signing of the ECTEL Treaty on 4 May

2000.⁴ At the same time, each member government enacted a national Telecommunications Act leading to the formation of National Telecommunications Regulatory Commissions (NTRCs).⁵ ECTEL acts as a regional regulatory body, while the NTRCs operate at the national level. The NTRCs consist of five Commissioners with different technical, legal and administrative skills, appointed by the responsible Minister. The NTRCs formulate national policy and manage the radio frequency spectrum in conjunction with ECTEL. At the national level they also deal with disputes, including those related to interconnection and spectrum usage. ECTEL organizes regular meetings with members of the NTRCs, covering relevant subjects.

In addition, several Telecommunications Regulations have been enacted in the ECTEL countries. There are eight such Regulations in force in St Lucia.

ECTEL consists of:

- a) A Council of Ministers, comprising Ministers of telecommunications in each country, as well as the Secretary General of the OECS as an *ex-officio* member;
- b) A Board of Directors comprising one delegate from each country and the Managing Director of ECTEL as an *ex-officio* member;
- c) The ECTEL Secretariat, headquartered in St Lucia and comprising the Managing Director and other professional, technical, legal and support staff.

The governments, having agreed that telecommunications/ICT was important for their economic development mandated ECTEL to undertake the necessary studies and take the necessary actions to

terminate the monopoly of Cable and Wireless and to ensure that competition was introduced.

On 7 April 2001, Cable and Wireless and the OECS contracting countries signed an Agreement for the liberalization of the telecommunication sector.⁶ This was incumbent on the countries concerned enacting the necessary harmonized legislation. The signing of this agreement meant that the exclusive licenses of Cable and Wireless would be terminated on an agreed date and that new licenses had to be issued. One of the conditions that Cable and Wireless insisted upon was that there be a level playing field for all players in the sector.

Following the 2001 Agreement, negotiations continued between Cable and Wireless, ECTEL and the governments concerned. A second Agreement was signed between the same parties on 20 May 2002. This was the enabling agreement for the liberalization of telecommunications in the contracting states. It contains information on the pricing of some telecommunications services by Cable and Wireless, including price cap rules.

Since the liberalization process began, 36 individual licenses have been issued or offered through ECTEL, including those to Cable and Wireless. 23 of these are now in operation. The 36 licenses include 11 fixed line, 13 cellular and 12 Internet. In the case of St Lucia, there are now three mobile operators, these being Cable and Wireless, Digicell and AT&T. In addition, two Internet licenses have been granted but these are not yet operational. The St Lucia NTRC has recently re-opened the application process thus making it possible to apply for licenses including the following services:

- Public Mobile Telecommunications
- Fixed Public Telecommunications
- Public Radio Paging
- Internet Network/Services
- Submarine Cable Landing

In St Lucia, licenses for broadcasting services are dealt with by the Ministry for Broadcasting.

5.2 Fixed networks

St Lucia's first telecommunication link was established in 1871 when the West India and Panama Telegraph Company landed a submarine cable connecting St Lucia to Martinique, Dominica, Guadeloupe, Antigua, St Kitts, St Thomas, and Puerto Rico. In 1938, the company changed its name to Cable & Wireless (West Indies) Limited.

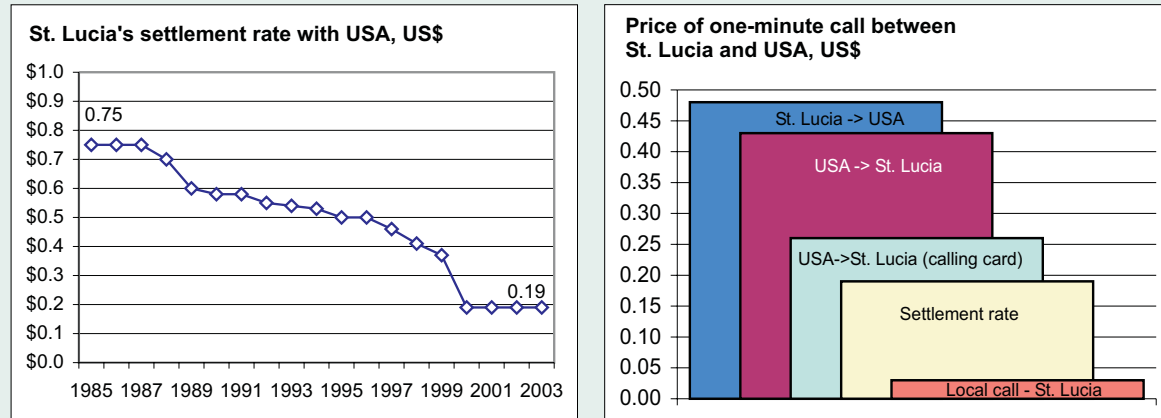
Cable & Wireless (C&W) was responsible for international telecommunication services while the government handled local telephone services. In 1966, Cable & Wireless was given a concession to also operate the national telephone network. The first automatic exchange was opened in December 1966 with a capacity of 800 lines. The C&W exclusive concessions for international and domestic telephone service expired in 1994 and 2000 respectively but were extended to 31 March 2001. The Telecommunications Act, which came into force on 1 April 2001, extended C&W licenses until October 2001 when it was awarded a new fixed public license.

St Lucia is one of fifteen countries in the Caribbean where Cable & Wireless operates (Box 5.1). Unlike the other OECS countries which have locally registered operating companies, the operation in St Lucia is part of Cable & Wireless (West Indies) Limited.⁷ One reason is that unlike the OECS countries, the government of St Lucia does not own any shares in the telecommunication operator.

Today, C&W operates a fully digital local telephone network. At March 2003, 50'963 lines were in service for a teledensity of 32. Though C&W is currently the only fixed line operator, the market is open to new entrants. The fixed line market may have reached saturation with C&W forecasting a drop in the number of lines—the first ever—for its 2003 fiscal year (ending March 2004). This is

Figure 5.1: Coming down

St Lucia settlement rate with the United States, US\$, per minute, 1985-2003 (left) and price of telephone call between the United States and St Lucia, per minute, US\$, 2003 (right)



Source: ITU adapted from FCC, Digicel, AT&T.

undoubtedly due to mobile substitution.

C&W has been providing international telecommunication services in St Lucia for over 100 years. Once considered a lucrative market segment—particularly in the case of St Lucia given the islands status and need for international communications—the gloss has faded the last few years as a result of falling accounting rates, call-back and Internet telephony. The St Lucia-US settlement rate (the amount an operator receives to terminate a call) dropped from US\$ 0.75 per minute in 1985 to US\$ 0.19 in 2003 (Figure 5.1, left). There is also little asymmetry in the cost of a call between St Lucia and the US. Digicel charges EC\$ 1.3 (US\$ 0.49) peak time and EC\$ 0.95 (US\$ 0.35) off-peak to the US while the cost for a call from US to St Lucia (AT&T) is US\$ 0.43. Thus it is puzzling why there is so much more incoming than outgoing traffic (ratio of 2.8). One explanation is that though the difference in published tariffs is not great, there is considerably more discounting and cheaper call-back pricing available in the US. St Lucia has also been approved for International Simple Resale with the US.

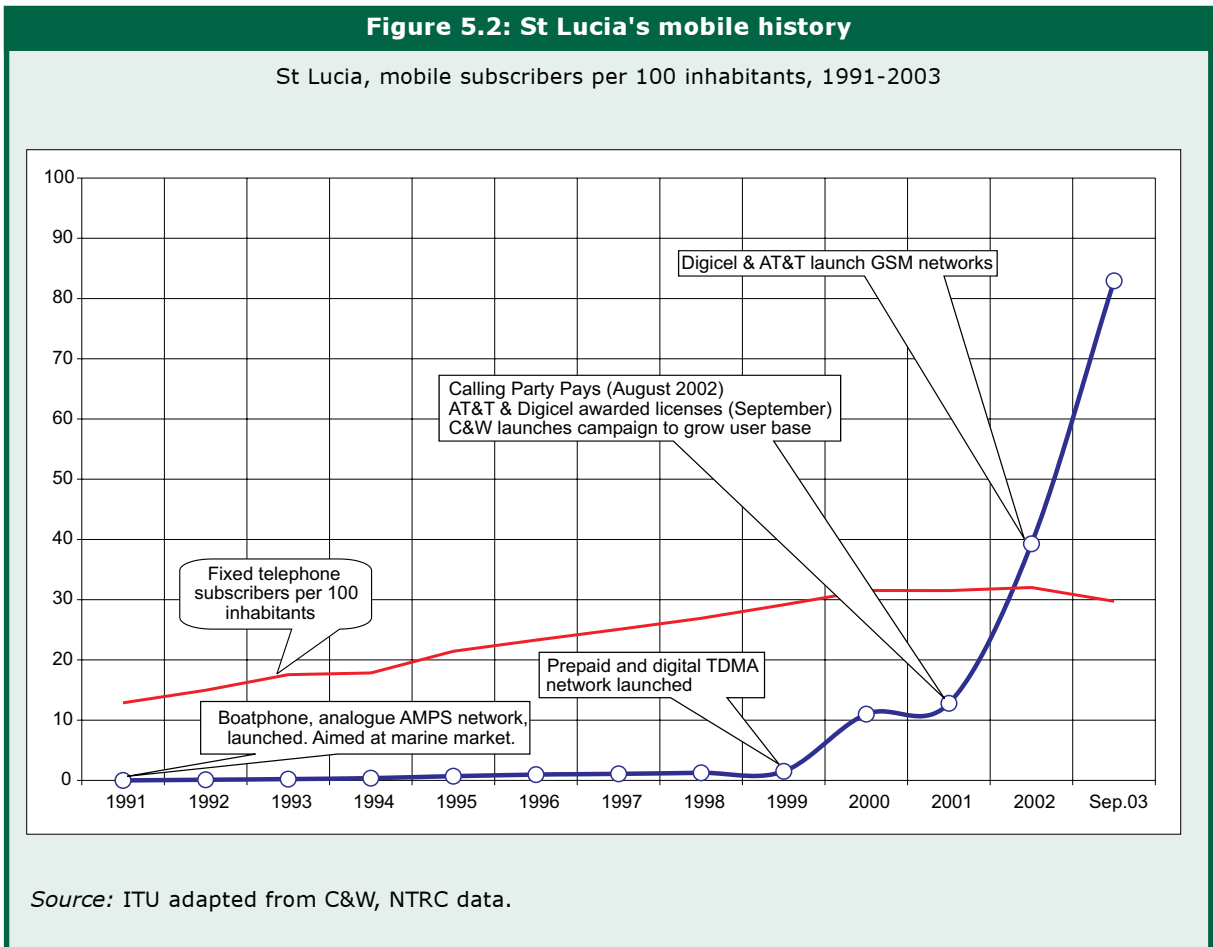
C&W now also has direct competition for international telephone service. Both new mobile operators were automatically given the right to offer international service with their mobile licenses. In addition two ISP licenses have been awarded—primarily to offer VoIP service and the existing call centre has its own VSAT connectivity.⁸

5.3 Mobile

St Lucia's mobile cellular sector is a classical example of evolution from a privileged service to a mass-market phenomenon (Figure 5.2). The transition from analogue to digital and from monopoly to competition is characteristic of numerous nations. What sets St Lucia apart is that it has set a new benchmark as the smallest developing country (in terms of population) to have three mobile operators. The results have been dramatic in a very short period of time.

5.3.1 Cable & Wireless

Mobile service in St Lucia started with Boatphone in 1992, a Cable & Wireless joint venture with other investors. It was primarily aimed at serving the



marine market with offices in Antigua, British Virgin Islands, Jamaica and Martinique. Cable & Wireless later bought out the other investors and the name was changed to Cable & Wireless Caribbean Cellular (St Lucia) Limited.

Boatphone used the analogue AMPS cellular system. By 1995 there were some 300 land customers and two cell sites. It was mainly aimed at people on yachts and marine industry. Sea coverage was important for races and safety and the "bare boat" market (people chartering boats).

Prepaid was introduced in March 1999. In late 1999, a digital TDMA network was introduced using the 850 MHz frequency with more cell sites (17), better coverage and enhanced roaming with North America.

With competition on the horizon, Calling Party Pays (CPP) was introduced in August 2002 (fixed-mobile calls also began to be charged a different tariff). CPP helped drive growth, particularly prepaid. SMS was also launched in 2002, based on a platform in Jamaica. Towards the end of 2002 there was a campaign to grow the user base through subsidizing handsets, price promotions and increasing coverage (population coverage was extended to 90 per cent and the number of cell sites to 27).

Meanwhile, the global Cable & Wireless organization made a strategic decision to install digital GSM mobile networks throughout the Caribbean.⁹ In St Lucia, Cable & Wireless began rolling out a GSM network in August 2003 with launch in December. It operates on the 850 MHz

frequency which limits roaming potential so a 1900 MHz network will be added in 2004.¹⁰ The GSM network was launched GPRS ready with WAP services provided by a server located abroad.

5.3.2 Digicel

Digicel (St Lucia) Limited (www.digicelstlucia.com) is part of an Irish-owned group currently providing mobile services in five Caribbean economies.¹¹ Digicel St Lucia was no stranger to the Caribbean, competition or C&W, with experience running a mobile operation in Jamaica where it became the market leader after a year and half. Indeed, the network in Jamaica lowered the costs of entry into St Lucia since Digicel could leverage off existing computer systems and knowledge. Although St Lucia is the most populated OECS country, it is still a relatively small market with some 160'000 inhabitants. What made it attractive was viewing it as part of a Pan-Caribbean strategy with the entire OECS seen as one market operationally. The potential for roaming revenues is also significant with a large number of tourists visiting St Lucia (Digicel has 140 roaming agreements covering 80 countries at March 2004).

It was awarded its license in St Lucia on 2 September 2002 and launched service in March 2003. Digicel's GSM network—St Lucia's first—consists of 33 base stations with around 90 per cent population coverage. Base stations are interconnected via a microwave backbone network. Digicel is also allowed to provide international voice service as part of its mobile license. It has its own VSAT with connectivity via INTELSAT. It has interconnect agreements with C&W and interconnect fees have been set by the regulator. Interconnection with C&W Mobile and AT&T goes through the C&W fixed network.

Digicel has been aggressive in encouraging companies to give up their fixed lines and use its network for international calls. The price of international calls dropped over 70 per cent. Digicel also introduced per

second charging, which it estimates saves customers around 33 per cent.

St Lucia is Digicel's hub for the OECS (where it has other licenses), just as Jamaica is the overall hub for the Caribbean. Digicel has 76 full time staff in St Lucia with the majority locally recruited. There are 13 dealers and four branded stores. In addition, there are some 700 outlets that sell Digicel prepaid cards. Almost 95 per cent of clients are prepaid.

General Packet Radio Service (GPRS) was launched on 24 October 2003. It is currently provided for free. Internet access is provided through a portal in Jamaica. A main driver for GPRS is expected to be MMS for tourists.

Digicel has invested over EC\$ 60 million (over US\$ 22.5) in constructing the network. The license cost was EC\$ 500'000. The number of subscribers has exceeded expectations and Digicel's market share, currently at around 50 per cent, is growing.

5.3.3 Wireless Ventures

Wireless Ventures (St Lucia) Limited (WV, www.attwireless.com/caribbean) (formerly called AWS Caribbean Holdings Limited) is a majority-owned subsidiary of US mobile operator AT&T Wireless. It launched its St Lucia GSM network in April 2003.

There are a number of factors driving the AT&T Wireless investment in St. Lucia. One is the company's new focus on its domestic customer base and extending its footprint to countries where US citizens travel. In the case of St Lucia, there were some 94'000 stay-over tourists from the US in 2002, 37 percent of the total. There were also 387'180 cruise ship visitors; there is no breakdown of their country of origin but those from US would be a significant portion.

According to WV, a factor making the investment more interesting is that manufacturers are much more adapted to small markets and have lowered their prices. Another attraction was to launch with GSM and

its technological advantage over TDMA. Although the AT&T Wireless network in the US is a mixture of TDMA and GSM, they are expanding the latter. So there will also be more and more US-based GSM roamers in St Lucia. WV can also leverage on roamers of other US GSM-based operators such as T-Mobile.

WV's network uses 900 MHz (as in Europe) in addition to 1900 MHz (used in the US). They have 21 base stations and a backbone microwave network. AT&T engineers were brought in to install the network and left. Some sites are shared with Digicel. International traffic is routed via an E1 circuit leased from C&W (for EC\$ 53'000 per month). The network is also GRPS ready. WV makes available the m-mode portal for mobile Internet access but for the moment only roamers can use it.

Wireless Ventures is 70 percent owned by AT&T Wireless. The other partner is St Lucia's CLICO International Life Insurance Limited. A local investor was desired because of familiarity with the national market. WV has 28 staff, most of whom did not have a telecommunication background and were trained by AT&T Wireless. There are 17 authorized dealers, three retail stores and 240 locations that sell prepaid cards (dealers receive up to ten per cent). The vast majority of subscribers are prepaid.

The fact that WV launched third and not at the same time as Digicel, had serious financial implications. WV argues that there is no justification for this. Digicel and WV got their licenses at the same time (September 2002 following invitations to apply in September 2001), the interconnection process was done at the same time (NTRC announced it had received the interconnection agreements in February 2003), and the deposits were paid at the same time. However the interconnection equipment for WV inexplicably arrived one month after the Digicel interconnection equipment. WV feels that NTRC should have ensured that the two operators launch at the same time.

Like the other mobile operators, handsets are subsidized and sometimes given away. For the operator this represents a substantial expense, particularly considering the 50 per cent tax on mobile phones. WV has thus far invested around EC\$ 30 million in the network.

One of the benefits of WV has is the ability to leverage on the AT&T Wireless brand recognition from US television ads available on cable television in St Lucia. One problem is that the advertisements sometimes feature offers (e.g., free handsets with a prepaid card or special pricing deals) that do not apply to St Lucia, causing confusion for customers.

5.4 Internet

At the end of 2003, the sole Internet Service Provider (ISP) was Cable & Wireless.¹² Although 13 ISP applications have been approved, only two have been licensed and both seem to be primarily interested in providing Voice over Internet Protocol (VoIP) service.

The University of Puerto Rico administers St Lucia's domain name—LC—and hosts the servers.¹³ Registration of commercial domain names (.COM.LC) is carried out by ISIS World Corporation, reportedly on a non-profit basis.¹⁴ Registration is US\$ 50 per year. The government domain (.GOV.LC) is handled by FINMAN but controlled by C&W who hosts the Domain Name Server. According to the Telecommunications Act, NTRC is responsible for the domain name but has not yet assumed this duty.¹⁵

Internet traffic is optimised, that is, it does not leave the country if it does not have to. However since most websites are hosted overseas, the majority of traffic leaves the country (about 90 per cent according to C&W estimates). The need for a national Internet traffic exchange will merit examination as more ISPs enter the market.

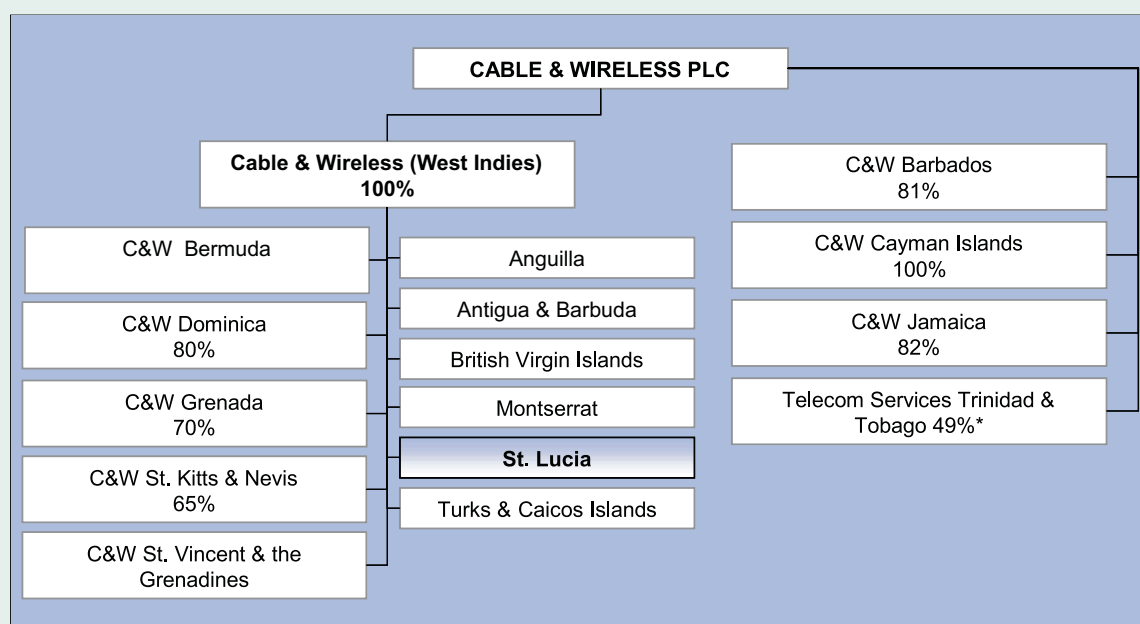
Box 5.1: Cable & Wireless in the Caribbean

Cable & Wireless plc, headquartered in the United Kingdom, provides local, international and mobile telecommunication services in 15 countries and territories in the Caribbean. Operations go back over a hundred years when all of the countries were British dependencies. Cable & Wireless ownership of the operating companies in the region is structured in several ways: (1) three of the companies are either majority or fully-owned subsidiaries; (2) Telecommunication Services of Trinidad and Tobago is a joint venture with Cable & Wireless holding 49 per cent of the shares; (3) five are majority or fully-owned subsidiaries of Cable & Wireless (West Indies), incorporated in their country of operation; and (4) six are fully-owned and directly operated by Cable & Wireless (West Indies),

incorporated in the UK. Curiously, St Lucia falls into the latter group that, except for Antigua and Barbuda, are all UK territories. Unlike St Lucia, other Organization of East Caribbean States (OECS) nations have government stakes in their telecommunication operating companies.

Cable & Wireless operates 860'000 telephone lines and has 940'000 mobile subscribers in the region. The Caribbean is a lucrative part of the Cable & Wireless portfolio. The region accounted for 24 per cent of Cable & Wireless revenues in the year ending March 2003 and was the only segment to have contributed a profit. Like St Lucia, all of the other countries are making the transition from formerly monopoly environments to liberalized ones.

Box Figure 5.1: Cable & Wireless in the Caribbean



Source: ITU adapted from Cable & Wireless.

- ¹ Cable & Wireless. "Claudius Francis Chooses 2003 Entrepreneur of the Year." *Press Release*. 23 January 2004. http://www.candw.lc/Media_Centre/news/entrepreneur_year_2003.htm. [Accessed 9 June 2004].
- ² Gunilla Tamm. "Islands where the market grows." *Contact* (Ericsson). No. 11, 2003. http://www.ericsson.com/about/publications/contact/pdf/c11_03/14.pdf. [Accessed 9 June 2004].
- ³ As noted in a meeting with Wireless Ventures, 19 December 2003.
- ⁴ <http://www.ectel.int/about/ECTEL%20Treaty.pdf>. [Accessed 9 June 2004].
- ⁵ The relevant Act for St Lucia can be found here: <http://www.ectel.int/lca/Laws%20and%20Regulations/Telecommunications%20Act%202000.pdf>. [Accessed 9 June 2004].
- ⁶ <http://www.ectel.int/about/Agreement.pdf>. [Accessed 9 June 2004].
- ⁷ The Cable & Wireless (West Indies) web site is at: <http://www.cwwionline.com/home.asp?bu=CWWI> [Accessed 9 June 2004] while information about St Lucia operations are available from: <http://www.candw.lc>. [Accessed 9 June 2004].
- ⁸ Because C&W controls the international Internet gateway as the only Internet Service Provider, it also controls the ability to use VoIP. Indeed, in the pricing details for its ADSL service, C&W notes: "Voice over IP will also not be allowed or tolerated." http://www.candw.lc/Products/adsl_faq.htm#19. [Accessed 9 June 2004].
- ⁹ According to a Nortel Networks press release, the intention is to migrate C&W TDMA networks to GSM. Nortel Networks. "Cable & Wireless West Indies, Nortel Networks Sign US\$100 Million GSM/GPRS/EDGE Agreement." *News Release*. 5 November 2002. Available at: http://www.nortelnetworks.com/corporate/news/newsreleases/2002d/11_05_02_cw_west_indies.html. [Accessed 9 June 2004].
- ¹⁰ The frequency used for GSM in Europe is 900 and 1800 MHz while in the US, 1900 MHz is used. This means that European roamers into St Lucia would need multi-band phones to access the C&W mobile network. Interestingly, Digicel's mobile network is 900 / 1800 MHz effectively limiting its potential for North American roamers. The best placed operator would appear to be Wireless Ventures which operates in 900 / 1900 MHz thus connectable for both North American and European roamers.
- ¹¹ Digicel is privately held with 8 per cent of the shares owned by the International Finance Corporation, the World Bank's private sector investment arm. It has applied for mobile licenses in other Caribbean nations.
- ¹² The mobile operators are presently providing trial Internet service over their GPRS network and have applied for ISP licenses.
- ¹³ <http://www.iana.org/root-whois/lc.htm>. [Accessed 9 June 2004].
- ¹⁴ http://www.isisworld.lc/stlucia_isis_world_domain_registration.htm. [Accessed 9 June 2004].
- ¹⁵ Paragraph 53 of the Telecommunications Act, entitled "Domain name registration" states: "The Commission shall assume responsibility for the registration and management of Internet domain names."

6. Information Society

*"We see telecommunications as pivotal to our intention of transforming St Lucia into an island of creativity."*²

6.1 Overview

There is growing recognition among government officials that Information and Communication Technology (ICT) can be an important tool for St Lucia's economic and social development. However there is still some distance to travel to formally incorporate ICT into government policies, strategies, plans and institutional arrangements. While there is a Telecommunications Act, other guiding documents such as e-commerce legislation and ICT policy and strategy documents are lacking. The government is conscious of these limitations and various ICT related documents are under preparation. One shortcoming has been the lack of a coordinating agency within the government to drive the information society. This may change with the Public Sector Reform Project and the

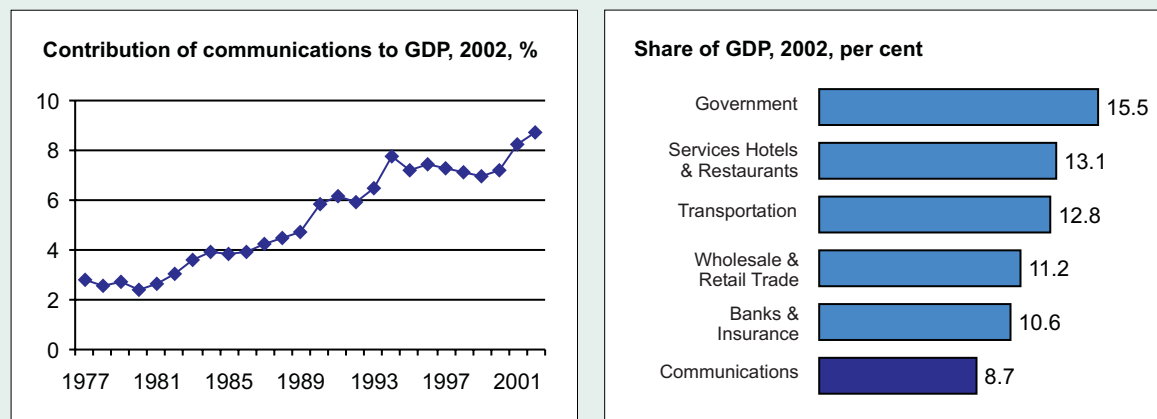
establishment of a unit within the Office of the Prime Minister to examine ICT issues. This has led to the creation of an inter-ministerial ICT sub-committee that could serve as the basis for a more structured institutional arrangement for promoting the information society.

6.2 Economic impact

The communications sector has witnessed steady growth in the St Lucian economy over the last two and half decades (Figure 6.1, left). Today communications is the sixth largest contributor to the economy, with a share of 8.7 per cent (Figure 6.1, right). Communications is critical for many segments of the economy which the government is promoting such as tourism, offshore finance and call centres. One study suggests that the multiplier impact of call centres—which are almost totally dependent on communications—is as much as 3.5 per cent of GDP (Table 6.1).

Figure 6.1: Contribution to the economy

Percentage contribution of communications to GDP (left) and share of leading sectors in GDP, 2002 (right), St Lucia



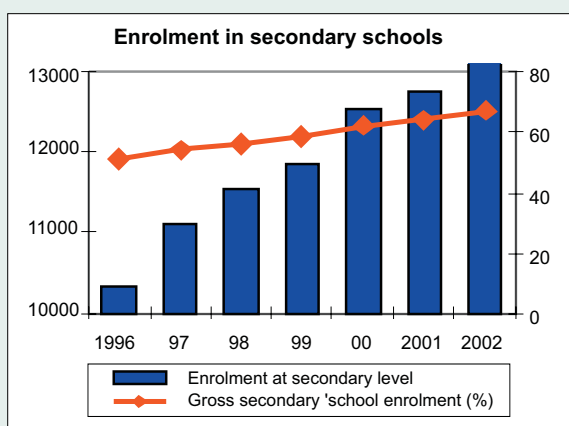
Source: ITU adapted from East Caribbean Central Bank and St Lucia Central Statistical Office.

The ICT sector also has considerable potential for creating jobs, particularly important since unemployment stood at 18.9 per cent in St Lucia in 2001. Cable & Wireless has 320 staff (plus a further 70 outsourced). The new mobile operators, Digicel and Wireless Ventures, have added over 100 jobs

since launching operations in 2003 plus they have created downstream employment opportunities selling mobile phones and prepaid cards. A Ministry of Commerce survey lists over 40 ICT companies (computer training, software and consulting, networking, call centres and telemarketing, and computer dealers) on the island employing 837 people at December 2002.

Figure 6.2: Changes in Enrolment

Secondary school enrolment, 1996-2002



Source: MoE, Education Statistical Digest 2001.

6.3 Education

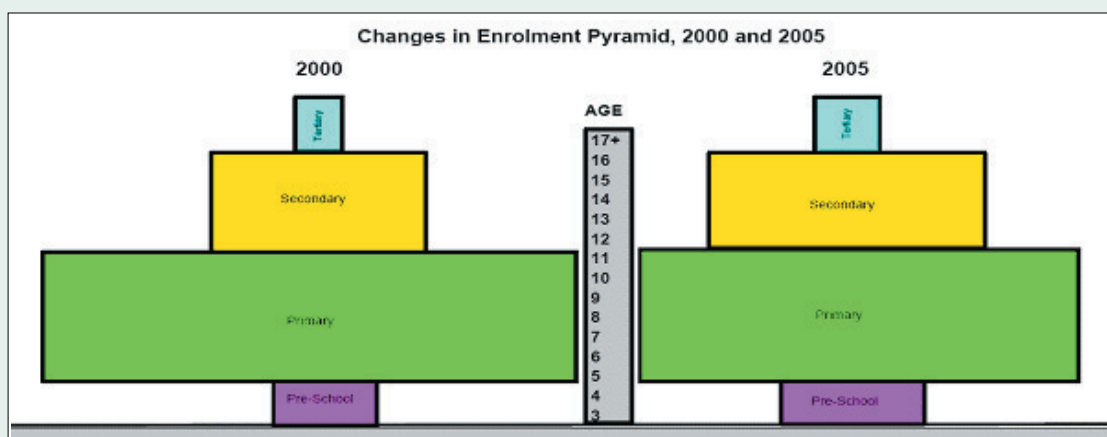
6.3.1 Enrolment and attainment

A country's knowledge base is a significant determinant of a country's ability to transition into an information society. Indicators such as school enrolment and educational attainment help determine the potential for ICT use in St Lucia.

While primary education is universal, secondary school enrolment has been constrained by the *Common Entrance*

Figure 6.3: Predicted outcomes of education reform

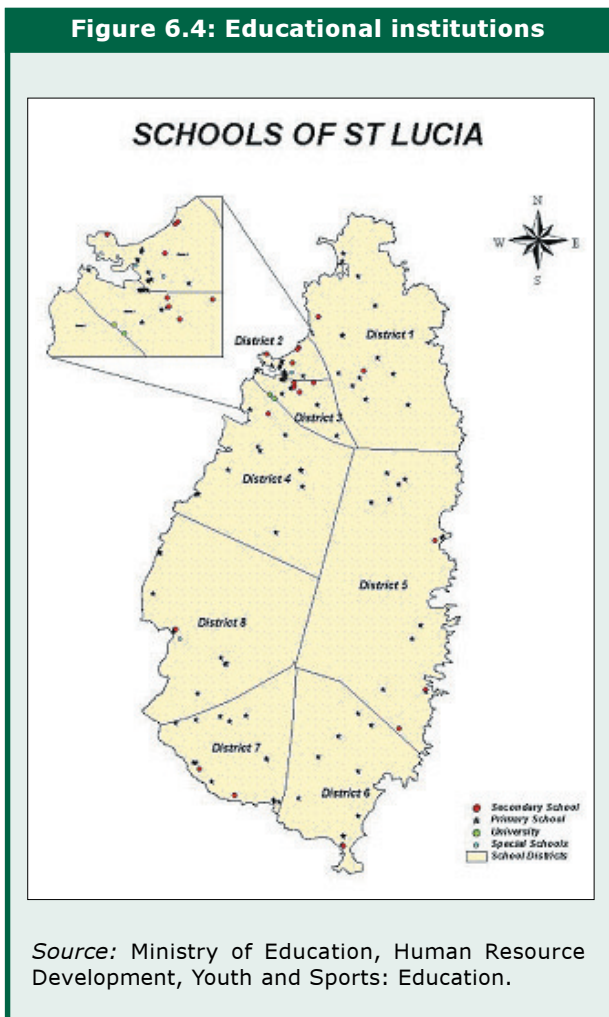
Enrolment changes between 2000 and 2005 (estimates) across the school system due to the education reform



Source: MoE, Education Statistical Digest 2001.

Note: In 2005 the number of primary school students is expected to drop because of less primary school aged children. Also, the reform will have allowed more primary students to change to secondary school.

Figure 6.4: Educational institutions



Source: Ministry of Education, Human Resource Development, Youth and Sports: Education.

Examination that must be taken to enter secondary school. Expanding secondary school enrolment has become the major objective of the government's education reform and the goal is to achieve universal secondary education by the year 2006/07.² Gross secondary school enrolment has steadily increased since the 1990s and by 2002 about 67 per cent of all 12-17 year olds were enrolled in public secondary schools (Figure 6.2). By 2006, the secondary school age population is projected to stand at 16'789, over 4'000 students — or 33 per cent — more than were enrolled in 2002/2003.³ The policy objective of achieving universal secondary education will thus boost St Lucia's knowledge base. According to government calculations, it will also

expand the number of tertiary school enrolments (Figure 6.3).

The Ministry of Education, Human Resource Development, Youth and Sports (hereafter referred to as the Ministry of Education, MoE) closely tracks educational statistics, including enrolment figures by sex, district and class size; student/teacher ratio; teacher qualifications; and pass and repetition rates. The geographic distribution of educational institutions helps track access to education (Figure 6.4). This has allowed the government to identify the system's qualitative and quantitative shortcomings, urgent needs, and to make policy decisions, accordingly.⁴

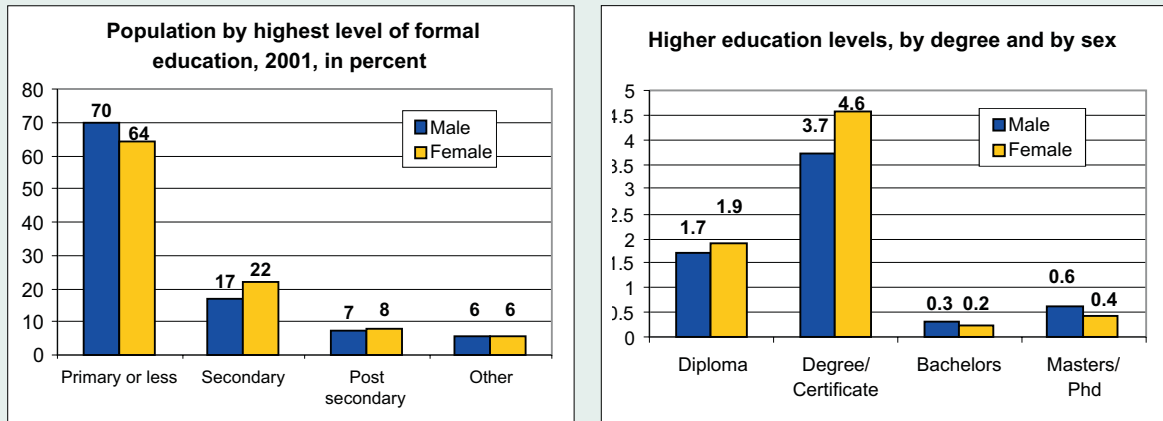
St Lucia's 2001 Population & Housing Census shows that the large majority of the population, 70 per cent of males and 64 per cent of females, have not continued their education beyond the primary level. Only 17 per cent of the male and 22 per cent of the female population has completed secondary school and seven and eight per cent of men and women respectively have a tertiary education (Figure 6.5 left).

Interestingly, the statistics show that St Lucia's women are more educated than men, and tend to continue through secondary school, when more men have dropped out. This trend applies to the Caribbean region in general.⁵ Few St Lucians, less than one per cent, have obtained Bachelors, Masters or Doctorate degrees. While more women overall have tertiary education, slightly more men have an advanced university degree (Figure 6.5, right).

According to the 2003 UNDP HDI, St. Lucia's adult literacy rate was 90.2 per cent. Efforts to increase adult literacy go back as far as 1984 and include classes given by the Adult Education Unit within the Ministry of Education.⁶

Numerous surveys carried out in different countries have demonstrated a strong link between education and Internet access. Those in school or with high levels of education have more elevated

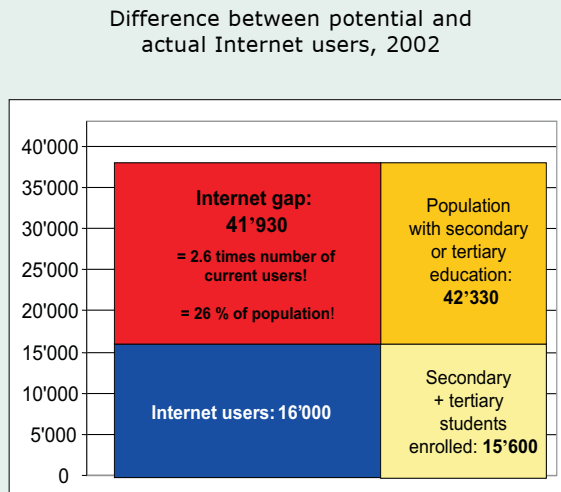
Figure 6.5: Educational attainment in St Lucia



Note: Left chart: "other" includes the replies: 'not stated', 'not applicable', and 'other'. Right chart: degrees in this chart are in order, with a diploma being the most basic degree, to a Phd, the most advanced degree.
Source: 2001 Population & Housing Census (top charts), and Education Statistical Digest, June 2001 (bottom right).

Internet usage rates than others. In the case of St Lucia it would appear that there is a large untapped Internet market. Cable & Wireless (C&W) estimated some 16'000 Internet users — or ten per cent of the population — at the end of 2002. At the same time St Lucia had some 12'900 secondary school students plus some 2'700 (full-time and part-time) students enrolled at the Sir Arthur Lewis Community College, the island's main tertiary institution. Based on the results of the 2001 Census, another 42'330 have attained secondary or tertiary education.⁷ While there will be some overlap in the number of students currently enrolled at the tertiary level and those having attained a secondary education, these two groups, prime Internet users, add up to almost 58'000. Thus there is a gap of close to 42'000 between those currently using the Internet and those who probably have the skills or can be taught fairly quickly how to use it (Figure 6.6).

Figure 6.6: St Lucia untapped Internet market



Note: The chart shows the gap between the estimated number of Internet users in 2002 and those believed to have the ability to use the Internet (students attending secondary school and the tertiary institution and those with at least a secondary school education).
Source: ITU adapted from Cable&Wireless' Internet user estimate, and 2001 Population & Housing Census.

6.3.2 ICT education in schools

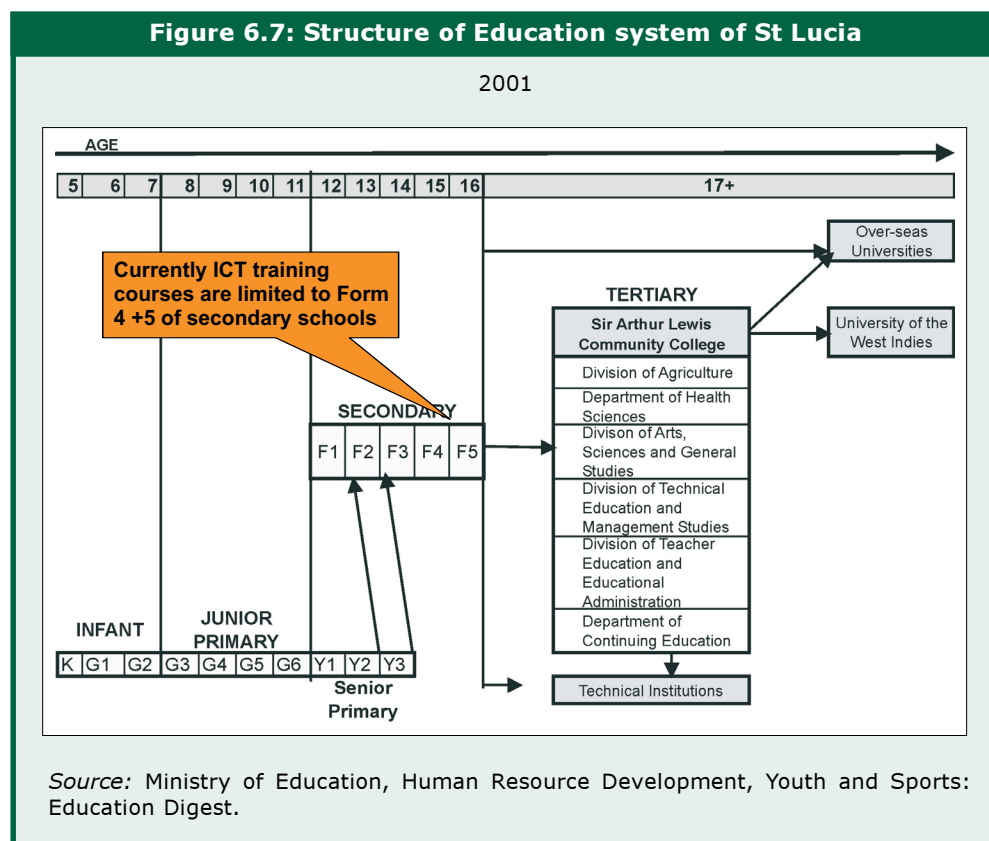
“Education ... cannot be a succession of regurgitate exercises, it must be regenerative. Communication, innovation, conceptualisation, information, these are the commodities of the future. They are the vehicles of knowledge-based industries”⁸ (Dr. Anthony, Prime Minister of St Lucia, 2000)

Although St Lucia’s Prime Minister has highlighted the need to adapt the educational system to new realities and the potential of information and communication technologies (ICT), the use of ICT in the educational sector remains limited. Policies geared at increasing ICT education in schools have only recently been adapted, primarily driven by a regional policy push in this area.

ICT courses are limited to upper secondary schools (form 4 and 5), when students are between 15-17 years old (Figure 6.7). This limits the number of students that are given the chance to

participate in ICT courses. Not only is secondary school enrolment limited, but because some students drop out over the years, the gross enrolment ratio for form 5 is also lower than for forms 1-4 (78 per cent compared to 69 per cent). In 2001, for example, 5’083 students – only three per cent of the total population and 74 per cent of the respective age group – were in form 4 and 5. On top of this, ICT courses are not compulsory. Because of excess demand, only students with higher grades can take these courses. Course material covers computer applications, like word processing, spreadsheets and database management. Students also acquire the basics about programming and hardware, and learn about the trends in IT and how it affects the way people work and communicate.

St Lucia has benefited from a regional push to increase ICT education in schools. To help St Lucia set its “ICT in education” priorities, the Education Reform Unit (ERU, at www.oeru.org) of the Organisation of Eastern Caribbean States (OECS, at



www.oecs.org) has developed a model policy paper.⁹ This document, which has been adapted by the Ministry of Education, presents a number of guidelines and objectives. It is broadly divided into three areas:

1. *Utilising ICT in the Curricula and in Education Administration.* This includes using the Internet as a resource and the computer as a working tool; making use of information systems to improve administrative efficiency; integrating ICT courses into the curricula and ensuring that all school leavers are computer literate.
2. *Planning, and Implementing ICT Initiatives.* This includes the budgeting of ICT related projects, providing and standardizing the necessary hardware and software; training teachers in the use of ICT.
3. *Sustaining, Supporting, and Evaluating ICT Initiatives.* Among other things, through budgetary allocation to ICT costs; adopting a partnership approach particularly with the private sector; evaluating the impact of ICT use in the educational sector.

While this document represents an important step toward the integration of ICT in education, it is general and needs to be translated into concrete actions.

A concrete step towards computer-based education was made with the recent completion of the Ciceron Secondary school. Officially opened in February 2004, the flagship ICT school is equipped with a state-of-the-art laboratory.¹⁰

Teacher ICT training is limited and there are no official ICT requirements for teachers. In 2002 St Lucia benefited from a teachers' ICT training program, a project jointly funded by the Organisation of American States (OAS) and the Caribbean Development Bank (CDB). A workshop, followed by online tutoring and hands-on projects, taught the educators how to integrate ICT into their teaching methods.¹¹

Besides these regional initiatives to help expand ICT in schools, the private sector has contributed its share by funding a Summer School project (Box 6.1).

6.3.3 ICT workforce

St Lucia does not have a significant IT industry and building up an ICT workforce has not been a government priority. The country's educational system turns out very few IT professionals. ICT skills are important primarily to support other sectors, such as business, government and tourism.

St Lucia's principal tertiary institution is the Sir Arthur Lewis Community

Box 6.1: C&W: Helping kids get hooked to the Internet



C&W, the incumbent telecommunication provider, has played an important role in helping young St Lucians make use of the Internet. Since the late 1990s close to 8'000 children of different ages have participated in the operator's Internet Summer School. The program, which lasts for six weeks and is free of charge, teaches youngsters how to use the Internet effectively.

This includes online research and ICT terminology as well as common desktop skills. The courses are provided by C&W staff and students are selected through their schools. In 2002 the focus was on children from particularly deprived communities.

C&W has also started offering scholarships at the University of the West Indies (UWI), for the masters degree programme in Telecommunication Regulation and Policy (MRP). The programme consists of eight courses, which are delivered over the Internet, and three required seminars, which are delivered face-to-face, at the UWI.¹² In its first year of the programme, one student from St Lucia is participating.

College (SALCC, at www.salcc.edu.lc). Students can also study at the University of the West Indies (UWI, www.uwi.org), a regional institution serving 15 different countries in the West Indies.¹³

SALCC has an Applied Electronics programme, which includes courses on computer hardware, operating systems, network technology and basic programming as well as digital electronics and electronic data processing systems. The two-year programme provides graduates with an Associate Degree. Since 2001, 33 students have graduated from the programme. Because of the high demand for IT courses, the intake of students in 2004 was increased to 35 so the number of graduates will be increasing over the coming years. To get a higher degree, such as a bachelor's, students need to go abroad.

SALCC's Department of Continuing Education offers a part-time IT programme. At the end of the 500-hour course, which can be taken over a maximum period of five years, students graduate with a Certificate in Computer and Information Technology. In collaboration with the University of the West Indies, SALCC has introduced a Certificate in Information Technology, which students continue at the UWI, where they obtain a Master's or Bachelor's degree. An average of 20 students a year graduate in each of these two programmes.

Considering that the total number of full-time students enrolled in 2001 was 1'395, the number of IT students is marginal. Further expansion is constrained by a lack of qualified staff. The IT programme has a total of five lecturers, but only two of them — both women — have an IT degree. On the other hand all SALCC students, regardless of their area of study, are required to take a basic IT course since 2001.

C&W, the country's incumbent telecommunication operator, used to have its own training institute in

St. Lucia but has since closed it. C&W provides a number of scholarships for students to study at SALCC. The college staff in charge of teaching IT regularly consults with C&W regarding teaching material.

Based on human resource needs, the government publishes an annual "*List of Approved Areas for National Training, Student Loans and Economic Costs*".¹⁴ The list of areas where human resource development is particularly urgent includes over 100 different subjects but less than ten subjects are in the area of IT.

Although there are no official statistics, brain drain is also a problem. Students studying abroad, especially in the United States and Canada, do not always return to St. Lucia.

In 2002 a total of 92 St Lucians received a scholarship to study abroad. The majority of students, over 90 per cent, pursued an undergraduate degree. Only eight out of the 92 students studied in the area of IT and only two of these in graduate studies.

The MoE lists some of the available international scholarships online, at www.education.gov.lc/hrd/trainopp.htm. Scholarship applications can also be downloaded from this web site.

6.3.4 Distance education

The University of the West Indies is the region's main distance education provider. Efforts to expand education in the region through virtual learning go back to the early 1970s.¹⁵ The UWI's Distance Education Centre is headquartered in Barbados and there are a total of 29 distance education sites, spread across the University's 16 contributing countries. The St Lucian site, which has existed in its current structure since 1997, is located in Castries. Two hundred seventy-two students are currently enrolled. The courses are based on printed materials, audio conferencing and tutorial support. The Web based components of the courses are under development. No IT related courses are offered.

6.4 The public at large

To overcome a shortage of secondary and tertiary training opportunities, the government has sought alternative ways of providing education. Some schools, for example, stay open late for adult education, including some IT classes. This is also the case at SALCC, where the 5-9 pm courses for the working population, including IT courses, are highly successful.

In 2001 the government opened the National Skills Development Center (NSDC). Closely linked to the private sector and co-funded by the European Union, the Center provides a number of technical and vocational skills, including IT courses. Courses last for about three months and St Lucians pay only a registration fee.¹⁶ Between September 2002 to July 2003 almost 900 students were enrolled in various courses at NSDC. Some 550 people – 73 per cent of which were female – graduated from the Centre in 2003 and another six hundred are expected to graduate in 2004.¹⁷

The National Enrichment and Learning Programme (NELP) was created in 1984 (it was then called the Adult Education Unit) and is part of the Ministry of Education, Human Resource Development, Youth and Sports. It was initially set up to provide the illiterate adult community with basic literacy courses. It has since expanded its scope and, based on a needs assessment survey carried out in 1999, provides a number of courses, including some on IT. In 2001, there were 19 Adult Education Centres – housed either in community centres or schools – with a total of 729 students.

The Centre for Adolescent Rehabilitation and Education (CARE), a charity organisation, provides a two-year professional skills training programme for those not able to continue secondary education. During their first year students take a computer literacy course.¹⁸

There are no official numbers on how many St Lucians make use of online education. There is some concern

about its quality and in 2003 the Ministry of Education warned of 'unaccredited online educational courses' offered over the World Wide Web.¹⁹

Finally, there are a number of local private training institutions that provide IT courses. A 2002 Ministry of Commerce survey identified nine companies, with a total of some 50 full-time and part-time employees, providing computer education and training. This suggests that there is a high demand for training in this area. One of them, the Institute of Self-Improvement Systems (ISIS), has worked with the SALCC to support them in their IT training courses.

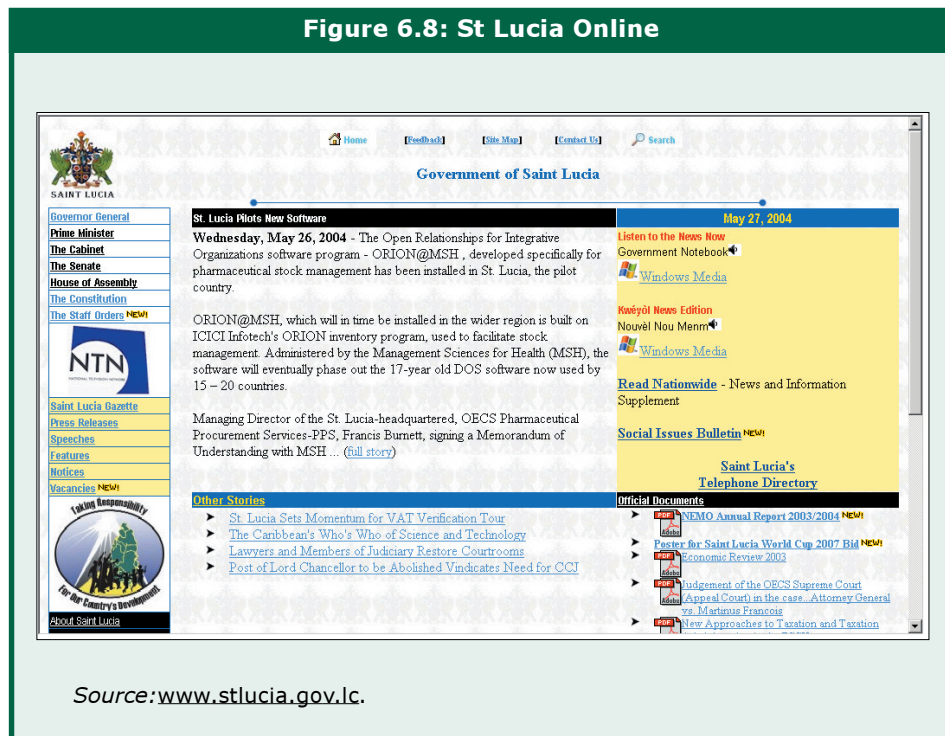
6.5 E-government

St Lucia is at two extremes in terms of e-government development. On the one hand, its public sector financial information system is one of the best in the Caribbean. The system has forced all government agencies to be networked for updating and exchanging budget information. There is also a government portal (at www.stlucia.gov.lc, Figure 6.8) with links to online agencies, key national reports, vacancy notices and the official government gazette. Some ministries have websites providing information, contact details and downloadable forms. For example, citizens can print income tax or trade license forms.

On the other hand, not all ministries have a web site. In addition, the lack of digital legislation and electronic payment methods has inhibited the development of transactional systems for citizens to interact with the government. To date, apart from the FINMAN system, there has not been a coordinated approach by the government for computerization of the public administration. Instead, the availability of ICT expertise in individual ministries has driven developments.

This is set to change within the Public Sector Reform Project. Carried out by a unit within the Office of the Prime Minister, one component of the project

Figure 6.8: St Lucia Online



will be the computerization of public services and the eventual introduction of full e-government services. A first step has been the creation of a subcommittee on ICT to address e-commerce issues.

An e-government proposal has been submitted to the European Union for funding.²⁰ The initiative envisions a central policy focus in the Office of the Prime Minister. In the first phase, the emphasis will be on public sector IT and e-government. This is deemed important because the government is the major employer and it can set an example for ICT development throughout the economy. Eventually this will lead to a national ICT policy.

The current plan is to have an IT department within each ministry rather than create one centralized IT department. A chief information officer in each ministry would enhance coordination. In addition, basic standards would be established for websites, downloadable forms, user interface, etc.

A major emphasis needs to be placed on passing an e-commerce law for this

is holding back efforts of a number of agencies to push ahead with providing online services. The attorney general is in charge of this and is reviewing St Lucian laws that might be affected. The Inland Revenue Department is looking at the legal requirements for filing financial claims electronically. The regional ECEMP project is also examining the feasibility of a standard tax system for all OECS countries and how to provide filing/enquiry/payment services online. The Customs and Excise Department is also upgrading to a new version of the ASYCUDA ++ software and would like to have brokers submit trade documents online.²¹

6.6 Call centres

Many Caribbean nations are keen to develop ICT businesses in areas such back office transactions, data entry, software development and call centres. English speaking populations, geographical proximity, compatible time zones²² and lower wages seem ideal to attract ICT business from the US and Canada.²³ St Lucia sees its market niche in the area of call centres. One reason is that it has

many high school leavers and no university hence the focus on low skilled IT industry such as call centres.

The potential of call centres for creating employment and generating income is considered substantial. According to one report, St Lucia's existing call centre has a multiplier effect of US\$ 24 million, about 3.5 per cent of GDP (Table 6.1).²⁴

According to the 2002 *Economic and Social Review* of St Lucia, there were five informatics firms "producing a range of services, including inbound and outbound telesales and telemarketing, customer administration, customer retention, data capture and conversion services", employing 566 persons. There is presently one locally owned call centre with 450 seats and 600 agents²⁵ with its own VSAT connectivity to the United States.²⁶ Telemarketing will be impacted by a recent modification to US legislation that allows people to have their telephone number blocked.²⁷ Call centres (where clients call a number rather than the reverse as for telemarketing) have not suffered since they are not affected by this legislation.

The National Development Corporation (www.stluciandc.com) has undertaken activities to attract ICT businesses such as telemarketing, call centres and back office work. This includes helping to locate the appropriate buildings and negotiating attractive telecommunication prices. The government argues that telecom rates are competitive compared to other Caribbean countries through an agreement negotiated with Cable & Wireless. In addition, the VSAT market for call centres and data entry businesses has been liberalized.

St Lucia faces several barriers in attracting call centre business. One is location. While facilities are available, most are in the southern part of the island some distance from where most of the labour is, in the north. Another reason is the lack of digital legislation. Today's call centre operations are often integrated with computers and may require agents to process transactions. The lack of Internet credit card transaction processing capability and legal protection is a barrier to attracting call centre business. Nevertheless the government recently announced that a new call centre will soon be established that may create up to 400 jobs within two years.²⁸

Table 6.1: Call centres economic impact

Selected Call Centers GDP Multiplier Impact

	Hourly Wages	Daily Wages	Annual Salary \$US	Total Agents	Multiplier	GDP Impact \$US
Jamaica	2.05	16	6'000	3'000	9	162'000'000
Trinidad	2.95	24	8'800	1'174	5.5	57'000'000
St Lucia	2.86	23	8'000	600	5	24'000'000
Dom. Rep.	0.99	7.92	1'900	2'821	(upper) 9 (lower) 5	48'239'100 26'799'500

Source: Zagada Institute.

- ¹ St Lucia Labour Party as quoted in "Caribbean Policy Response to the Information Age: A Review of Government Information and Communication Technology Policy and Services in Selected Caribbean Countries." http://itd.gopa.de/sites/oecs/documents/Policy_Response.pdf. [Accessed 9 June 2004].
- ² The government has managed to negotiate a new loan package with the World Bank for a total of US\$ 13.2 million. This is expected to allow the government to build two new schools and achieve universal secondary education. See the St Lucia Department of Information Services, at: <http://www.stlucia.gov.lc/gis/nationwide/2003/default.htm>. [Accessed 9 June 2004].
- ³ Ministry of Social Transformation, Culture, and Local Government. *Interim Poverty Reduction Strategy and Action Plan for St Lucia*. February 2003. See: <http://www.stlucia.gov.lc/docs/socialtransform/IPRSAPSAINTLUCIAMainreportFINAL08-2003.pdf>. [Accessed 9 June 2004].
- ⁴ In 2001 the Ministry of Education, Human Resource Development, Youth and Sports published the *Education Statistical Digest, June 2001. Past Trends, Present Positions and Projections up to 2005/06*. See: <http://www.stats.gov.lc/edigest601.pdf>. [Accessed 9 June 2004].
- ⁵ According to a 2001 speech by St Lucia's Prime Minister, there is a "trend at our schools here and across the Caribbean, where women and girls are doing much better these days than men and boys. It's also in keeping with the trend in attendance at our tertiary institutions, such as the University of the West Indies (UWI), where 60% of the students are women". See: www.stlucia.gov.lc/features/gisfeatures/prime_minister_tours_national_jobs_training_centre_learning_new_skills_at_an_old_factory_shell.htm. [Accessed 9 June 2004].
- ⁶ The Adult Education Unit has since then been renamed to 'The National Enrichment and Learning Programme'. See: <http://www.education.gov.lc/nelp/>. [Accessed 9 June 2004].
- ⁷ This number is based on the fact that according to the 2001 Census 24 per cent of the male and 30 per cent of the female population had completed secondary school or tertiary education.
- ⁸ Prime Minister Dr. Anthony at the Sixth Conference of Heads of State of CARICOM in 2000. See: <http://www.stlucia.gov.lc/pr2000/Sixth%20Conference%20of%20Heads%20of%20State%20of%20CARICOM%20Opens%20in%20St.%20Lucia.htm>. [Accessed 9 June 2004].
- ⁹ *Integration of Information and Communication Technology in Education: Proposed Policies*. September 2002. See: <http://www.oeru.org/publications/St.%20Lucia%20Draft%20ICT%20Policy%20for%20the%20Education%20System.pdf>. [Accessed 9 June 2004].
- ¹⁰ Virnet St Omer-Fontenelle. Ciceron Secondary School: An Education Model. February 25, 2004. See St. Lucia Government web site, at: http://www.stlucia.gov.lc/pr2004/february/ciceron_secondary_school_an_education_model.htm. [Accessed 9 June 2004].
- ¹¹ For further information on this project, see the project paper, at: <http://www.quasar.ualberta.ca/DRMIKE/Szabo/FinRptStLucia.pdf>. [Accessed 9 June 2004].
- ¹² For details of the course, see section 4.7 of the UWI's postgraduate programmes, at <http://www.uwi.tt/faculty%20booklets/post%20engineering.pdf>. [Accessed 9 June 2004].
- ¹³ These countries are: Anguilla, Antigua & Barbuda, Bahamas, Barbados, Belize, British Virgin Islands, Cayman Islands, Dominica, Grenada, Jamaica, Montserrat, St Kitts/Nevis, St Lucia, St Vincent & The Grenadines, Republic of Trinidad & Tobago. The UWI has three campuses: in Jamaica, Trinidad, and Barbados, see: <http://www.mona.uwi.edu/about/index.htm>. [Accessed 9 June 2004].
- ¹⁴ For an overview of the 2003-2004 list, visit the government website, at <http://www.education.gov.lc/hrd/Priority%20List%202003%20-%202004.pdf>. [Accessed 9 June 2004].
- ¹⁵ Dr. P.J. Dirr. *Distance and Virtual Learning in the Caribbean*. The Commonwealth of Learning. See: <http://www.col.org/virtualed/chapter4.pdf>. [Accessed 9 June 2004].

- ¹⁶ See government announcements, at: http://www.stlucia.gov.lc/pr2002/215_graduate_from_national_skills_development_centre.htm [Accessed 9 June 2004] and http://www.stlucia.gov.lc/features/gisfeatures/prime_minister_tours_national_jobs_training_centre_learning_new_skills_at_an_old_factory_shell.htm. [Accessed 9 June 2004].
- ¹⁷ 2004 New Year's Address to the Nation by Prime Minister Dr. Anthony, at: http://www.stlucia.gov.lc/primeminister/statements/2004/pms_new_year_2004.htm. [Accessed 9 June 2004].
- ¹⁸ See: http://www.deutschordenswerke.de/international/pages_english/st_lucia.htm. [Accessed 9 June 2004].
- ¹⁹ See government announcement, at: http://www.stlucia.gov.lc/pr2003/education_officials_warn_beware_of_online_courses.htm. [Accessed 9 June 2004].
- ²⁰ The World Bank has also provided a grant for this project. See: <http://wbln0018.worldbank.org/RMC/PHRD/proc%20planning.nsf/0/e57b77718c9f61ed85256dbf0061480b?OpenDocument>. [Accessed 9 June 2004].
- ²¹ The Caribbean Development Bank approved a US \$457,755 loan to St Lucia in 2003 for the Customs and Excise Department to enhance its computer systems including installation of the latest version of the Automated System for Customs Data Acquisition (ASYCUDA) software, a package it has been using since 1993. <http://www.caribank.org/Projects.nsf/ApprovedProjects?OpenPage&ExpandSection=3>. [Accessed 9 June 2004].
- ²² The issue of time zone compatibility is two-edged. On the one hand not being in the same time zone could be an advantage since work can be sent overnight for processing and availability the next day. On the other hand, for certain types of IT businesses, such as call centres, it is advantageous to be in the same time zone as where the majority of calls will come from. St Lucia time zone is four hours behind Greenwich Mean Time. This is the same time zone as Washington DC and Toronto, Canada during daylight savings (and one hour ahead at other times).
- ²³ Commenting on the attractions of the Caribbean for the Internet Economy, one analyst notes about English: "This gives the English speaking Caribbean an advantage in new economy services such as call centres that require a significant amount of conversation with customers." Regarding proximity, "As the largest geographical market on the Internet, the US market is important...The Caribbean region is strategically positioned in that it is one of the closest regions to this very important market." The analyst notes other attractions of the Caribbean including culture (home to calypso, soca, reggae), relatively high levels of functional literacy and high rates of telecommunication penetration. See Allister Mounsey. "The Internet Economy: Challenges and Opportunities for Caribbean Exports." Eastern Caribbean Central Bank. *2002 Annual Report*. Available at: http://www.eccb-centralbank.org/Publications/res_articles.asp. [Accessed 9 June 2004].
- ²⁴ Zagada Institute. 2002. *Caribbean Call Center Report*. Available at: <http://www.summitcircuit.com/archive/is-1102.html>. [Accessed 9 June 2004].
- ²⁵ James Beatty. November 2002. "Caribbean Call Center Overview." NCS International. Available at: <http://www.tmcnet.com/cis/1102/1102re.htm>. [Accessed 9 June 2004].
- ²⁶ Helen IT Systems — a subsidiary of Helen Television System at The Morne. Earl Bousquet. "600 Start New Jobs at HTS' Call Centre" 6 February 2001. Available at: http://www.stlucia.gov.lc/pmpressec/600_start_new_jobs_at_hts_call_centre_-_february_6,_2001.htm. [Accessed 9 June 2004]. The decision to allow the call centre to install its own VSAT connectivity was a point of friction with Cable & Wireless which argued it had offered the centre "very competitively-priced call centre services." See "Cable & Wireless explains its proposed pull-out from St Lucia." Available at: <http://www.caymannetnews.com/Archive/Archive%20Articles/February%202001/Issue%2059/CWpullsst.lucia.html>. [Accessed 9 June 2004].
- ²⁷ In December 2002 the US Federal Trade Commission made a series of amendments to its Telemarketing Sales Rule (TSR) including the development of a national "do not call" registry that empowers consumers to stop most unwanted telemarketing calls. Consumers have registered more than 50 million phone numbers with the National Do Not Call registry, and in anticipation of the October 1 compliance requirements, nearly 5,000 telemarketers have purchased all or segments of the list. For more, see the website at: <http://www.donotcall.gov>. [Accessed 9 June 2004].
- ²⁸ 2004 New Year's Address To The Nation By The Honourable Dr. Kenny D. Anthony. JANUARY 11, 2004. http://www.stlucia.gov.lc/primeminister/statements/2004/pms_new_year_2004.htm. [Accessed 9 June 2004].

7. Conclusions

*"The vulnerability of SIDS are also non-natural, economic and external in nature. These are compounded by economic constraints, such as small domestic markets with small natural and human resource bases, resulting in lack of economies of scale, competitiveness, diversification and hence investment opportunities."*⁷¹

7.1 How small is too small?

St Lucia is a dramatic example of the impact telecommunication liberalization can have on network growth and access, at least in the mobile market segment. Participation in the Organization of East Caribbean States (OECS) Telecom Reform Project, membership in the East Caribbean Telecommunication Authority (ECTEL), passage of a Telecommunications Act and creation of a new regulator were all prerequisites leading to the implementation of market opening. The entry of two additional mobile operators has had astounding results in a short period of time. In just six months the number of mobile subscribers per 100 inhabitants more than doubled to 83, significantly adding to accessibility of telephone services. Moreover, market liberalization resulted in large investments, an increase in employment and network upgrades supporting global roaming and advanced mobile Internet features.

What is equally relevant is that St Lucia is just a market of 160'000 inhabitants. That competition can be made to work in such a relatively small market is a stunning rebuttal to the historical argument that small islands developing states (SIDS) are not suited to competition. This is a lesson for other SIDS. Though St Lucia is not the smallest of SIDS, others in the Caribbean region are and they have also embarked on the liberalization process.

Thus the threshold of how big a market needs to be to sustain competition has been dramatically lowered.

What St Lucia now needs to do is extend its success in mobile to other sectors. Ironically, liberalization was not primarily intended to increase mobile subscriptions but rather to make the economy more competitive, particularly for export-oriented industries that depend on telecommunications. Thus far the desired impact has been limited. Efforts to attract offshore ICT industries have not been completely successful. One problem is that new companies have not yet entered market segments important for the attraction of offshore businesses such as Internet access. This includes a wide variety of suppliers for Internet access and international leased lines and a supporting ICT industry in areas such as web hosting, software development and related areas.

One barrier to wider development of the information society has been a lack of digital laws to ensure consumer and business protection, to legalize electronic transactions and to foster an environment of confidence in new online ways of business. This must be pursued with utmost urgency. Another barrier relates to education and awareness. There is a need to increase computer literacy and training both for those in school as well as the general population. A third barrier has been inadequate institutional support and accompanying policies and strategies. Ensuring proper staffing at institutions involved with ICT and developing ICT strategy and policy papers and integrating them into national development goals is necessary. Finally, a universal service and access policy and mechanisms for making it work need to be implemented.

7.2 Ranking St Lucia

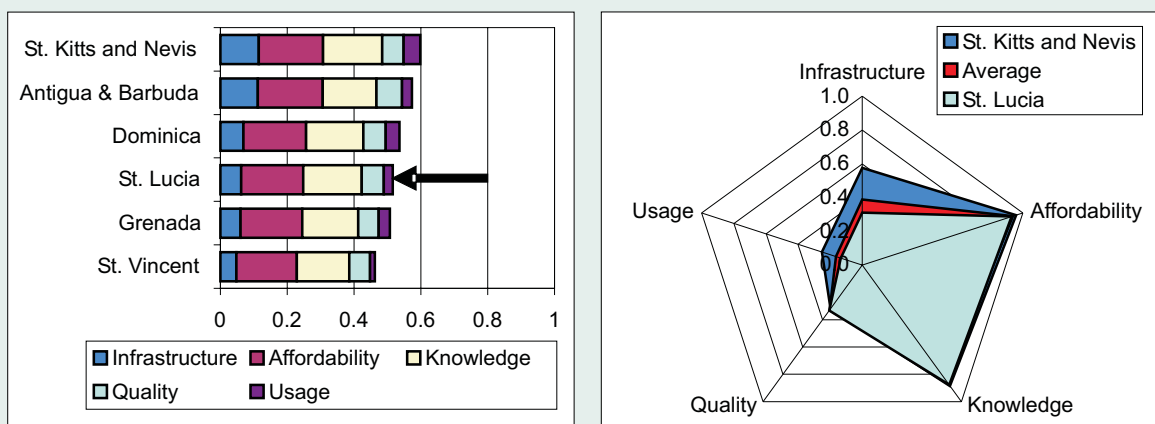
ITU has been using two methods to rank the ICT capabilities of nations. One is based on the Mosaic methodology (Box 7.1) and looks at the state of the Internet in a country. The ITU has used this framework in 21 economies where it has carried out case studies. St Lucia ranks fairly well (with a total score of 17.5 out of a possible 24) and ties for fifth with Mauritius. However it should be noted that most of the countries studied have per capita incomes considerably lower than St Lucia. The area where St Lucia is weakest compared to the best performers is connectivity, organization and sophistication. The first measures the availability of broadband infrastructure. St Lucia has international connectivity via the fiber optic ECFS cable. This is a benefit since fiber optic has attractive bandwidth and quality features. In terms of user access methods to the Internet, broadband access via ADSL is available. However the level of penetration is low and most access is via slow-speed dial-up. In terms of organization, St Lucia has liberalized its telecommunication market. However the organization variable measures the actual situation of the

Internet provider market and presently, St Lucia has only one provider. Steps need to be taken to diversify the market. Finally sophistication measures the use of applications beyond the traditional email and information searching and extends into areas such as video streaming and e-government and e-commerce services. St Lucia needs to encourage the use of more powerful applications to fully realize the benefits of the Internet.

The ITU introduced the Digital Access Index (DAI) in November 2003. Based on five categories, the DAI measures access to ICT. The categories are based on factors that contribute to the ability to access ICT and include 1) infrastructure (fixed and mobile telephone subscribers); 2) affordability (Internet access cost); 3) knowledge (literacy and school enrolment); and 4) quality (international Internet bandwidth and broadband subscribers). A fifth category, Internet usage, matches the theory of the index to reality. With a DAI value of 0.52, St Lucia just makes it into the upper access group (cut-off at 0.5) and ranks fourth among the six OECS countries considered. It lags the top-ranked OECS country,

Figure 7.1: The DAI and St Lucia

Digital Access Index category values in St Lucia and other Organization of East Caribbean States, 2002



Source: ITU.

Box 7.1: State of the Internet in St Lucia

The ITU has been using a framework to analyze the development of the Internet in different nations. Developed by the Mosaic group, the framework consists of values for six different elements that have an impact on Internet take-up. Values range from 0 to 4; the higher the value, the better.

Pervasiveness measures the overall access rate to the Internet. St Lucia is rated *pervasive*, 4, as the estimated penetration rate is ten per cent of the population (just meeting the 1 in 10 to reach the pervasive level).

Dispersion measures the geographical spread of Internet access. St Lucia is rated 4, *nationwide*, with Internet access available throughout the island.

Absorption measures the extent to which different sectors of the economy are using the Internet. St Lucia is rated 3, *common*, with between 50 – 90 per cent of organizations in the academic, government, business and health sectors having Internet access.

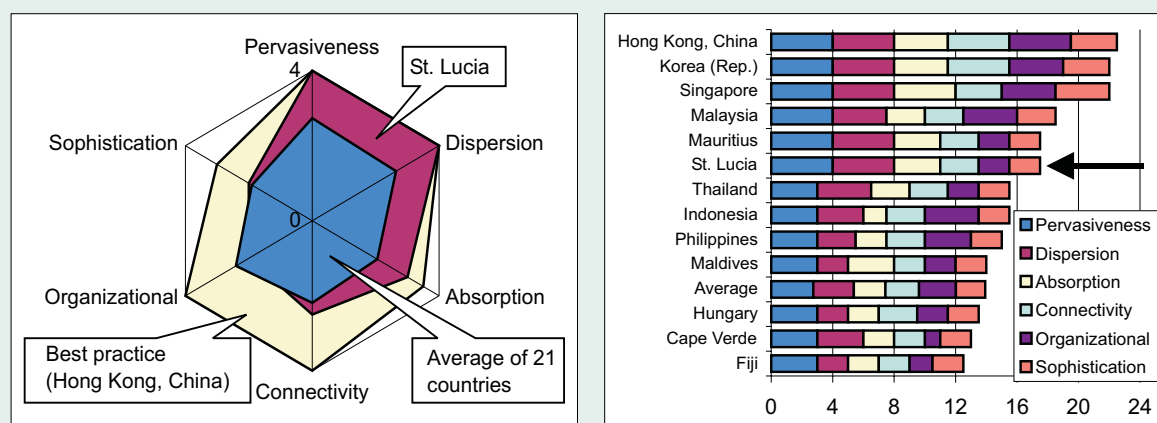
Infrastructure measures the extent and speeds of backbone and local access networks. St Lucia is rated 2.5, between *expanded* and *broad*. St Lucia has a well-developed, digital telephone network and is connected to the ECFS fibre-optic cable for international connectivity. However, although broadband access (via ADSL) is available, the predominant method of access to the Internet is still via low-speed, dial-up.

Organization measures market conditions. St Lucia is rated 2, *controlled*. There is presently only one ISP. Though the telecommunication industry has recently been liberalized, it is still too early to say what impact that will have on creating a dynamic and competitive ICT sector.

Sophistication measures how usage ranges from conventional to highly sophisticated. St Lucia is rated 2, *conventional*. The usage of advanced applications such as media streaming, e-commerce transactions and government interaction are still developing.

The ITU has carried out evaluations for 21 economies since January 2000. One way of comparing economies is to sum the individual scores. The highest ranked economy thus far is Hong Kong, China with an overall score of 22.5 (out of a possible maximum of 24). St Lucia ties with Mauritius at fifth with a score of 17.5. However it should be noted that many of the countries evaluated are not ideal comparators for St Lucia as they are either significantly above or below its income level. One benefit of the Mosaic framework is that it highlights which areas a country needs to improve to enhance its Internet diffusion. In the case of St Lucia, this would be organizational, an area where it is below the average of the 21 countries evaluated. Although St Lucia has recently opened up its telecommunication market it is too early to gauge the impact.

Box Figure 7.1: State of Internet in St Lucia



Note: The higher the value, the better (0=lowest, 4=highest).

Source: ITU.

St. Kitts and Nevis, in infrastructure and usage. St Lucia's ranking suggests that it has progressed half-way towards achieving a high-level of access to ICT.

7.3 Recommendations

- *E-commerce legislation and payment system.* There is an urgent need for an electronic commerce act (and other computer related legislation covering privacy, crime, etc.). The lack of such legislation is holding back the development of e-commerce and e-government applications and is a deterrent to investment in the sector. Priority should also be given to encouraging the banking sector to rapidly implement online payment systems. The lack of online merchant services blocks the capability for processing electronic transactions over the Internet in St Lucia and forces companies to locate websites abroad in order to have the needed capability.² This is a loss of potential revenue for St Lucia and adds to costs for local consumers because of the extra bandwidth required to access overseas sites. Neither of these—the lack of e-commerce legislation and payment systems—should be causing the delay they are. Model frameworks exist for e-commerce legislation and there are numerous examples from other nations.³ Banks in St Lucia already process "off-line" credit card payments submitted by local businesses and have Automatic Teller Machines from which cash can be withdrawn using credit cards. The banks have the expertise and resources to add online transactional capabilities.⁴
- *Relation between NTRC & ECTEL.* The National Telecommunication Regulatory Commission (NTRC), the national regulator, and the Eastern Caribbean Telecommunications Authority (ECTEL), the regional one, need to work more closely together. Cooperation is particularly important because NTRC is often reliant on ECTEL for administrative decisions and responses depend

on ECTEL's workload and resources. In some cases this can delay the implementation of projects and actions in St Lucia. Tasks between the two agencies need to be clarified especially with regard to financial and human resources issues. To avoid duplication and conflicts, the creation of staff and the establishment of funding need to be discussed jointly and take place in a cooperative, transparent way. Of course solutions to these issues cannot be made solely by St Lucia but point to the need for a regional review of the relationship between national regulatory agencies and ECTEL. Fine-tuning these ties is possible now that liberalization has kicked in and experience has been gained.

- *ICT coordination, institutions and documentation.* Various government agencies are involved in ICT issues:
 - o Office of the Prime Minister for developing e-government strategy;
 - o FINMAN (within the Ministry of Finance) for technical support of the government computerized financial system and ancillary ICT support for government agencies;
 - o Ministry of Communications as the sector ministry;
 - o NTRC and ECTEL as the national and regional telecommunication regulator respectively; and
 - o Other government agencies such as the Ministry of Commerce (e-commerce issues, ICT business sector), the National Development Corporation (attraction of IT business such as call centres), the Ministry of Broadcasting (regulation of mass media) and others are also involved.

There is somewhat of a lack of coordination and possible

duplication in the various areas of ICT the government is involved in. There is no central agency that is taking stock of all the various initiatives. Even though the Public Sector Reform project in the Office of Prime Minister has been put forth as a coordinator, it appears that for now, the thrust is more focussed on e-government issues rather than wider ICT within the nation. Many countries have tried to reduce overlap, consolidate resources, simplify procedures and create a larger voice for ICT by creating a single ICT agency. St Lucia might give this some consideration. Short of that, coordination needs to be improved. Furthermore a wide-ranging committee should be created overseeing the development of ICT in the nation. This would draw on all the various agencies currently involved. At the same time, the Ministry of Communications needs to play a greater role in the evolution of sector strategy and policy as is the case in other countries. This may require institutional strengthening. Finally sector strategy and policy documents are needed to guide ICT development. Furthermore, ICT issues need to be more fully considered in national development policies, plans and evaluations.⁵

- *Universal service.* A policy and strategy needs to be designed for universal service and access to Information and Communication Technology (ICT). The Telecommunications Act calls for the creation of a Universal Service Fund (USF) to which all operators are supposed to contribute a percentage of revenues. However this has not yet been implemented. The Act also notes that all operators are to contribute at the same percentage rate. This might need revisiting in that smaller operators might find this difficult. Also, it seems that the percentages might vary according to the market segment the provider operates in. The Act puts

some emphasis on the idea that the USF is to reimburse operators although it does make mention that it can also be used to "promote universal service." The exact operation of the USF needs to be clarified. It would be preferable that this be done in conjunction with a public consultation among all stakeholders about what kind of universal service and access mechanisms are needed. It would also be useful to look at experience in other countries, particularly developing ones. It is critical that the USF be designed so that it is consistent with an eventual national ICT policy and strategy, particular sections that deal with universal service and access. In that regard, it is important to consider that universal service is not only about reimbursing operators for the provision of service to households but should also consider community access facilities such as Internet cafés, libraries and schools. Finally, universal service and access indicators should be tracked on a regular basis to ensure that the mechanisms eventually put in place are having the desired impact.

- *Attracting market entrants.* While the mobile market has been successful in attracting new entrants, the same has not been so for other market segments such as Internet access provision or fixed lines. Although two licenses have been awarded to provide Internet access, neither company has commenced operations. Both also appear more interested in providing Voice over Internet Protocol (VoIP) than Internet access service. Another company had applied for a fixed line license but its application was later withdrawn. The reasons behind this lack of interest in other market segments besides mobile and failure to attract additional market entrants merits investigation and the necessary adjustments made. This is essential for competitive

pricing and innovation in the ICT sector. For example, while St Lucia's dial-up Internet access prices are not particularly expensive, they are also not the cheapest among peer countries with the same level of income. Broadband pricing is steep and would probably decline with additional competition.

- *Hosting.* Most St Lucian web sites are hosted abroad. This adds to higher Internet access costs for the local community and is a drain on foreign exchange. In addition the local ICT industry is losing out on opportunities. Efforts need to be made to offer price and quality competitive web hosting and supporting services.
- *Regional hub.* St Lucia is the largest of Organization of East Caribbean States (OECS). As such it already serves as the headquarters for a number of regional organizations such as OECS itself as well as the East Caribbean Telecommunication Authority. Private companies such as Digicel have also made St Lucia the hub of their OECS regional operations. St Lucia could gain much by leveraging this and emphasizing itself as the regional base for ICT in the OECS. This would attract foreign investment, increase employment and add to the size, diversity and innovation of its ICT sector. Indeed, the government might want to widen its policy of focusing on the attraction of call centres to a broader range of informatics companies.
- *Statistics.* The diagnosis of the ICT sector is dependent on data. Statistics are essential to monitor the liberalization of the market, track universal service and access and measure the impact of ICT on the economy and social well-being. The NTRC has made a good start of collecting data for analyzing the sector. The Central Statistical Office is also to be commended for the ICT data it collects in its household surveys.

Their efforts need to be combined to attain synergy and minimize duplication. Attention needs to be paid to standard indicators and model surveys developed by the ITU, EUROSTAT and others to enhance international comparability of the situation in St Lucia and other countries. At the same time, indicators need to be updated regularly (at least on a quarterly basis) and posted to a web site for easy access by government, industry, public and researchers.

- *IT for all secondary students.* The government needs to expand ICT classes to all secondary students and make them compulsory. With universal secondary education a near accomplishment, this would steadily increase ICT literacy over the next years.
- *Strengthening the educational system.* There are several signs that St Lucia has not adequately managed to prepare people for the changing economy and to satisfy the demand for education. While government efforts to accomplish universal secondary education are laudable, it needs to reinforce the tertiary system in order to expand its intellectual capital. With more secondary students graduating, more will want to enter the tertiary system and the government should be prepared to use this pool of potential manpower to increase the country's knowledge base. Efforts should also be made to increase the level of studies at SALCC and to offer higher level degrees, particularly Bachelor degrees.
- *Increase the number of IT experts.* The number of necessary IT experts is limited since there are no plans to create a high-level ICT industry. At the same time IT experts are needed in all the other sectors of the economy, including tourism, the telecommunication market, and the banking sector. The government therefore needs to

expand the IT department at SALCC in terms of courses as well as in terms of the number of students. Ideally, a survey should be carried out in cooperation with the private sector to identify the

most urgent areas of IT expertise. SALCC courses should be complement through distance education courses that already exist with the University of the West Indies.

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- ¹ Statement by Honourable George W. Odum, Minister for Foreign Affairs and International Trade of St Lucia, at the Special Session of The United Nations General Assembly For the Review and Appraisal of the Implementation of the Programme of Action For the Sustainable Development of Small Island Developing States, September 27, 1999. http://www.stlucia.gov.lc/pr1999/foreign_minister_address_un_assemble_for_review_of_developing_states.htm. [Accessed 9 June 2004].
 - ² "For instance, participants in a seminar on e-commerce in St Lucia (July 8, 2000) reported that in discussing credit card authorizations for e-commerce transactions, local banks wanted security deposits ranging between EC\$250,000 to \$500,000! They also pointed out that the absence of a facility to have credit card authentication is seen as a bigger problem than even the cost of telecommunications. Another problem identified was the lack of trained personnel for Internet-related and e-commerce activities." http://itd.gopa.de/sites/oecs/documents/11_CARICOM_eCommerce.pdf. [Accessed 9 June 2004].
 - ³ For example the United Nations Commission on International Trade Law (UNCITRAL) has adopted a model laws for electronic commerce and electronic signatures. See: <http://www.uncitral.org/english/texts/electcom/ecommerceindex.htm>. [Accessed 9 June 2004]. For examples of national legislation from another small island developing state see the Cybercrime and Electronic Transaction Acts of Mauritius, available at: <http://ncb.intnet.mu/mitt/ministry/regulat.htm>. [Accessed 9 June 2004].
 - ⁴ For example the Royal Bank of Canada has two branches in St Lucia, provides online banking and VISA credit card. It even offers discounts to Canadian customers who make online purchases using its VISA card. <http://www.royalbank.com/cards/rbc rewards/onlinepromo/index.html>. [Accessed 9 June 2004].
 - ⁵ For example the Poverty Reduction Strategy Report makes no mention of the role of ICT for reducing poverty and spurring development.

Annex 1: Meetings

Subject	Date/Time	Contacts
Minister of Communications	Mon 15.12.2003 09:00	Hon. Felix Finisterre
Ministry of Communications	Mon 15.12.2003 09:30	Mr. Barrymore Felicien; Mr. Michael Flood; Mr. Truscott Augustin
Ministry of Education	Mon 15.12.2003 11:30	Mr. Marlon Narcisse; Ms. Cathy Augier -Gill
Ministry of Finance	Mon 15.12.2003 14:30	Mr. Lyndon Arnold
Ministry of Health	Mon 15.12.2003 16:00	Mr. Dwight Calixte
NETEL	Tue 16.12.2003 10:00	Mr. Victor
Ministry of Commerce	Tue 16.12.2003 11:15	Mr. Leo Titus Preville
FINMAN	Tue 16.12.2003 14:00	Mr. M. Alexis
Sir Arthur Lewis Community College	Tue 16.12.2003 16:00	Ms. Annie Sealy-Auguste; Ms. Coleen Palmer
DigiSolv	Tue 16.12.2003 16:30	Mr. Gerry George
NTRC	Wed 17.12.2003 08:30	Ms. Michele Marius
Fiji Islands Statistics Bureau	Wed 17.12.2003 10:30	Mr. Edwin St. Catherine
Mirror Newspaper	Wed 17.12.2003 11:45	Mr. David Vitalis
Digicel	Wed 17.12.2003 13:30	Mr. Mark Naughton; Mr. Bennette Thomas
NDC	Wed 17.12.2003 16:00	Ms. Deborah Hackshaw
Consumer Association	Wed 17.12.2003 16:00	Mr. Andrew Antoine
Cable & Wireless	Thu 18.12.2003 09:00	Mr. Rudy Gurley
Cable & Wireless, Fixed & International	Thu 18.12.2003 10:00	Mr. Roderick Cherry
Cable & Wireless, Mobile	Thu 18.12.2003 11:00	Ms. Tulia Mathews
Cable & Wireless, Internet	Thu 18.12.2003 14:00	Mr. Lawrence Nervais
Fred Issac	Fri 19.12.2003 08:30	Dr. Frederick Isaac
UNDP	Fri 19.12.2003 08:30	Ms. Petal Nathaniel
AT&T	Fri 19.12.2003 10:30	Mr. Richard Scott
ECTEL	Fri 19.12.2003 14:00	Mr. Donnie De Freitas
Office of Prime Minister	Fri 19.12.2003 15:50	Dr. Cletus K. Bertin

Annex 2: Acronyms

ADSL	Asymmetrical Digital Subscriber Line
AMPS	Advanced Mobile Phone Service/System
C&W	Cable & Wireless
CARICOM	Caribbean Community
CDB	Caribbean Development Bank
EC\$	Eastern Caribbean Dollar. The currency used in St Lucia. The exchange rate is EC\$ 2.67 per one United States dollar.
ECFS	Eastern Caribbean Fibre System
ECTEL	Eastern Caribbean Telecommunications Authority
EU	European Union
FINMAN	Financial Management Reform Project
GDP	Gross Domestic Product
GPRS	General Packet Radio Service
GSM	Global System for Mobile
ICT	Information and Communication Technology
ISDN	Integrated Services Digital Network
ISP	Internet Service Provider
IT	Information Technology
LC	St Lucia's top level country code
LUCELEC	St Lucia Electricity Services Limited
MIS	Management Information System
MIS	Management Information System
MMDS	Multi-channel Multi-point Distribution Service
MMS	Multimedia Message Service
MoH	Ministry of Health
NTRC	National Telecommunications Regulatory Commissions
OECS	Organization of Eastern Caribbean States. Members are Anguilla, Antigua and Barbuda, British Virgin Islands, Dominica, Grenada, Montserrat, St. Kitts and Nevis, St Lucia and St Vincent and the Grenadines
PC	Personal Computer
SALCC	Sir Arthur Lewis Community College
SIDS	Small Island Developing States
SMS	Short Messaging Service
TDMA	Time Division Multiple Access

TV	Television
UNDP	United Nations Development Programme
UNPAN	United Nations Online Network in Public Administration and Finance
VSAT	Very Small Aperture — Satellite — Terminal
WAP	Wireless Application Protocol
Wi-Fi	Wireless Fidelity
WLAN	Wireless Local Area Network

