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ECLAC SUBREGIONAL HEADQUARTERS FOR THE CARIBBEAN

FOCUS

Magazine of the Caribbean Development and Cooperation Committee (CDCC)

A NEW ERA IN CARIBBEAN TELECOMMUNICATIONS

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ABOUT ECLAC/CDCC

The Economic Commission for Latin America and the Caribbean (ECLAC) is one of five regional commissions of the United Nations Economic and Social Council (ECOSOC). It was established in 1948 to support Latin American governments in the economic and social development of that region. Subsequently, in 1966, the Commission (ECLA, at that time) established the subregional headquarters for the Caribbean in Port of Spain to serve all countries of the insular Caribbean, as well as Belize, Guyana and Suriname, making it the largest United Nations body in the subregion.

At its sixteenth session in 1975, the Commission agreed to create the Caribbean Development and Cooperation Committee (CDCC) as a permanent subsidiary body, which would function within the ECLA structure to promote development cooperation among Caribbean countries. Secretariat services to the CDCC would be provided by the subregional headquarters for the Caribbean. Nine years later, the Commission's widened role was officially acknowledged when the Economic Commission for Latin America (ECLA) modified its title to the Economic Commission for Latin America and the Caribbean (ECLAC).

Key Areas of Activity

The ECLAC subregional headquarters for the Caribbean (ECLAC/CDCC secretariat) functions as a subregional think-tank and facilitates increased contact and cooperation among its membership. Complementing the ECLAC/CDCC work programme framework, are the broader directives issued by the United Nations General Assembly when in session, which constitute the Organisation's mandate. At present, the overarching articulation of this mandate is the United Nations Sustainable Development Goals.

Towards meeting these objectives, the Secretariat conducts research; provides technical advice to governments upon request; organizes intergovernmental and expert group meetings; helps to formulate and articulate a regional perspective within global forums; and introduces global concerns at the regional and subregional levels.

Areas of specialization include trade, statistics, social development, science and technology, and sustainable development, while actual operational activities extend to economic and development planning, demography, economic surveys, assessment of the socio-economic impacts of natural disasters, climate change, data collection and analysis, training, and assistance with the management of national economies.

The ECLAC subregional headquarters for the Caribbean also functions as the Secretariat for coordinating the implementation of the Programme of Action for the Sustainable Development of Small Island Developing States. The scope of ECLAC/CDCC activities is documented in the wide range of publications produced by the subregional headquarters in Port of Spain.

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Guyana	

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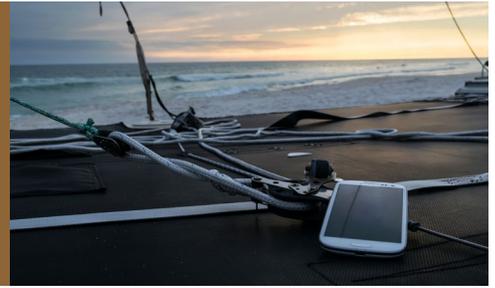
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A NEW ERA IN CARIBBEAN TELECOMMUNICATIONS



Telecommunications systems in the Caribbean have been going through a period of consolidation. What will this mean to their customers, to regulators and to governments?

The liberalization of telecommunications markets in the late 1990s and early 2000s marked the emergence of many Caribbean countries from an era of monopoly control over the networks supporting fixed and mobile telephone services, broadband Internet, and cable television. An environment of regulated competition in the years that have followed has contributed to far lower costs for telecommunications services than what came before, and has contributed to broad increases in the number of Caribbean citizens who are using the Internet.

However, recent years have seen a consolidation among companies offering telecommunications serviced in the region, and this has the potential to erode the benefits enabled by the forces of market competition. The recent acquisition of Columbus International, which provided services under the FLOW brand name, by Cable & Wireless – operator of the LIME brand – represents the consolidation of two of the top three telecommunications providers operating in Caribbean markets. As part of the merger, Cable & Wireless has not only acquired Columbus' retail and commercial broadband operations in seven Caribbean countries, but has also gained control of Columbus' extensive network of undersea cables.



Photo by Dale Alexander, ECLAC

Ms. Diane Quarless, Director, ECLAC subregional headquarters for the Caribbean

This merger is part of a trend in recent years that has seen small telecommunications operators in Caribbean countries merged into larger regional companies, and may well see regional companies further merged into larger, global companies. Consider, for example, the case of Columbus Communications, which in 2013 purchased the Karib Cable Network, with operations in Antigua, Barbados, Saint Lucia, and Saint Vincent and the Grenadines, having also acquired in 2012 TeleBarbados and Tele-St. Lucia. Columbus has also recently made acquisitions in El Salvador and Honduras. These companies have all been aggregated under the ownership of Cable & Wireless, which has itself now been acquired by Liberty Global, a broadband and cable company with operations in 14 countries, primarily in Europe. The Cable & Wireless experience is typical in this dynamic industry.

Digicel, the Caribbean's other major multi-national telecommunications provider, has also been active in the acquisition of small cable, telephone, and broadband companies. In recent years, Digicel has acquired Jamaica's Telstar Cable, Dominica's SAT Telecommunications, Bermuda's BTC, TCI Broadcasting in the Turks and Caicos, and the Caribbean Cable Network, with operations in Anguilla, Nevis, and Montserrat. Digicel's focus on acquisition of cable and fixed-broadband assets is indicative of the company's strategic expansion into market offerings beyond its traditional presence in the mobile services sector. However, Digicel's rapid expansion has also significantly increased its debt exposure. The company may thus find itself challenged to finance further growth following the recent withdrawal of a planned stock offering. Digicel may therefore find itself ripe for acquisition by a larger company.

In the coming years, it appears likely that telecommunications in the Caribbean will be dominated by two major players – whether Digicel and Liberty Global or their corporate successors – competing head-to-head in both mobile and fixed broadband service across a number of national markets. Furthermore, we should anticipate that several countries will continue to host operators that remain, at least in some portion, state-owned.

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CONSOLIDATION OF TELECOMMUNICATIONS COMPANIES



The acquisition of Columbus International by Cable & Wireless will likely have the greatest impact in countries where these companies had previously been the two major competitors in the fixed broadband market.

The countries most affected by this merger will include Barbados, Grenada, Jamaica, Saint Lucia, and Saint Vincent and the Grenadines. The impact will also be felt in Trinidad and Tobago, where Cable & Wireless – now Liberty Global – will need to divest itself of a 49 per cent stake in a major, state controlled telecommunications company.

In some of these countries, a level of competitive balance may be restored over time as the mobile carrier, Digicel, expands into the fixed broadband market. However, while the subsequent market duopoly surely be better than a monopoly, still the limited level of competition will likely have negative repercussions for consumers. Following is a synopsis of the current status of negotiations ongoing between country telecommunications regulators and the companies competing for control of the telecommunications market in the Caribbean.”

BARBADOS

The Fair Trading Commission (FTC) of Barbados estimated that Columbus’ FLOW network, combined with Cable & Wireless’ LIME network, would have at least a 90 per cent market share of the fixed internet sector.¹

Out of concern for the potential anti-competitive effects of this projected market dominance, the FTC stipulated as a condition for its approval of the merger, a requirement that the combined entity divest itself of one set of fibre cable assets and related equipment in all areas where there exists an overlap between the two networks.

In total, the cables to be divested run past 56,000 homes. The merged entity has been directed to sell these assets to a “suitable buyer that has the economic and technical capacity to maintain a viable network,”² which will then operate in the market as a competitor to Cable & Wireless. As the company had not found a buyer as of a 180 day deadline that lapsed in September, an appointed Trustee has become involved in facilitating the sale of these assets.³

GRENADA

Though Columbus and Cable & Wireless officially merged at corporate level in March, the Grenadian subsidiaries of the two companies continue to operate independently as at the time of this writing.

Grenada’s Minister of Communications, Gregory Bowen, has indicated⁴ that a

merger will likely be approved if the companies subscribe to an Agreement articulating 10 conditions proposed by the Council of Ministers of the Eastern Caribbean Telecommunications Authority (ECTEL). ECTEL is a regional advisory body to the telecommunications regulator in Grenada, and to those in Dominica, Saint Kitts and Nevis, Saint Lucia, and Saint Vincent and the Grenadines as well.

ECTEL’s proposed Agreement included requirements that the merged entity enable non-discriminatory access to their facilities by other licensed telecommunications providers, and provide consumers with a basic retail broadband internet service at a price not to exceed 3 per cent of GDP per capita. However, in September 2015, the merging parties proposed amendments to the Agreement, which the ECTEL Council of Ministers found would render the Agreement unenforceable. The Council of Ministers therefore rejected the proposed amendment. At the same time, the Council also condemned an increase in the price of broadband that had been announced by FLOW Grenada at a time when the wording of the conditions of the Agreement had not yet been finalized.⁵

¹ http://www.ftc.gov.bb/library/2015-04-30_summary_report_cwc_columbus.pdf

² Ibid.

³ <http://www.nationnews.com/nationnews/news/73226/buyer-fibre-network>

⁴ <http://thenewtoday.gd/local-news/2015/06/25/conditions-set-for-flowlime-merger/>

JAMAICA

Jamaica was the first country to indicate regulatory approval for the merger between Cable & Wireless and Columbus.

When the approval was announced in January 2015 by Technology Minister Phillip Paulwell, he indicated that, as per the terms of the country's Telecommunications Act, the Government was not expressly authorized to impose conditions in relation to the transaction.⁶ However, in discussion with Cable & Wireless prior to the approval, the Government did extract a commitment that the company would continue to provide access to undersea cables and utility poles to Digicel and other competitors.

The merger leaves Cable & Wireless with a near-monopoly on Jamaican fixed broadband in the short term, as Digicel is a very recent entrant into that market. Additionally, Cable & Wireless now controls all submarine cables connecting Jamaica to the rest of the internet.

SAINT LUCIA

The two national sub-entities of the merged company, Cable & Wireless (St. Lucia) Ltd. and Columbus (St. Lucia) Ltd. continue to operate separately under their individual operating licenses and frequency authorizations.

The merger of these companies is still pending approval by the National Telecommunications Regulatory Commission, working in concert with ECTEL. Digicel does not currently offer fixed

broadband services in Saint Lucia. Though there is one additional small cable ISP in the country, the merger will leave the combined Cable & Wireless/Columbus entity with a near-monopoly position in the fixed broadband market. This is especially problematic for Saint Lucia because, as revealed by a 2014 ECTEL survey, only 33 per cent of households have fixed internet access, the lowest percentage among ECTEL Member States.⁷ Going forward, absent the impetus of competition, it may be difficult to stimulate the investment needed to expand broadband on the island.

SAINT VINCENT AND THE GRENADINES

As in other ECTEL countries, the local FLOW and LIME networks continue to run as separate companies. If the merger is completed at a local level, it could leave Saint Vincent and the Grenadines with a single fixed broadband provider.

However, through the Caribbean Communications Infrastructure Program (CARCIP), the country is currently in the planning stages for the deployment of new networking infrastructure to improve service in the Grenadine islands, which is expected to be instituted under the terms of a public private partnership (PPP). Potentially, should a company other than the monopoly provider be chosen to build and operate this new network infrastructure, that network could form a key element of a broader, national network, which could be an important, new competitive force in the marketplace.

TRINIDAD AND TOBAGO

The Telecommunications Authority of Trinidad and Tobago (TATT), the country's telecommunications regulator, has required Cable & Wireless to divest itself of the 49 per cent share of ownership that it holds in the Telecommunications Services of Trinidad and Tobago (TSTT) company.

TSTT, which is 51 per cent state-owned, provides broadband service under the brand name "BLINK", and mobile phone service under the brand name "bmobile". Since Columbus' FLOW network is now TSTT's primary competitor in the Trinidad and Tobago's broadband market, it was seen as a conflict that a single entity would own the country's largest broadband provider, plus 49 per cent of its biggest competitor.

Accordingly, as purchasers for the 49 per cent stake are being actively sought, Cable & Wireless has withdrawn itself from operational involvement in TSTT's affairs, and has vacated its seats on the company's Board of Directors. The divested assets are unlikely to be sold to Digicel, because Digicel is TSTT's only competitor in the market for mobile services. Digicel, for its part, is actively investing in its nascent fixed-broadband offerings in Trinidad and Tobago. Eventually, between FLOW, Digicel, and TSTT, there may be three major competitors in the country's broadband market - in addition to several smaller ones - which will make Trinidad and Tobago one of the most competitive broadband markets in the Caribbean region. ■

⁵ http://www.ectel.int/images/ECTEL-NOTICES/ECTEL_Communique-32nd_Meeting-Council_of_Ministers.pdf

⁶ http://www.jamaicaobserver.com/news/Gov-t-gives-green-light-to-CWC-s-control-of-Columbus-Int-l_18229082

⁷ See "Broadband access and use in the ECTEL Member States," page 8 - <http://www.ectel.int/index.php/resources/publications?download=98:broadband-survey-2014>

FINANCING UNIVERSAL ACCESS TO TELECOMMUNICATIONS SERVICES



In recent years, governments have expanded the use of Universal Service Funds (USFs) as a source of funding for public investment in socially beneficial ICT projects, such as initiatives aimed at expanding ICT access to underserved members of society.

For example, in Jamaica, the USF has been used to support the Community Access Point project, which has enabled the establishment of over 200 computer labs across the country. In Saint Lucia, the USF is being used to fund the purchase of broadband equipment and related services at libraries and Community Access Centres. In Saint Vincent and the Grenadines, in addition to supporting over 150 public internet access points and providing subsidized internet access to low-income households, the USF has been used to fund programmes on mobile applications development and cyber security at Saint Vincent and the Grenadines Community College.

In Caribbean countries, USFs are commonly funded through a surtax on the use of telecommunications services. Commonly, the tax is levied as a per-minute charge on telephone calls, such as in Barbados, where an excise duty is attached to cellular phone calls at a rate equivalent to 1.5 US cents per minute. In Jamaica, the USF is funded through a similar duty, as well as an additional charge attached to incoming international calls.

In the case of Saint Vincent and the Grenadines, the USF has been funded through a flat one per cent tax on

the revenues of telecommunications companies.

However the National Telecommunications Regulatory Commission (NTRC), which manages the USF, has indicated a need to increase revenue as part of a broaden the scope of the fund to match the “large connectivity gaps” that persist in the country.¹ In light of this, the NTRC has proposed raising funds through a “Multiple Rate Framework,” that would collate resources as a percentage of various revenue streams. For example, after five years, revenues from internet and mobile data would be levied at two per cent, fixed line phone calls would be levied at five per cent, and mobile calls would be levied at 11 per cent. This rate structure was devised to provide an incentive for service providers to focus on offering data oriented services, rather than voice services, as data services are considered more conducive to driving economic productivity.

However, in-as-much as the focus on taxing phone calls is encouraging a shift toward the use of data services, it is undermining the strategy to establish a sustainable revenue mechanism in the long term. Consumers are already shifting their calling behaviour toward internet-based telephony services, such as

Skype and WhatsApp. These services are one of the reasons that mobile phone traffic is dropping in countries across the region. In Trinidad and Tobago for example, the number of domestic voice minutes used decreased by 6.3 per cent between 2013 and 2014.² A similar trend can be observed with cable television use, as customers increasingly “cut the cord” in favour of services like Netflix, Hulu, and Amazon Prime.

The use of these so-called “Over the Top” (OTT) services reduces costs to consumers, improves quality of service, brings additional competition to the market, and opens up new options for innovation. On the whole, these are beneficial changes, though telecommunications providers have a point in their expressed concern that OTTs pose a threat to company revenues – and hence also to corporate incentive to increase investment in the network. Similarly, USFs that rely heavily on revenues based on the taxation of voice traffic, face an ongoing erosion of their funding source as consumers increasingly choose to make use of OTT services.

Accordingly, USFs will need to shift their reliance for recapitalization toward other sources of revenue, such as from national licensing and concession payments made by

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¹ <http://ntrc.vc/wp-content/uploads/2015/07/Consultative-document-proposed-increases-to-USF-contribution-fees.pdf>

² http://www.tatt.org.tt/DesktopModules/Bring2mind/DMX/Download.aspx?Command=Core_Download&EntryId=507&PortalId=0&TabId=222 page 38

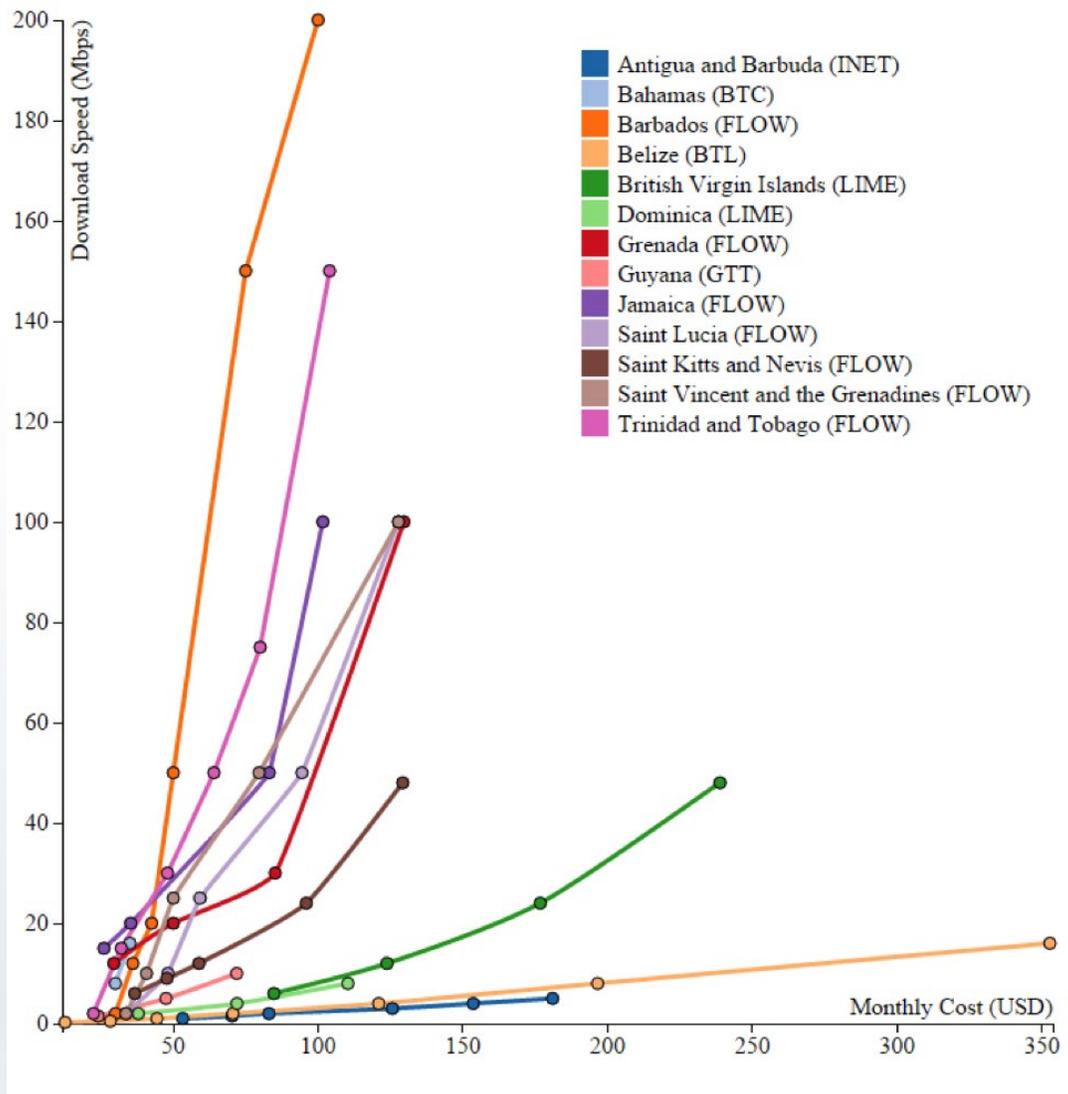
MARKET LIBERALIZATION IN THE BAHAMAS

The Bahamas Telecommunications Company (BTC) was state-owned until 2011, when Cable & Wireless paid US\$204 million for a 51 per cent stake in the company. In 2014, the Government of the Bahamas negotiated a restructuring to reduce the Cable & Wireless stake in BTC to 49 per cent, with the 2 per cent balance in ownership going to a charitable trust – the BTC Foundation – tasked with investing in Bahamian interests. Cable & Wireless still maintains majority voting rights in BTC, as well as management and board control of the company.*

As part of its sale to Cable & Wireless, BTC was granted an exclusive monopoly in the cellular market for three years following its sale. When this expired in 2014, plans were announced to auction two additional licenses for cellular operators, and Cable Bahamas recently won the auction for the first additional license. Digicel, which was widely expected to bid for one of the licenses, had dropped out of the process prematurely. It is not clear whether the market can support the successful auctioning of the second additional license.

* <https://www.telegeography.com/products/commsupdate/articles/2014/08/15/cwc-completes-controversial-2-deal/>

FIGURE 2: PRICE OF FIXED BROADBAND PLANS IN SELECTED CARIBBEAN COUNTRIES



This chart illustrates the cost and download-speeds of broadband plans advertised on the websites of ISPs in 14 Caribbean countries, as of October 2015. Some ISPs, such as those in Barbados, can be seen to have steep, tall graphs that reflect a high availability of bandwidth at a relatively low cost. ISPs with long graphs of modest slope, found in Belize and Antigua and Barbuda, offer slower broadband plans at a higher cost.

INNOVATIONS: GEOTHERMAL CLOUD COMPUTING FOR THE EASTERN CARIBBEAN



The Eastern Caribbean's geothermal resources could be used to power data centres that would enable the region to compete in the growing, global market for hosting cloud computing services.

Islands such as Dominica, Grenada, Guadeloupe, Martinique, Montserrat, Nevis, Saint Lucia, and Saint Vincent have the potential to generate electricity using subterranean heat sources, but these resources remain largely untapped. An important reason for this is that domestic markets in Caribbean countries are too small to generate sufficient local demand to cover the high investment costs needed to establish and maintain geothermal electricity generation projects. Geographic isolation has also presented a challenge to the possibility of large-scale electricity export.

Limited market size is one of the reasons that previous attempts at initiating geothermal energy projects in the subregion have brought only limited success. However, a new opportunity is emerging on the horizon – one which may change the equation. There is currently a global trend toward the outsourcing of electricity-hungry data centres to places with abundant green energy. This represents a potential opportunity for the commercial exploitation of geothermal energy in the Caribbean. Rather than trying to export raw electricity, the geothermally-rich islands of the Lesser Antilles could instead use that energy to power data centres located close to the source of the power. These data centres could be used to host the computer systems

needed to enable the export of cloud computing services. The revenue stream created from such projects could justify the capital investment needed to establish geothermal power stations, which in turn could provide low cost, green electricity to all sectors of the economy.

INNOVATIONS: LOW EARTH ORBIT SATELLITE INTERNET

Satellite-based Internet access has a reputation for being slow and expensive, but new generations of communications satellites are changing the equation.

In the past, internet-supporting communications satellites were located in a high, geostationary orbit, 35,786 km into space. In this orbit, a satellite will travel at a speed synchronized with the rotation of the planet, enabling it to stay above a single point on Earth at all times. The drawback to this orbit is that, even at the speed of light, the time it takes for the radio signal to travel from the ground to a satellite and back is no more than a quarter of a second. That figure gets doubled to half a second as a system awaits a response. This is considered very high latency for Internet communications, causing enough delay to be noticeable to end-users.

More recently, a company called O3b launched a constellation of 12 satellites orbiting in a Medium

Earth Orbit (MEO), only 8,062 km above the ground, reducing latency to around 0.15 seconds for a full request and response. Connections to this network are sold as “backhaul” services to mobile network operators and internet service providers (ISPs) in remote areas. They enable these services to connect their customers to the internet backbone, a competitive means of providing service to remote areas without having to deploy terrestrial or undersea cables.

Within the next few years, two companies – SpaceX and OneWeb – will compete to launch large constellations of communications satellites that will operate from a low Earth orbit (LEO) of less than 1,200 km above the ground. These constellations will entail large numbers of small, mass-produced satellites; OneWeb is planning to orbit 648 satellites, and SpaceX is planning to orbit 4,025. Because these satellites will be operating in such a low orbit, the problem of latency should be no more a factor than it is with fibre-optic based systems.

These satellite systems could be used to provide backhaul services to network operators on small islands and in rural areas. Their entry into the market would also provide competition to existing undersea cable networks that could result in cost reductions, especially for smaller, local service providers, some

of which have had past challenges obtaining wholesale bandwidth from major telecoms at a reasonable cost.

Accordingly, LEO satellite-based internet systems could support the development of community-based broadband services, which are co-operative, non-profit, or user-owned entities that can provide network connectivity to areas underserved by incumbent telecommunications carriers. As the Caribbean telecommunications sector becomes increasingly consolidated, a robust network of community-based broadband services could provide an important counterweight to the current trend toward

duopolistic control of national telecommunications markets. To that end, regulators should have good cause to welcome the introduction of LEO satellite internet technology into Caribbean countries. ■

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A NEW ERA IN CARIBBEAN TELECOMMUNICATIONS

These include operators in Antigua and Barbuda, Aruba, the Bahamas, Belize, Curacao, Guyana, Suriname, and Trinidad and Tobago.

The few small, independent telecommunications companies that remain will find themselves increasingly challenged to operate in such an environment. To survive, they will depend on the ability of regulators to ensure protection from potentially anti-competitive behaviour on the part of larger actors. Moreover, there may be need for special regulatory attention in cases where market forces alone are not sufficient to ensure that consumers have access to high quality telecommunications services at a reasonable cost.

This edition of FOCUS puts the spotlight on the ongoing process of the consolidation of telecommunications companies in the Caribbean subregion. ECLAC

Caribbean will continue to monitor the rapidly evolving developments in this dynamic industry, given the central role that enhanced ICT infrastructure and service will inevitably play in the efforts of the countries of the Caribbean to build strong knowledge economies.

Yours in Focus,

Diane Quarless

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FINANCING UNIVERSAL ACCESS TO TELECOMMUNICATIONS SERVICES

telecommunications companies, or from the proceeds of auctions for the right to use radio frequency spectrum. Naturally, the telecommunications operators will pass any additional costs on to the consumers of their services, spreading the financial burden broadly across all users of telecommunications products. This sharing of costs may be considered fairer than the current system, in which the expenses associated with providing universal access fall primarily on those who continue to use traditional telephone services. ■

UNPCOMING EVENTS 4TH QUARTER 2015

6 July

Expert group meeting to review draft of a study to develop a framework for Caribbean medium term development. Port of Spain, Trinidad and Tobago

29 July

Launch of the Economic Survey of Latin America and the Caribbean. Port of Spain, Trinidad and Tobago

24 August

Expert group meeting to examine the potential for integrating big data within statistical data production in the Caribbean (WebEx). Port of Spain, Trinidad and Tobago

LIST of Recent ECLAC Documents and Publications

Listed by Symbol Number, Date and Title

No. L.470

October 2015

Caribbean synthesis review and appraisal report on the implementation of the Beijing Declaration and Platform for Action.

ECLAC SURVEY ON PRIORITIES FOR THE INFORMATION SOCIETY IN THE CARIBBEAN



The *Fifth Ministerial Conference on the Information Society in Latin America and the Caribbean*, held in Mexico City in August 2015 articulated a set of objectives embodied in the eLAC 2018 *Digital Agenda for Latin America and the Caribbean*. To gauge how well these objectives aligned with the needs for ICT-related development in Caribbean countries, a recent ECLAC survey collected expert opinions on what strategic objectives should represent the highest priorities for the Information Society in the Caribbean.

Thirty-seven experts in areas related to information and communication technology (ICT) policy responded to the questionnaire, providing opinions from at least nine different Caribbean countries and the diaspora. The experts were asked to evaluate the relative importance of 90 potential strategic goals, rating each strategic goal on a scale from “Not a Priority” (0) to “High Priority” (4). These responses were collected and averaged into scores, which are ranked from highest to lowest in the table below.

The experts considered the goal to “promote teacher training in the use of ICTs in the classroom” the highest priority, followed by goals to “reduce the cost of broadband services”

and “promote the use of ICT in emergency and disaster prevention, preparedness and response.” Goals in the areas of cybercrime, e-commerce, e-government, universal service funds, consumer protection, and on-line privacy completed the top 10.

Some of the lowest ranked goals were those related to coordinating the management of infrastructure changes. These included the switchover for digital terrestrial television (DTT) and digital FM radio, cloud computing for government ICT, the introduction of satellite-based internet services, and the installation of content distribution networks (CDNs). Initiatives aimed at using ICT to promote specific industries, or

specific means of promoting the digital economy, tended toward the centre of the rankings. Thus, the general pattern discerned, elevates the importance of focusing on strategies to integrate ICT into the broader society. Economic issues were considered secondary, with concerns regarding coordination on infrastructure issues taking a lower priority. ■

Category Key

Access and infrastructure
Social inclusion and sustainable development
Governance for the Information Society
Digital economy, innovation, and competitiveness
e-Government and citizenship

Rank	Strategic Goal	Score (out of 4)
1	Promote teacher training in the use of ICTs in the classroom	3.74
2	Reduce the cost of broadband services	3.69
3	Promote the use of ICTs for emergency and disaster prevention, preparedness and response	3.67
4	Prevent and combat cybercrime through cybersecurity strategies, policies, and legislation	3.53
5	Strengthen e-commerce at the national and regional levels	3.51
6	Make e-government procedures and services available through multiple channels, at all levels of government	3.50
6	Promote the use and good governance of universal service funds (USFs)	3.50
6	Adapt consumer protection regulations to the digital environment	3.50
6	Guarantee the right to on-line privacy	3.50
10	Use ICTs to facilitate increased transparency in government	3.49
11	Include or strengthen the use of ICTs in education	3.47
11	Prevent and combat cybercrime through institutional capacity building	3.47
13	Promote the development and adoption of new pedagogical models for the use of ICT as a teaching tool	3.46
13	Expand the use of ICT in agriculture	3.46
13	Ensure the inclusion of vulnerable groups as full participants in technology-based initiatives	3.46
16	Guarantee the protection of personal data	3.41
17	Place special emphasis on quality of telecommunications services in rural, vulnerable, and isolated areas	3.41
17	Promote standards for the interoperability of e-government systems	3.41
19	Provide legal certainty to promote investment in the digital ecosystem	3.39

Rank	Strategic Goal	Score (out of 4)
20	Achieve substantial improvements in broadband service capacity and quality	3.38
21	Develop ICT products for customers within the region	3.36
21	Promote access to public information through digital media	3.36
23	Increase coordination between the public and private sectors	3.35
23	Promote training and skills development initiatives for vulnerable groups	3.35
23	Encourage technology transfer between universities and business	3.35
26	Promote the security of and confidence in Internet use	3.34
26	Use digital platforms to facilitate two-way interaction between citizens and government	3.34
28	Increase the ability of SMEs to accept electronic payment options on-line	3.33
28	Ensure a high-level of competition between providers of telecommunications services	3.33
28	Develop national plans for e-waste management	3.33
31	Ensure ICT access for vulnerable groups	3.31
32	Ensure the regular production of data and statistics on ICTs in conformity with international standards	3.30
33	Develop emerging sectors in ICT, such as mobile apps development, big data analysis, and the production of digital content, goods and services	3.29
34	Prevent and combat cybercrime through public information programs on Internet safety and security	3.28
35	Promote the use of ICTs for environmental observation, analysis, and planning	3.27
35	Strengthen telecommunications services through the deployment of fibre optics, wireless networks, and deep-sea cables	3.27
37	Protect new users of ICT from predatory online behaviour	3.25
37	Promote local and regional coordination between computer security incident response teams	3.25
37	Develop ICT products for global export	3.25
40	Support efficient and low cost settlement of international financial transactions	3.22
41	Strengthen the institutional frameworks needed to coordinate, monitor, measure and promote digital policies	3.22
42	Develop capacity in the traditional ICT sector, in areas such as enterprise software development, network engineering, web design, and systems	3.20
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