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TELECOMMUNICATIONS COMMISSION
SOLOMON ISLANDS

2020 ANNUAL REPORT

TELECOMMUNICATIONS COMMISSION SOLOMON ISLANDS

31 March 2021

Mr David Kusilifu
Clerk to the National Parliament
National Parliament House
Honiara

Dear Mr Kusilifu,

I write in regards to the matter of the 2020 Annual Report of the Telecommunications Commission of Solomon Islands ("Commission"), and pursuant to Section 23 of the Telecommunications Act of 2009, which provides as follows:

"s.23 (1) Within three months after the end of each financial year, the Telecommunications Commission shall prepare and deliver to the Clerk to Parliament who shall lay before Parliament the Telecommunications Commission's annual report ..."

In accordance with this requirement, I am pleased to submit herein the 2020 Annual Report of the Commission in respect of the financial year ending 31 December 2020. The report contains the overview of the telecommunication sector and a summary of the key initiatives of Commission on regulatory issues, with specific reference to the functions mandated to the Commission under the Act.

The Financial Statements for the 2020 financial year is included in this Report. These reports are however unaudited, as the Audit of Accounts has not yet commenced at the time of this reporting requirement. Final Audited Accounts will be provided once they are completed.

Calvin Ziru
Interim Commissioner
Telecommunications Commission

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Foreword

Chairman

George Gray

It is my pleasure to present this Foreword of the 2020 Annual Report as Chairman of the Evaluation Committee. I have been invited by the newly appointed Interim Commissioner, Mr Calvin Ziru to offer my perspectives on the role the Evaluation Committee played over the last year, and to share my views on areas for institutional strengthening as we enter into what is essentially our second decade under the Telecommunications Act.

2020 was not just a massive year for the telco sector, but a massive year for the world and for humanity as we know it. Coronavirus. Covid-19. Lockdown. Self-isolation. Quarantine. These were but a few words that dominated our vocabulary by becoming everyday language, and totally changing our way of life. The global Covid-19 pandemic disrupted everything from international travel, international trade, to closing down major events, projects, factories, schools, businesses, etc. Yet, as humanity retreated into the safety of their own homes, Telecommunications as a sector stepped up and seemingly held the world together like a stitch. And Solomon Islands was no exception.

In Solomon Islands, telecommunications operators worked tirelessly to meet the growth in online internet use, keeping government, business, schools and families connected to the rest of the world online.

In sharp contrast to other industries, telecommunication has been generally exempted from major COVID-19-related restrictions, such as stay-at-home orders and quarantine requirements, resulting in the positive performance by the local sector compared to other infrastructure sub-sectors. Growth in data traffic increased, reinforcing our reliance on connectivity and digital services.

As a Regulator, the Commission must remain 'mission-critical' during the pandemic, and drive its objectives through as it seeks to also ensure that operators and licensees who are responsible for international trade, banking and finance, retail and wholesale, and the economy keep moving under the lockdown, are appropriately authorised to carry on business in Solomon Islands. In the meantime, work with our operators to continue to provide business-critical connectivity and resiliency; facilitate work-from-home arrangements; and keep individuals and societies connected and informed, with access to medical, financial, commercial, and other essential services during mandated social isolation.

In 2020, the Committee bid farewell to former Commissioner Bernard Hill, whose contract ended at the end of 2019, but was extended for a further 3 months. Bernard Hill had led the Commission as its second and longest serving Commissioner of 9 years, from 2011 to 2020. But replacing Bernard Hill was not an easy task. Firstly, there was no Committee in place given that between the 2019 and 2020 period of time, retirements and unfilled vacancies in the Committee meant that there was no Committee in place for some time, resulting in the Commission being managed by its directors only for the year March 2020 to February 2021.

I am confident in the Commission under the new Interim Commissioner and his re-energised team of staff. He brings to the Commission a strong professional reputation with practical legal experience in law, politics, international affairs and trade. And already, the changes that have been implemented in the Commission, in as far as re-connecting ourselves with the key stakeholders, re-establishing our role as Regulator, but also re-building the integrity and trust in a fair and inclusive Commission as a key organisation in the fabric of society in Solomon Islands, is assuring.

I am excited about the future.

George Gray - Chairman

Purpose of Annual Report

This 2020 Annual Report is prepared in accordance with Section 23 of the Telecommunications Act of 2009, and in addition to the specific areas for reporting required by the Act, seeks to provide a report on all relevant regulatory, economic and technical activities undertaken by the Commission over the 2020 financial year. The relevant section is provided below.

Additionally, the Annual Report highlights operational, governance and functional, as well as legal and policy aspects of the Commission; acknowledging the statutory relationship between the Commissioner, the Minister, the Service Providers which have flow on effects to the services provided to the people of the Solomon Islands.

As a review of previous annual reports, this Annual Report most fundamentally differs in that its economic market analysis provides a rather clearer picture of the sector, its relationship to the economy, and by drawing references to previous data, provides an analysis that illustrates the nature of the growth of the sector in the last decade or so years (depending on availability of data) since the establishment of the telecommunications regime under the Act.

Telecommunications Act of 2009

Annual Report

23. (1) Within three months after the end of each financial year, the Telecommunications Commission shall prepare and deliver to the Clerk to Parliament who shall lay before Parliament the Telecommunications Commission's annual report which shall include—

(a) a summary of the activities of the Telecommunications Commission since the last annual report laid before Parliament, including without limitation—

(i) determinations, orders and directions made;

(ii) steps taken in connection with universal access policy and disbursements from the Universal Access Special Fund;

(iii) applications, disputes and complaints filed with the Telecommunications Commission and actions taken;

(iv) investigations undertaken;

(v) material procurement and outsourcing activities;

(vi) material litigation involving the Telecommunications Commission;

(b) an assessment of progress towards the objective in section 3 and a plan of activities for the following year to advance progress towards such objective;

(c) a summary of the income and expenditures of the Telecommunications Commission and an explanation of compliance with or variance from its approved budget;

(d) a list of licences and exemption orders in force under this Act;

(e) a list of interconnection and access agreements filed;

(f) a summary of radio frequencies allocated or assigned;

(g) a summary of regulated prices; and

(h) such other matters as are reasonably necessary or appropriate to enable understanding of its activities.

(2) The commissioner shall upon reasonable request appear before any Parliamentary committee to respond to questions relating to the annual report, budget and activities of the Telecommunications Commission.

(3) The Telecommunications Commission shall publish its annual report on its website and make copies available on written request by any person.

Commissioner's Report

Looking ahead,

I am pleased to present our 2020 Annual Report for the year ended 31 March 2021.

Calvin Ziru

Interim Commissioner

Key Areas for the work of the Commission:
1. Regulatory
2. Economical
3. Technological

The Sector

Whilst only having joined the Telecommunications Commission as Interim Commissioner on 1 February 2021, our small but savvy set of technical and administrative staff have allowed me to swiftly and seamlessly transition into the role. Whilst providing management oversight and ensuring progress from where my predecessor had left off – we are on track to delivering on our government and operators' confidence this year.

I inherit an established organisation that has more than a good long decade of corporate memory and experience built up over the years. And over the years, its team of dedicated and highly skilled engineers, economists, and administrators have run the show, so to speak, with the support of international telecommunications lawyers and economists at any given time. Between them the local staff share a total of more than 50 years of professional telecommunications experience between them.

As Interim Commissioner, I join the team with the view to providing management oversight to the organisation by picking up from my predecessor and hopefully enabling the seamless recruitment and transfer of responsibilities to the substantive Commissioner. What value will I then be adding to the organisation? I am pleased to report that whilst there is much to be done, we are well on the way to achieving that.

The Commission

The work of the Commission cuts across 3 key areas those being Regulatory, Economic and Technical. All three areas need new perspectives and new drive to deliver the much-needed capacity and competence moving forward. In 2021 I will focus on conducting long overdue organisational needs assessments, policy and regulatory reviews, staff skills and capacity assessments, as well as set the groundwork for introducing Regulations to the Act. These are done upon foundations of developing new internal systems for greater administrative efficiency, position recruitment of much needed technical staff and building stronger working relationship with our stakeholders.

My primary goal therefore would be to become a highly efficient and effective Regulator capable of contributing to the drive and direction of growth and development in the telecommunications sector.

It is a vibrant sector and we must be at the forefront of change if we are to keep up with the region, let alone the world. Our strength however is in our law

Outlook

Having bid farewell to our former Commissioner Bernard M. Hill, the Commission continues to see a bright future for the telecommunications sector in the Solomon Islands. Whilst telecommunications subscribers may have dropped with commiserate reductions in revenues by operators, this is in line similar contraction of the economy both locally and globally.

As such the COVID-19 pandemic has brought us an anomaly of 4% higher broadband internet penetration, 7% higher mobile penetration with 49,207 fewer mobile subscribers meaning resulting in a 14% reduction in revenues and APRU as an industry.

Interestingly in 2020 though the total mobile subscribers contracted by the figure above, the mobile internet subscriber's subset grew by 3% and those who have internet according to the price per Mb enjoy a 69% price reduction since February 2019. Further, the price reduction and the CS2 cable have resulted in a 110% increase in mobile data usage.

These indicators show an industry poised to bounce back with reducing prices and innovative services once the economic turmoil subsides, with strong cable capacity and satellite backup for internet and strong mobile penetration (59%) and coverage set at 96%.

Key 2020 Highlights

There are key highlights of 2020 that are of particular impetus to achieve the objectives of the Commission.

The biggest change in the sector was the CS2 implementation and licencing by the Commission on 31 January 2020 was a highlight in that the installation of infrastructure and policy had taken more than a decade to implement. Whilst pricing is still to be reviewed coming towards license conditions from June, this piece of infrastructure opens the doors for new products, new entrants and new innovative ideas to be realised.

This has led to the second highlight which is the dramatic increase in data usage and reduction in process. Our Telekom has recorded a significant drop in the price of data, calculated from the total revenue gained from data, and the total data used in 2020.

New entrants have also entered the market as a result of this, and our initial interactions with them reveal a strong desire to developing new ideas, new services and new ways of doing things. This is encouraging especially when we consider the demand for telecommunication services to extend to the provinces and outlying islands.

Finally, a highlight of 2020 although perhaps ironically so, is the attention that the sector has received as a result of Covid-19, especially in terms of connecting the world through the internet in online meetings and conferences, online streaming, online education, and a host of other services and activities. There is in essence an epiphany of the possibilities of the industry, giving rise to growing public demand for better prices, better access, and services from operators.

Looking Ahead

There is much to look forward to.

Government policies are being developed to meet national objectives encapsulated in the NDS and NICTP. Donor Partner interests in supporting growth in the sector continues to grow. If matched by private sector investment, planned infrastructural developments can do so much for the country.

As a Regulator, the office of the Commissioner also anticipates changes. As above, the unaudited Financial Statements for the 2020 financial year are included in this Report. Though the Commission has not previously built a financial reserve, with a full review of budget moving into the new financial year there are likely to be key automations, synergies and ways of working which will put the Commission on much firmer financial footing. This continual refinement ensures sustainability with the Commission on track to remain within budget moving forwards.

As for the year ahead, we look forward to:
• New Regulations and a new Open Licencing Framework which includes Updated Price, Levies and Fees need to be developed to ensure sustainability moving forwards.

• Modernisation of management, administration and financial tools as critical for the Commission.

• Further, the recruitment of additional staff must take place in 2021 to fill much needed positions in technical, economic and compliance areas, as well as in the office of the interim Commissioner.

Last but most important to understand the direction we must take, is to breakdown the barriers that commonly exist between key stakeholders of the independent regulator with government, operators and the citizens of our country.

Whilst the final decision on all matters rest with the Commission as the independent statutory authority, there is more that can be achieved by working together, than not working together.

It is our mantra and fervent endeavour to serve the interests of the people of Solomon Islands.

Calvin Ziru - Interim Commissioner

.... the direction we must take, is to breakdown the barriers that commonly exist between key stakeholders of the independent regulator with government, operators and the citizens of our country.

1

Telecommunications Regime

1.1 The Commission

The telecommunication regime in Solomon Islands is established by statute, Telecommunications Act of 2009, which when passed in 2009 was a landmark piece of legislation and achievement that saw the Government rest its powers in an independent regulator and remove involvement in regulation of telecommunications, and the inclusion of a second telecommunications operator in the country in Bmobile from Papua New Guinea. The current state of the sector in terms of the increased investment and rapid growth in the market since 2009 has been considered a vindication of that decision by the Solomon Islands Government to end to the political and public service involvement in the industry.

The Act provides the regulatory framework for fair and inclusive processes around licencing, technology neutrality, spectrum management, numbering, as well as competition and pricing; all of which fall under the purview of the Telecommunications Commission of Solomon Islands (Commission).

The Commission is the statutory body established by the Act as the independent authority, charged with the mandate of managing the telecommunications sector in Solomon Islands, manage Solomon Island's radio-frequency spectrum resource, and to safeguard competition and the interests of consumers.

Although established by Parliament, it is funded through services licences fees paid to the it by the operators, and therefore independent of the consolidated funds. In the exercise of its statutory powers and functions the Commission is not subject to the direction and control of government ministers. The Commissioner, in consultation with the statutory Evaluation Committee, is responsible for the strategic and operational management of the organisation.

1.2 The Team and;
1.3 2021 Organisational Structure

Director Corporate Services

Emmanuel Tora

Finance and Administration Officer

Stella Bubulu

Administration Officer

Office Assistant

Judith Pebolo

Manager Regulatory Resources

Aaron Hopa

Commissioner

Calvin Ziru

(Interim)

Director Regulation and Licencing

Director Markets, Competition and Pricing

Manager Inspections

Legal Officer

Economic Research Officer

1.4 The Evaluation Committee

The Technical Evaluation Committee ("Committee") as established under section 7 of the Telecommunications Act 2009 continues to be a key feature of the regulatory functions of the Commission.

In November 2020, the Committee was instrumental in providing oversight guidance to the Commission following the departure of now former Commissioner Bernard Hill, and by facilitating the seamless recruitment of Calvin Ziru as the Interim Commissioner.

The Committee continues to exercise financial administrative oversight over the budget of the Commission; a 3-year rolling budget provided for under Part 3 of the Act. The Committee approved an annual rolling budget of approximately eight million dollars (SB$8.0m) for the next three years (2021 to 2023).

In 2020, the composition of the Committee changed on several occasions, due to the retirement of the Chairman of the Law Reform Commission Mr Frank Paulsen in November 2019, and the Governor of Central Bank of Solomon Islands Mr Denton Rarawa in October 2019. Mr Denton Rarawa was replaced by Dr Luke Forau as Governor Central Bank (CBSI). A replacement for Mr Paulsen was not possible and therefore as per section 7 (3) under the Act, the Public Solicitor, Mr Howard Lawry, became Chairman of the Commission.

In 2020, Mr Howard Lawry was appointed to the High Court Bench, and thus following a lengthy recruitment process, Mr George Gray was appointed as Public Solicitor in November 2020, allowing the Committee to complete the recruitment of the Interim Commissioner in December 2020.

1.5 2020 Committee Members

Chairman

Mr George Gray
The Public Solicitor
Office of the Public Solicitor

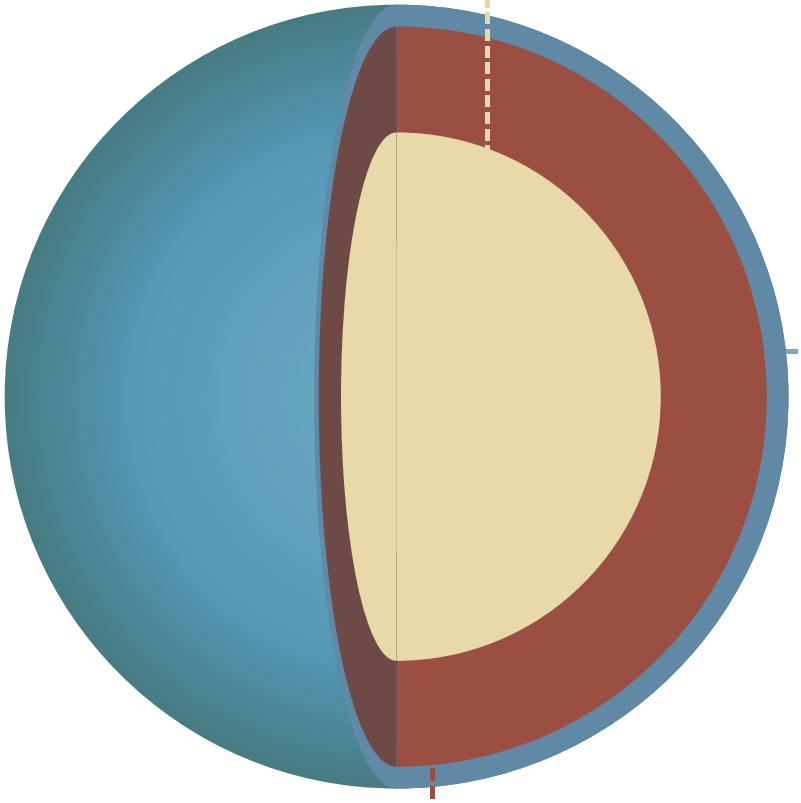
Member

Dr Luke Forau
Governor
Central Bank of Solomon Islands

Member

Mr Jeremy Bartlett
Chairman
Solomon Islands Chamber of Commerce and Industry

1.6 Corporate Governance



Commission

Administer the Telecommunications Act 2009; independent authority; Advises the Minister on specific matters pertaining to the telecommunications sector; supports the Minister in carryout specific duties under the Act including spectrum management with other government departments; works closely with the Evaluation Committee on budgetary approval.

Telecommunications Act 2009

Provides for the powers, rights and authority over the telecommunications sector; Establishes the Commission and provide for powers of the Commissioner as regulator; Establish legislative framework for telecommunication sector management, development and facilitation; provide for rights, powers and protection of consumers and user.

Minister

- Appoint the Commissioner;
- Formulate, monitor, review and recommend policies for the telecommunications sector
- Coordinate government authorities on telecommunication policies;
- Facilitate spectrum utilisation in government.

Evaluation Committee

- Recruit the Commissioner;
- Set the terms and conditions of employment of Commissioner;
- Approve rolling budget for the Commission;
- Appoint Disputes and Appeals Panel;

Service Providers

- Licenced to operate telecommunications services in Solomon Islands;
- Legal compliance with rules on fairness, inclusiveness competition, pricing, market etc.
- Engage with Commission on data, market analysis etc.

1.7 Policy and Legal Context

Legal Context	Policy Rationale
Telecommunications Act 2009 The Regulatory Framework for the Telecommunications Regime of Solomon Islands	• Regulate license fees and levies; • Regulate use and assignment of radio spectrum; • Regulate competition, pricing, and agreement; • Regulate dealing and relations with consumers; • Protect consumer confidentiality, information and communication; • Address complaints and disputes and discrimination; • Regulate rules and standards for equipment and technology; • Administer national numbering plan and domain plans; • Administer penalties for violations of the Act.
National Development Strategy 2016-2035 MTS 3, Goal 9c: Significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in least developed countries by 2020.	• Facilitate communications infrastructure development extending coverage of mobile telecommunications networks to all rural areas and facilitating affordable access by rural dwellers. • Encourage development and spread of ICT coverage; • Review legislation and regulations to promote competition and consumer choice to improve services and pricing. • Link communities with telecommunication networks. • Establish fiber optic submarine cable system and provide broad band services.
National ICT Policy	• Principle No. 6 – Pro-competitive business conditions: Competition in the telecommunications sector, particularly among mobile network operators; ICT policy must promote pro-competitive conditions for ICT business in the Solomon Islands • Principle No. 7 – Technology neutrality, Technology aptness: Regulation on the use of technology, requiring that particular technologies not be favoured over other technologies; ensure policy and regulation is "technologically apt" and "technologically neutral." • Principle No. 8 – Evaluation to drive improvement: Emphasises the value of Government, ICT service providers, and users of ICT accumulating experience over time.

Underpinning Objectives & Values

Our Purpose

To enhance the long-term well-being of the population of Solomon Islands, the inclusiveness and fairness of its society and the productivity of its economy by improving the availability, affordability, quality of service and kinds of telecommunications services in Solomon Islands.

Our Goals

Promote fair and effective competition among service providers;

Maintain open, non-discriminatory, competitive and technologically apt and neutral regime;

Ensure efficient use of spectrum and other resources;

Protect the long-term interests of Solomon Islanders;

Encourage efficient and sustainable investment in and use of telecommunications networks and services.

Our Commitment

Fairness and inclusivity in market

Integrity and transparency in administration

Efficient and effective in regulation

Innovative investment in development

2 Key Sta

MOBILE PHONE

464,000

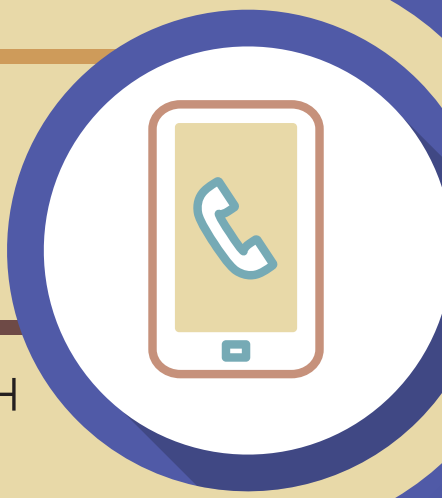
SUBSCRIBERS

66.3%

PENETRATION

-2.8%

ANNUAL GROWTH



OUR TELEKOM, BMOBILE VODAFONE

MAJOR OPERATOR

125,500

SUBSCRIBERS

MO

Country Statistics

POPULATION
704, 482

LAND AREA
28,400 sq km

CAPITAL
Honiara

LOCAL CURRENCY
Solomon Islands Dollar (SB$)

GDP (At Current Prices)
US$ 1.59 Billion

GDP (Per Capita)
US$ 2,37 [Unit]

GDP (Real Growth Rate)
1.2%

GOVERNMENT TYPE
Parliamentary Democracy

tistics

FIXED BROADBAND

0.16%

PENETRATION

1,046

SUBSCRIBERS

TELEPHONE NETWORK

1%

PENETRATION

6,279

IN SERVICE

OUR TELEKOM

MAJOR OPERATOR

-2.7%

ANNUAL GROWTH

18.7%

PENETRATION

BILE BROADBAND

3

Market Analysis

3.1 Overview

In this section of the Telecommunications market analysis, focus is on the progress and growth of the market since 2010 and especially with the launch of the Undersea Coral Cable Network in early 2020 and how the market responses in terms of the cost of data, voice and the demand for data.

Due to limited time and available data, the report does not cover any new local investments in the industry and comparison of local industry with those of the regional service providers. Nor does it cover the accessibility of the telecommunications services to the remote areas of the country. It should be noted that with the use of the recent 2019 national census projected figures, the estimates for the mobile and broadband/internet penetration are slightly different from the previous figures used in the previous annual reports of TCSI.

Although the mobile subscriber's market has decreased by 10.3% from 2019, there is an increase in mobile broadband/internet subscribers by 3.3% to 133,148 in 2020 from the previous year.
The total revenue generated by the Telecommunications industry has seen a fall by 14% to $369m from 2019 thereby affecting a fall in the value of Average Revenue Per User (ARPU) to $861 in 2020 from $901 in 2019. Although the fall in total revenue in 2020 can be indirectly linked to the effects of the Covid-19 pandemic causing global and local economic recession, the trend can also indicate that the marginal revenue generated by the industry through the value-added services such as data and voice plans has not yet been realized. It is also noteworthy to mention that this is despite the rapidly declining cost of data since early 2020 to an estimated SBD$0.06 since the opening of the undersea cable.

The Telecommunications industry continues to maintain its share of the annual Gross Domestic Product (GPD) at 3% and is likely to grow given the trend in the global and local demand for the telecommunications services.

3.2 Market Performance Indicators

[*] The 2019 national census projected figures change estimates from the way this was previously calculated in the previous annual reports of TCSI.

PENETRATION

20%	2010
66%	2019
59%	2020*

SUBSCRIBERS

Mobile

2010	115,500
2019	478,116
2020*	428,909

Mobile 3G & 4G

2010	8,205
2019	128, 961
2020*	133, 148

Wireless (Hotspot)

2010	127
2019	78
2020*	33

ADSL

0.2%	2010
0.14%	2019
0.13%	2020*

2010	1,359
2019	872
2020*	908

Dial-Up / DSL

2010	1,163
2019	81
2020*	1

Fixed Lines

2010	8,400
2019	7,007
2020*	6,279

INTERNET PROVIDERS

2020*

4

2010 - 1

MOBILE NETWORK SERVICE PROVIDERS

2020*

2

2010 - 2

MOBILE COVERAGE

2020*

59%

2010 - 20%

INDUSTRY GROSS REVENUE (SBD million)

2010 **106 million**

2020* **369.44 million**

3.3 Access and Usage

Access to Telecommunications Services

The telecommunications sector has seen key improvements in broadband and bandwidth usage due to the successful set-up of the International Coral Sea Cable (CS2) and Solomon Islands Domestic Network (SIDN) which went live in February 2020. This resulted in improved internet connectivity and more data availability to subscribers at a rapidly decreasing cost of data. On the demand-side, there were significant reductions in the number of mobile subscribers and the number of fixed lines which could be attributed to the downside impact of COVID-19 pandemic that caused disruptions to economic activities and resulted in loss of businesses and jobs.

In spite of this, uptake or usage of telecommunications services was higher compared to previous years and demonstrated the resilience and growth of the sector in 2020, in light of the COVID-19 pandemic.

Table 3.1 : Key Market Indicators

Year	Mobile Subscribers	Mobile Internet Subscribers (3G / 4G LTE)	Telephone (Fixed Lines)	ADSL	DSL	Wireless
2010	115,500	8,205	8,400	1,359	1,163	127
2011	274,872	21,133	8,375	1,422	1,008	128
2012	302,147	35,826	8,060	1,308	824	114
2013	323,105	44,935	7,618	1,184	700	96
2014	376,696	74,457	7,525	1,335	641	96
2015	424,712	66,664	7,438	1,382	592	38
2016	416,572	77,100	7,405	1,272	360	76
2017	465,331	114,023	7,405	1,084	360	82
2018	482,029	114,249	7,430	987	143	79
2019	478,116	128,961	7,007	872	81	78
2020	428,909	133,148	6,279	908	1	33

Key market indicators include the number of users for different telecommunications services for the last ten years (2010-2020). Mobile subscribers have grown over the years as the two Major Network Operators (MNOs) continue to expand their coverage to all provinces. Total mobile subscribers declined further by 10% due to a reduction of 49,207 mobile subscribers during the year compared to a 1% decrease in 2019.

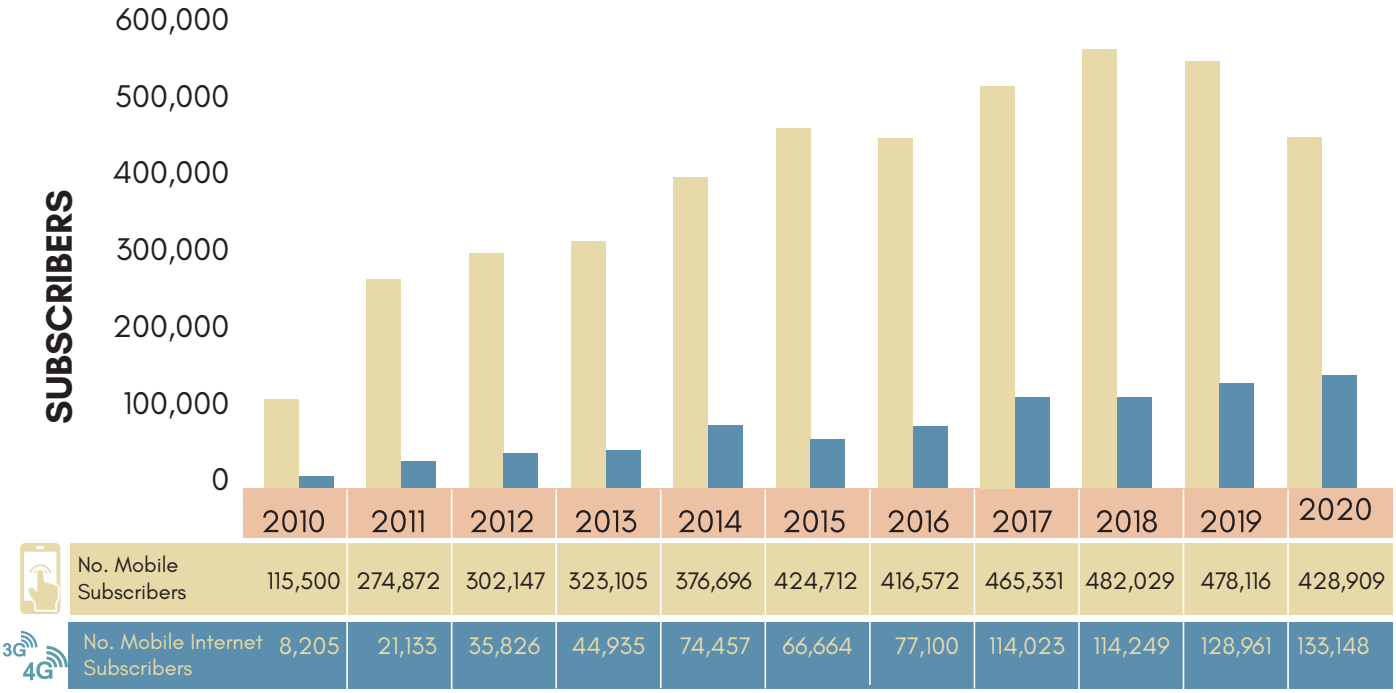
On average, total mobile subscribers grew by 19% annually since 2010.

The continued upward trend in mobile internet subscriber shown in Figure 3.1 is an indication of the continuous improvements in mobile internet connectivity and pricing which enable users to access high speed internet and consume more data at a lower price. Growth in mobile internet

subscribers was low at 3.2% compared to a 12.9% increase in the previous year. On an annual average, total mobile internet subscribers grew by 38.8% for the last 10 years.

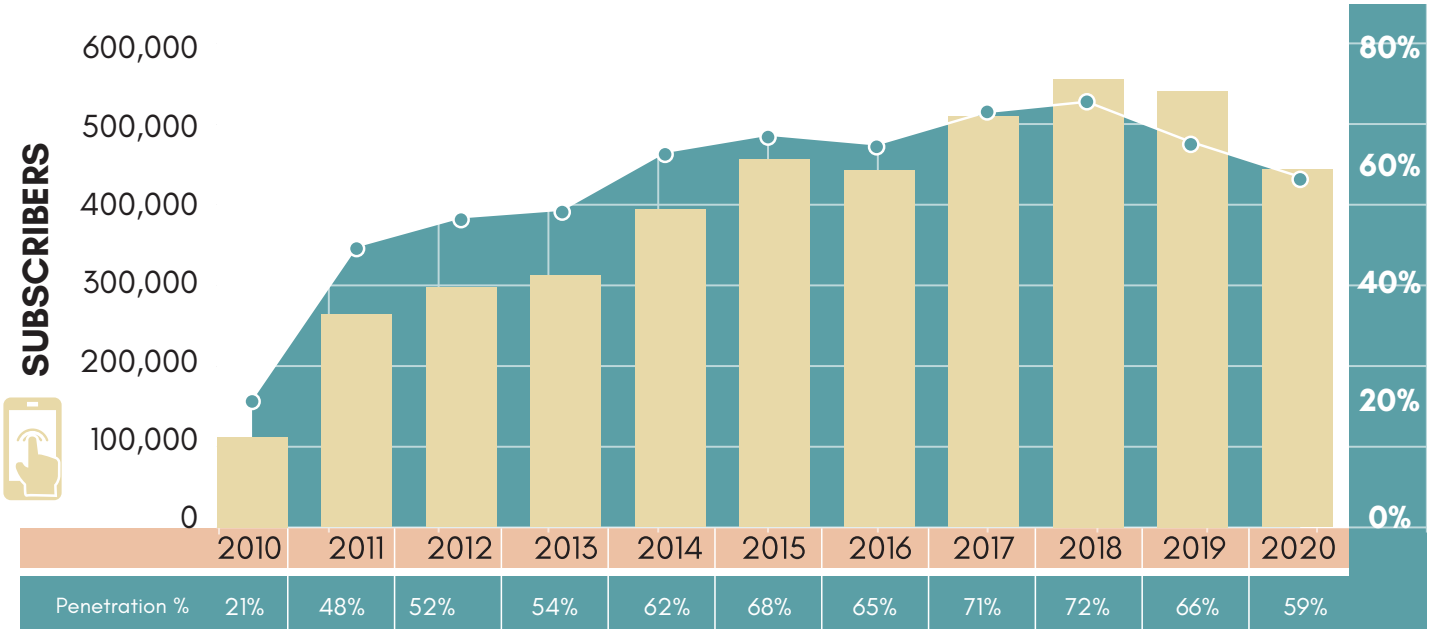
Meanwhile, the opposite trend is seen in the growth of fixed lines, ADSL & DSL users and the number of wireless hotspots as indicated in Table 3.1.

Figure 3.1 : Mobile Subscribers vs Internet Subscribers



In terms of mobile subscriber penetration, the penetration of mobile subscribers declined from 66% in 2019 to 59% in 2020. As previous, figures on subscriber penetration might be slightly different from other reports due to the use of different projected census figures. The results above use figures from the 2019 population figures. In previous years, report on mobile subscriptions as presented in the Annual Report, have been varied die to a number of analytical factors. The above Figure 3.2 however has corrected that, thereby projecting what is a more accurate illustration of the actual percentage of mobile presentation.

Figure 3.2 : Mobile Subscriptions Penetration 2010-2020

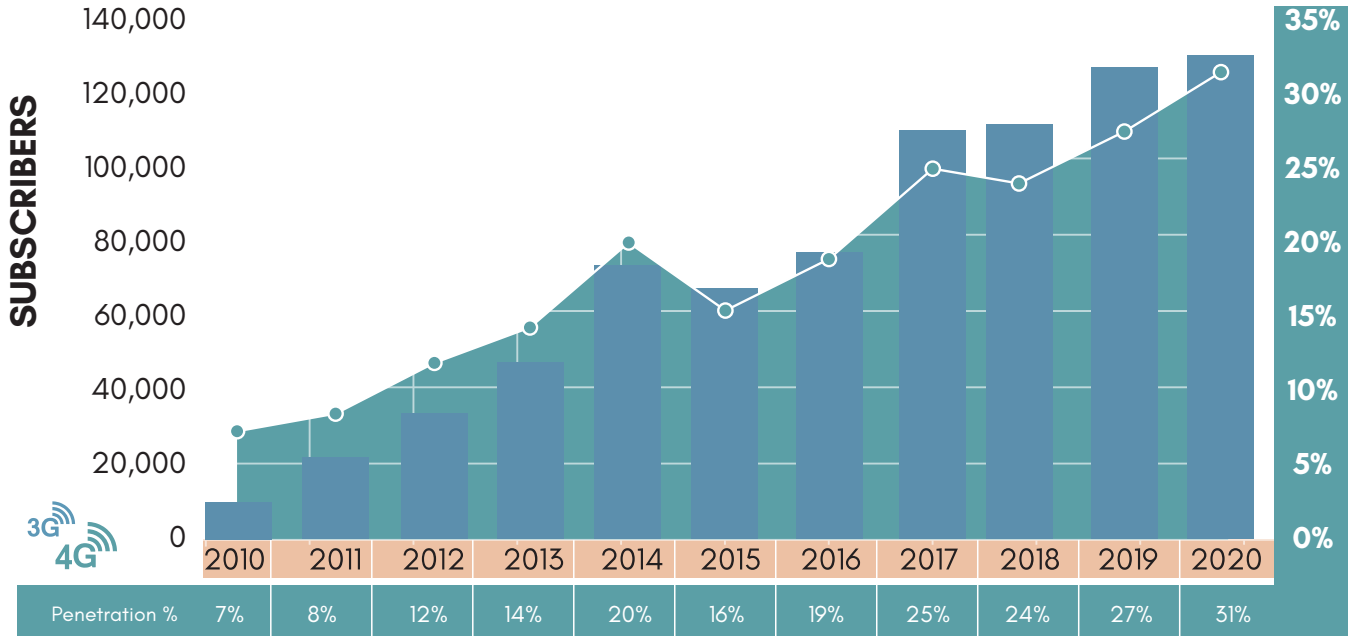


Mobile Subsribers vs Penetration

A slight decline is record from 2018 to 2019, and from 2019 to 2020. This may be due to a number of reasons, but it is expected that as economic activities increase and the financial environment continues to improve, the number of mobile subscribers will increase.

Overall, the mobile broadband penetration has increased from 7% in 2010 to 31% in 2020, but over the last number of years, penetration continues to increase with a 4% increase from 2019 to 2020. With continued drops in the cost of data and voice plans, and with increasing demand for mobile internet usage, mobile broadband penetration is only expected to rise.

Figure 3.3 : Mobile Internet Subscriber Penetration 2010-2020



Mobile Internet Subsribers vs Penetration

Total mobile broadband subscriber and user penetration registered an ongoing increasing trend from the previous year. Aggregated mobile broadband user penetration increased to 18.5% from 17.9% in 2019. This uptick was due to upgrades in network connectivity and cheaper data plans which enticed more users to use mobile internet.

Table 3.2 : Mobile Broadband Subscribers and User Penetration

Year	Mobile Internet Subscribers (3G / 4G LTE)	Annual Growth Rate	Penetration
2010	8,205		1.5%
2011	21,133	157.6%	3.7%
2012	35,826	69.5%	6.1%
2013	44,935	25.4%	7.5%
2014	74,457	65.7%	12.2%
2015	66,664	-10.5%	10.7%
2016	77,100	15.7%	12.1%
2017	114,023	47.9%	17.5%
2018	114,249	0.2%	17.1%
2019	128,961	12.9%	17.9%
2020	133,148	3.2%	18.5%

Table 3.3 : Internet Penetration

Year	Mobile Internet Subscribers (3G / 4G LTE)	ADSL	DSL	Wireless	Internet Penetration
2010	8,205	1,359	1,163	127	2%
2011	21,133	1,422	1,008	128	4%
2012	35,826	1,308	824	114	7%
2013	44,935	1,184	700	96	8%
2014	74,457	1,335	641	96	13%
2015	66,664	1,382	592	38	11%
2016	77,100	1,272	360	76	12%
2017	114,023	1,084	360	82	18%
2018	114,249	987	143	79	17%
2019	128,961	872	81	78	18%
2020	133,148	908	1	33	19%

The above Table 3.3 illustrates Internet Penetration by technology in the market. Data shows that the internet penetration has increased by 1% in 2020 to 19% from 18% in 2018 largely caused by the twin increases in Mobile Internet subscribers and ADSL technology users.

Figure 3.4 : Telephone Density (Teledensity)

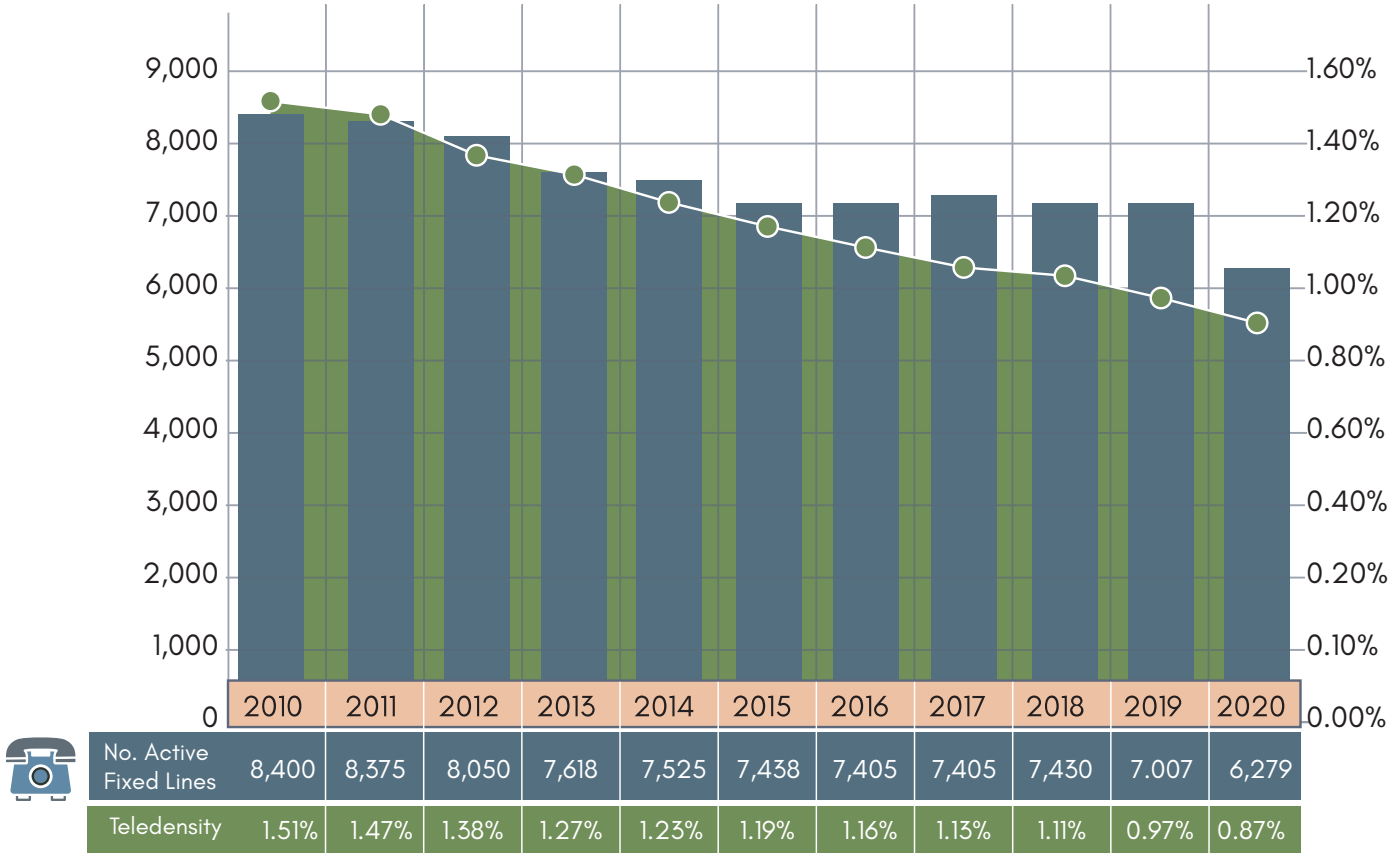


Figure 3.4 illustrates the steady decline in fixed lines since 2010 due primarily to the emergence of GSM as an affordable means of communications which continued to substitute for Household and Personal fixed line connections. The majority of fixed lines are used only by government offices, companies and corporate organizations. Consequently, similar trend was also observed for the telephone density (teledensity) or the number of fixed line connections as a proportion

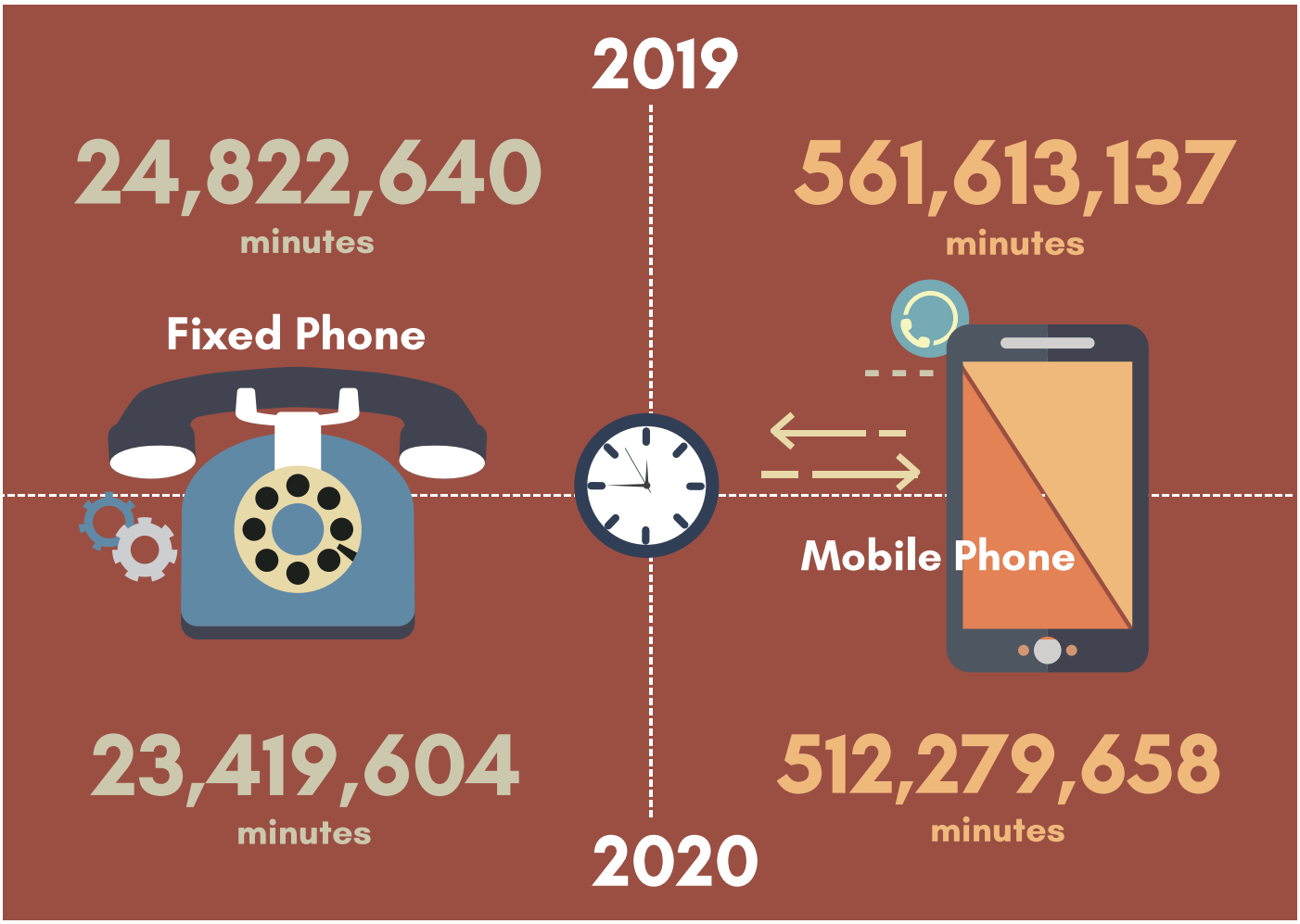
of the overall population, which dropped to 0.87% in 2020 from 0.97% in 2019.

The low teledensity meant that telephone fixed lines connections were not widespread and is decreasing in its share of the technology market, which is in line with global trends.

Usage Telecommunications Service

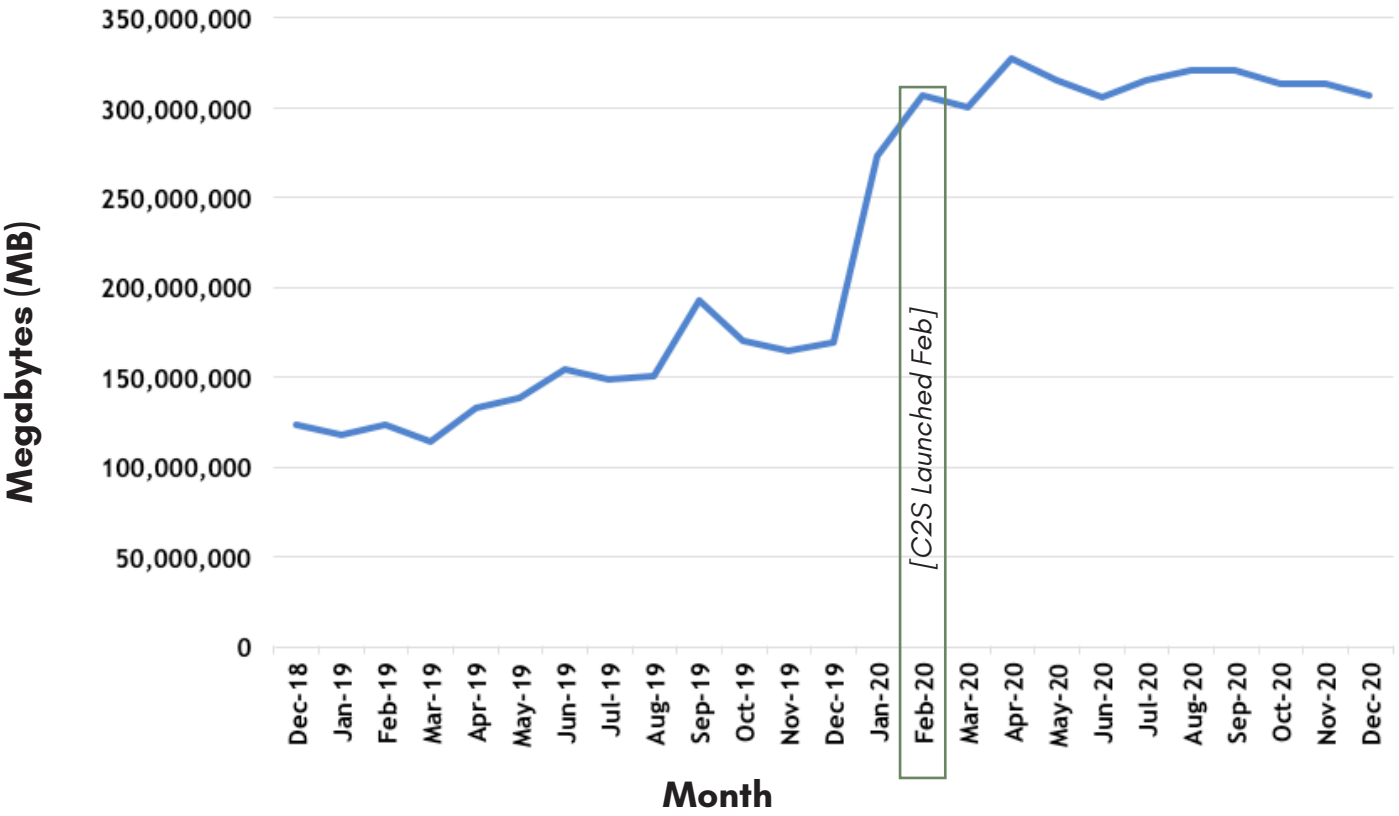
Mobile call minutes constituted approximately 95% of aggregated call minutes while Fixed line calls make up the remaining 5%. But the number of call-minutes has decreased in 2020 compared to a 2019.

Figure 3.5 : Call Minutes



Internet Usage

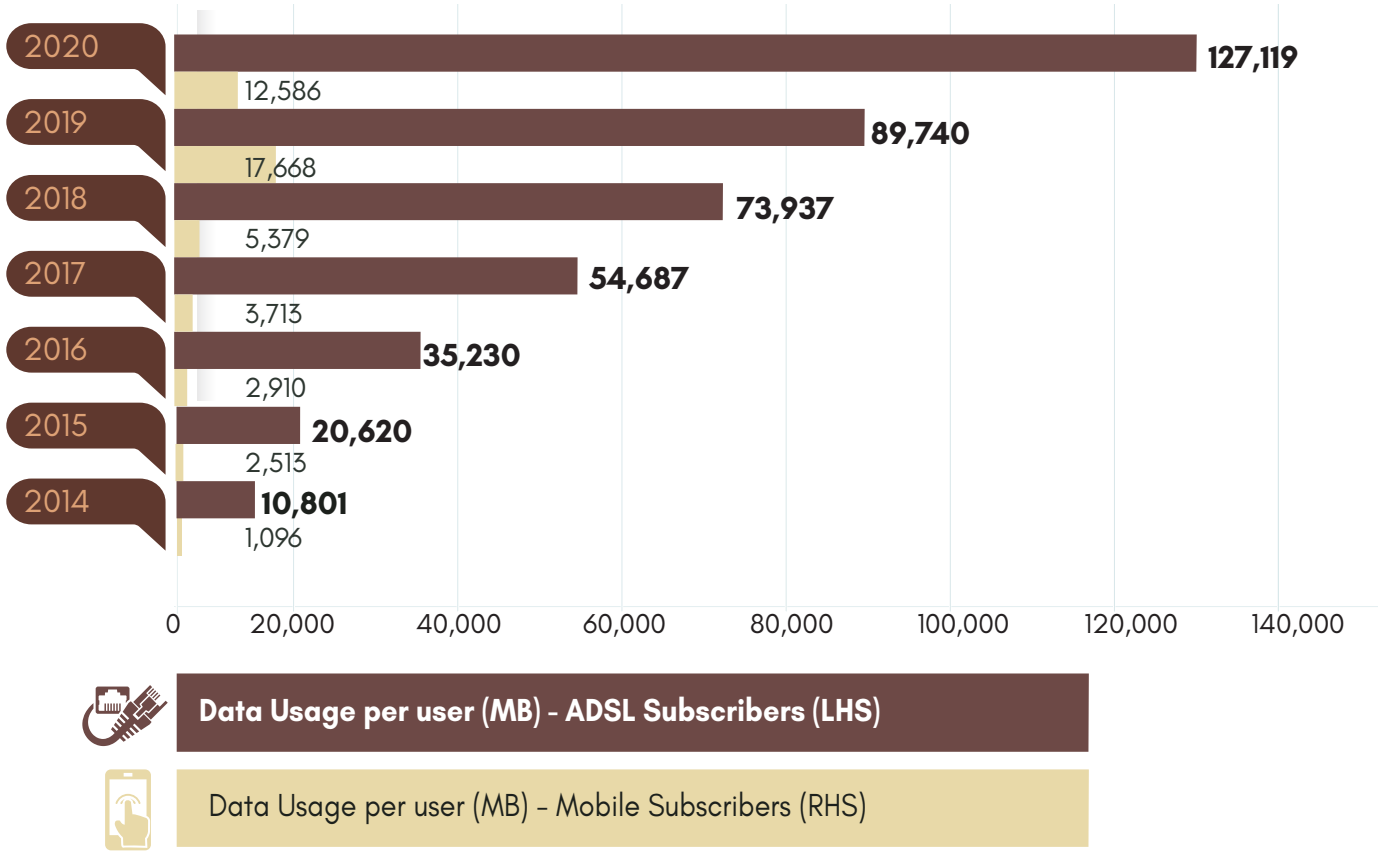
Figure 3.6 : GSM Prepaid Data (MB) Usage



As illustrated in the above Figure 3.6, the launch of the CS2 in February 2020 caused a significant upsurge in the monthly GSM data usage which was then maintained throughout 2020. The difference between 2019 and 2020 in this area was significant.

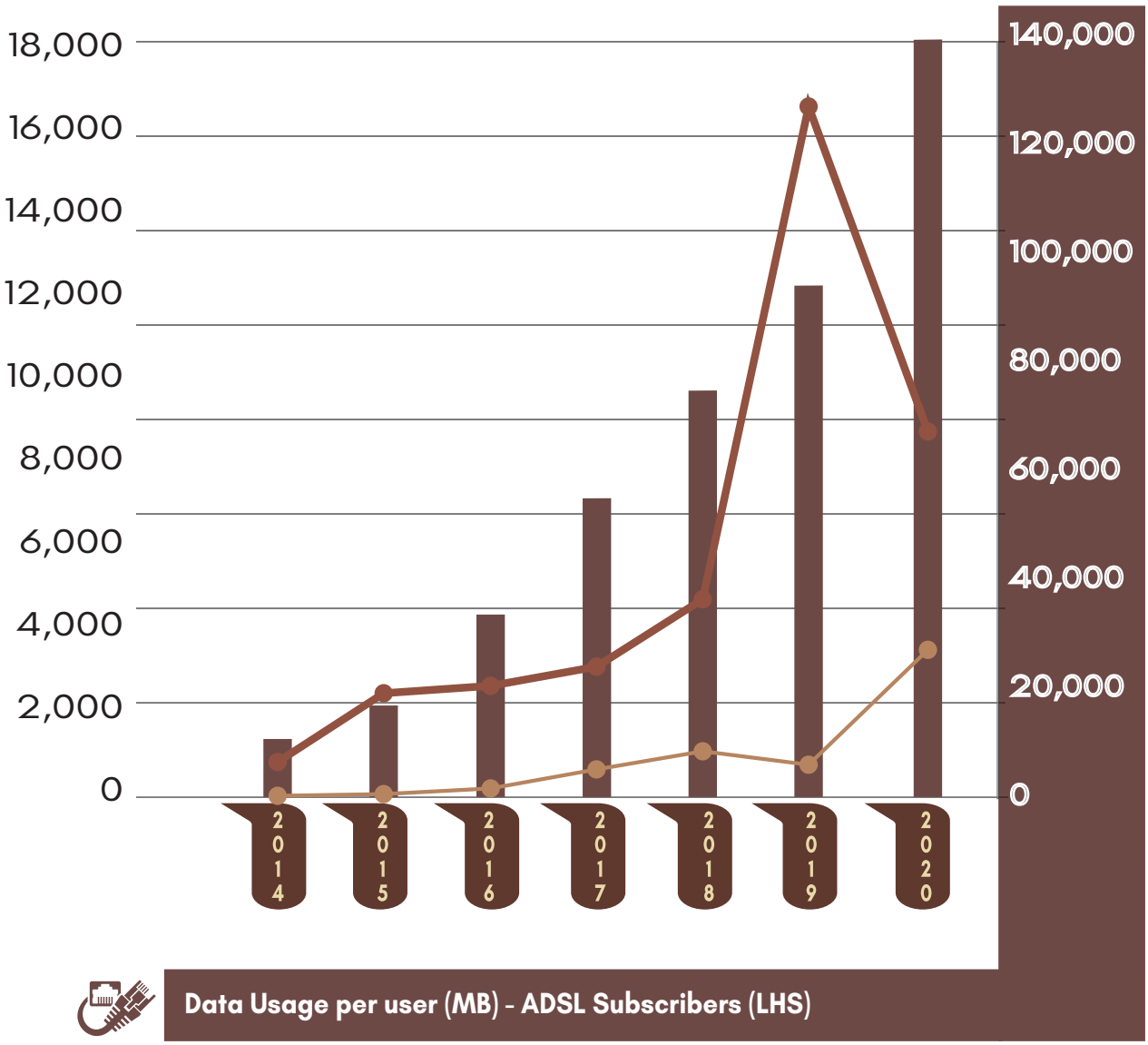
Additionally, the average monthly GSM data usage in 2020 was 309,398,423 MB compared to 145,696,550 MB data usage in 2019. The increase of 110% usage is driven by CS2 which necessitated for more data capacity to become available to users at lower cost.

Figure 3.7 : Data Usage per User per month



As demonstrated in Figure 3.7 above, the average data usage per user in terms of MB per user per month has increased substantially from 1GB per person in 2014 to 12GB for the Mobile Broadband users and 11GB per person for ADSL broadband users in 2014 to 127GB in 2020. The increasing consumption of data is a result of the rapid declining cost of data although since Bmobile entered the mobile market in 2010 and rapidly since the launch of the undersea cable in early 2020. The higher usage of data of ADSL broadband could be explained by the fact that most ADSL subscribers are corporate users mainly for business use, hence its higher volume.

Figure 3.8 : Data Usage per User per month (MB) - Postpaid vs Prepaid



Data Usage per user (MB) - Postpaid Subscribers (RHS)

2014	2015	2016	2017	2018	2019	2020
1,034	2,348	2,443	2,830	4,150	16,603	8,991

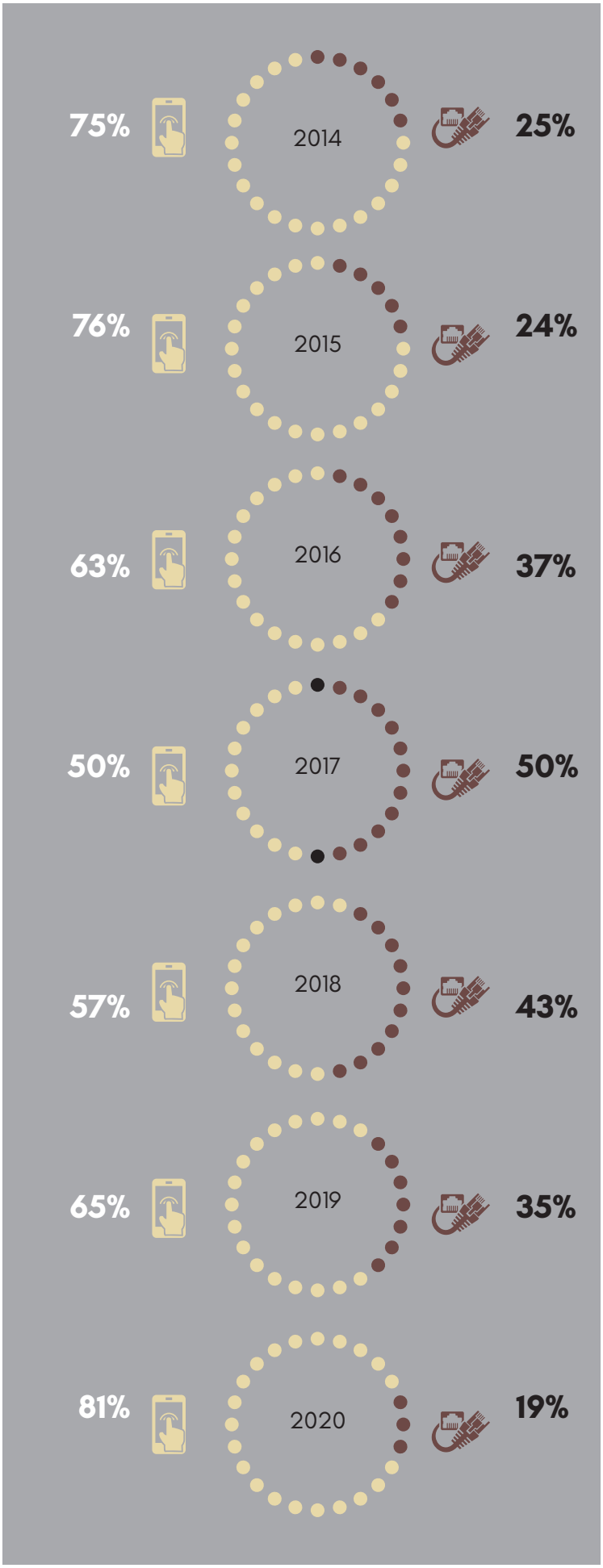
Data Usage per user (MB) - Prepaid Subscribers (RHS)

2014	2015	2016	2017	2018	2019	2020
63	165	468	882	1,229	1,065	3,595

Figure 3.8 above is the same as Figure 3.7 except that it shows the average data usage per user for mobile prepaid and mobile postpaid separately. As indicated by the graph, prepaid has increased by 238% from 2019 and ADSL increased by 42% while mobile postpaid decreased -46% from 2019 for postpaid.

The Post-paid data rates have not manifestly reduced to the same levels seen in prepaid plans, hence there is likely a conversion of post-paid customers to prepaid as a result

Figure 3.9 : Percentage Share of Downloads by Technology



Internet downloads have been increasing by 434% annually since 2014. As shown in Figure 3.9 above, internet downloads have been dominated by ADSL broadband technology from 2014-2016, due to the fact that ADSL fixed lines internet was only provided for by Our Telekom. However, this was overtaken by Mobile technology since 2018. The internet market began to change when Bmobile entered the market in 2010. By the end of 2020, 81% of all downloads was from the Mobile technology. This also reflects the changing behaviour and taste of customers towards the use of mobile technology as a result rapidly declining cost of data due to competition and the launch of the undersea cable in early 2020.

Table 3.4 : Internet Downloads by Mobile vs ADSL

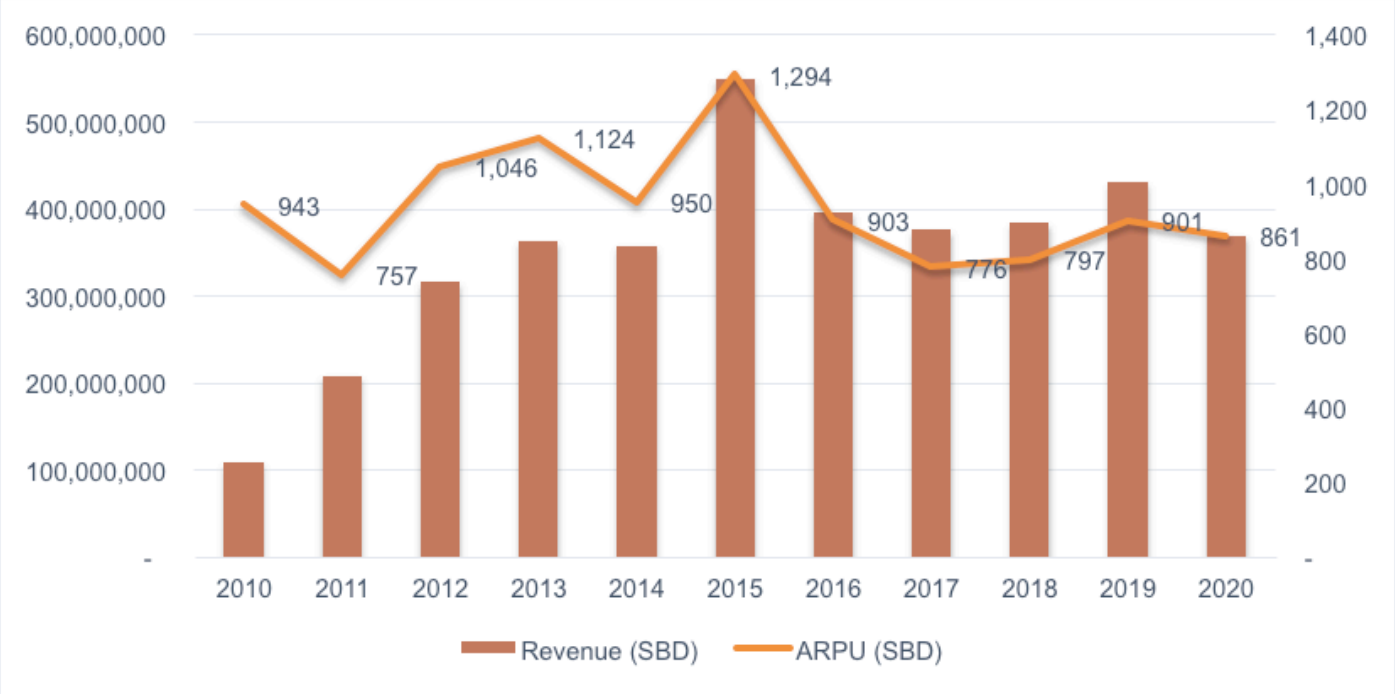
Year	Mobile	ADSL	TOTAL
2014	57,303,866	173,024,635	**230,328,503**
2015	106,973,126	341,965,935	**448,939,061**
2016	322,292,584	537,750,337	**860,042,921**
2017	716,031,839	711,374,016	**1,427,405,855**
2018	1,148,330,866	875,712,458	**2,024,043,324**
2019	1,714,624,953	939,042,490	**2,653,667,442**
2020	5,849,947,014	1,385,090,481	**7,235,037,495**

The above Table 3.4 shows that data downloads was increasing annually by 130% between 2014-2017 but has slowed to 29% per annum between 2017-2019 and increased to a high of 173% annually between 2019 and 2020.

The high percentage increase in 2020 was due to the low cost of data (as shown in Figure 3.10) since the launch of the undersea cable in early 2020.

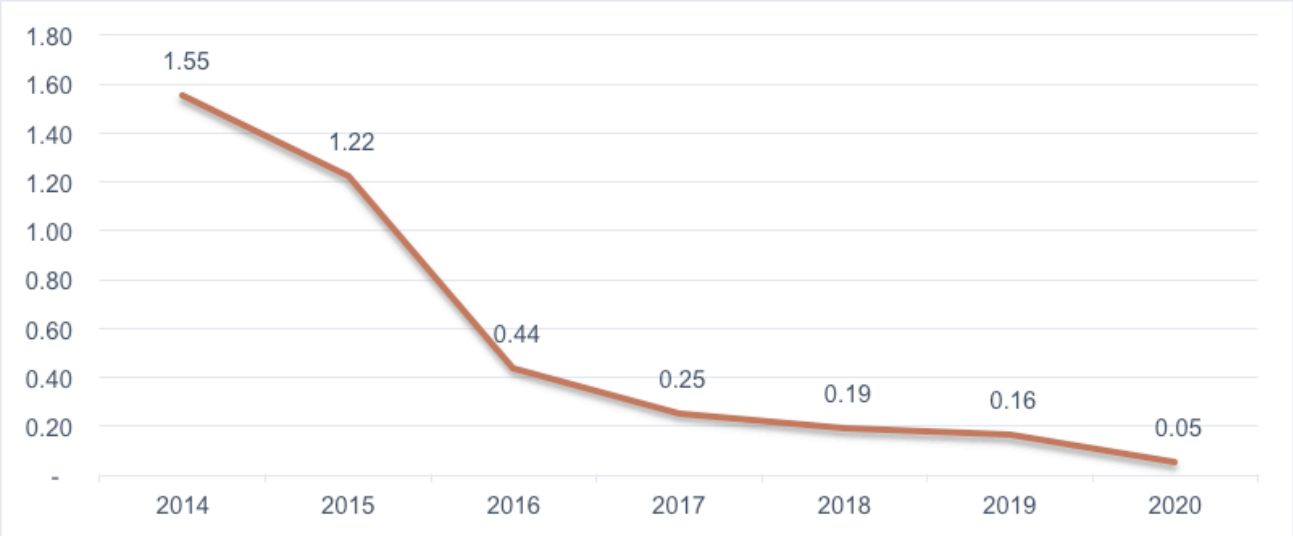
3.4 Industry Revenue, Cost of Data and ARPU

Figure 3.10 : Telecommunication Industry Revenue vs ARPU



total subscribers. Since 2010, it average has been fluctuating and reached $1,200 before decreasing to $861 in 2020. The reduction in ARPU in 2020 is a result in the total revenue decline by the service providers, with a fall of some 14% in total revenue. The trend also indicates that the plans has not yet materialised the marginal value in the overall revue raised by the sector. This is because of competition of product bundling and discounting in the market and the cost of data is very low with the launch of the undersea cable.

Figure 3.11 : Cost of Data 2014-2020 ($/mb)



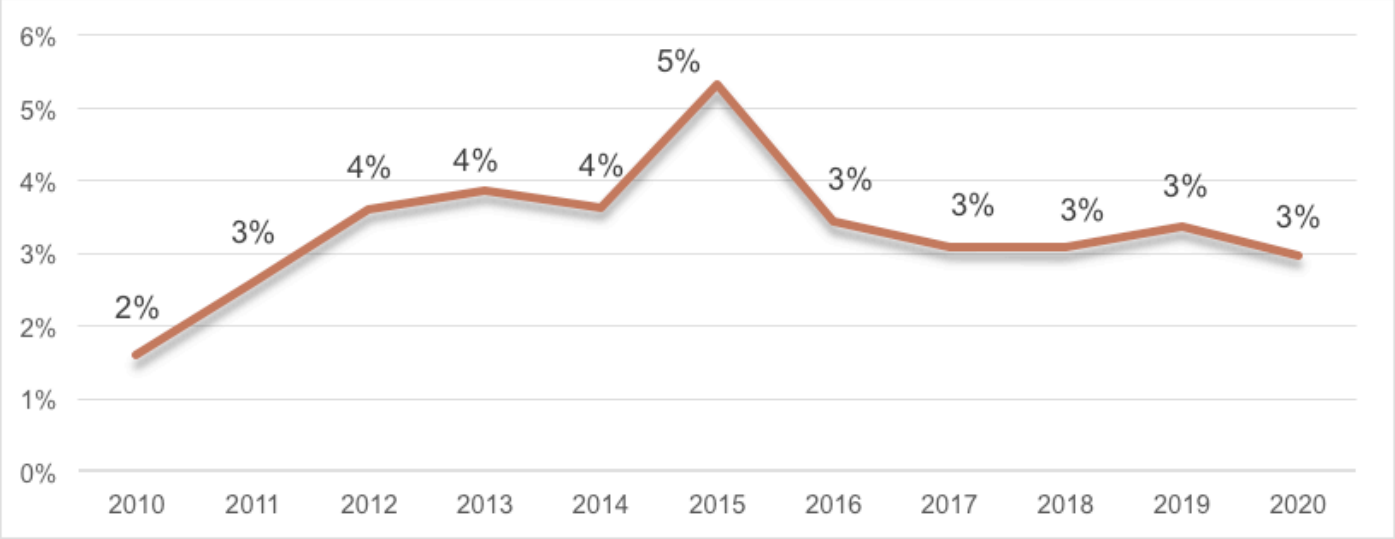
From the above graph, the cost of broadband data as measured by $ per MB (megabytes) has been decreasing since 2014 from $1.55/MG to $0.05/MB. The first large decrease occurred in 2016 with a decline of -64% from 2014. This is despite the undersea cable network being introduced only in early end of 2019. This is the result of competition between internet service providers. With the introduction of the undersea cable network in early 2019, by February 2020, the data cost

further declined by (-69%) from February 2019. It is anticipated that further reduction of the cost of data will occur as a result of competition between the service providers.

Table 3.5 : Telecommunication Industry Revenue as % of GDP

Year	GDP (Nominal) / million SBD	Revenue / SBD	Telecom industry as % of GDP
2010	6,829	108,922,350	**2%**
2011	8,023	208,085,100	**3%**
2012	8,760	316,102,850	**4%**
2013	9,381	363,104,400	**4%**
2014	9,850	357,954,100	**4%**
2015	10,345	549,550,000	**5%**
2016	10,957	375,972,747	**3%**
2017	11,703	361,238,639	**3%**
2018	12,482	384,000,364	**3%**
2019	12,772	430,801,100	**3%**
2020	12,405	369,441,223	**3%**

Figure 3.12 : Telecom Industry Revenue as % of GPD 2014-2020



Since 2010, the Telecommunications industry's contribution to the economy, in terms of employment and taxes to the national government, has steadily increased over the years. It has increased from 2% in 2010 as a percentage of Gross Domestic Product (GDP) and peaked at 2015 with a 5%.

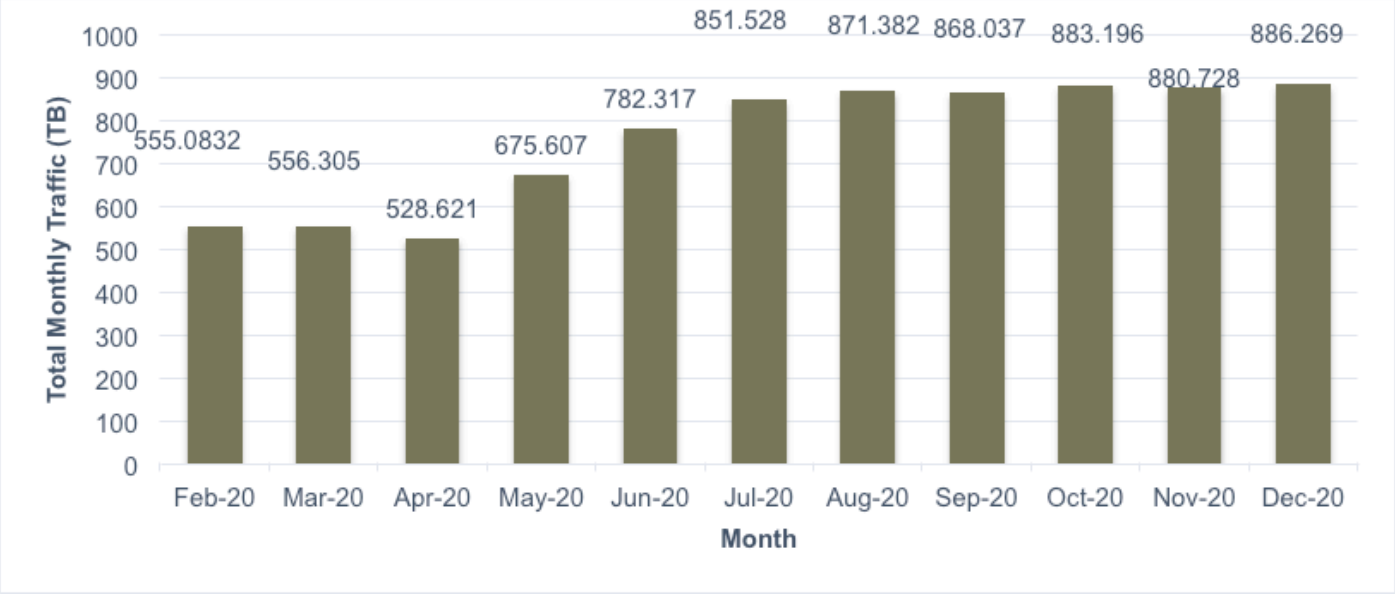
3.5 Competition and Network Traffic Data Usage

Domestic vs International Traffic Usage

In 2019, the telecommunications sector transitioned to Coral Sea submarine fibre optic cable from legacy satellite network connections. The Coral sea cable (CS2) was completed simultaneously with the Solomon Islands Domestic Network (SIDN) which ensures that key Provincial Centres can benefit fully from the International cable system contribute to the advancement of domestic telecommunications in the Solomon Islands. Currently, 4 Provinces – Western Province, Choiseul Province, Malaita Province and Honiara, are all connected to the SIDN. When the CS2 went live in 2020, the aggregated monthly international traffic usage thereafter has been 8,339.1TB.

According to Figure 3.12, trends in international traffic usage indicated a slight decline for the first three months prior to an uptick in traffic usage for the second three months and later a moderate increase for the rest of 2020. On average, the monthly international traffic usage for 2020 is 758.1TB.

Figure 3.13 : Total Monthly Traffic for CS2 (Terabytes - TB)

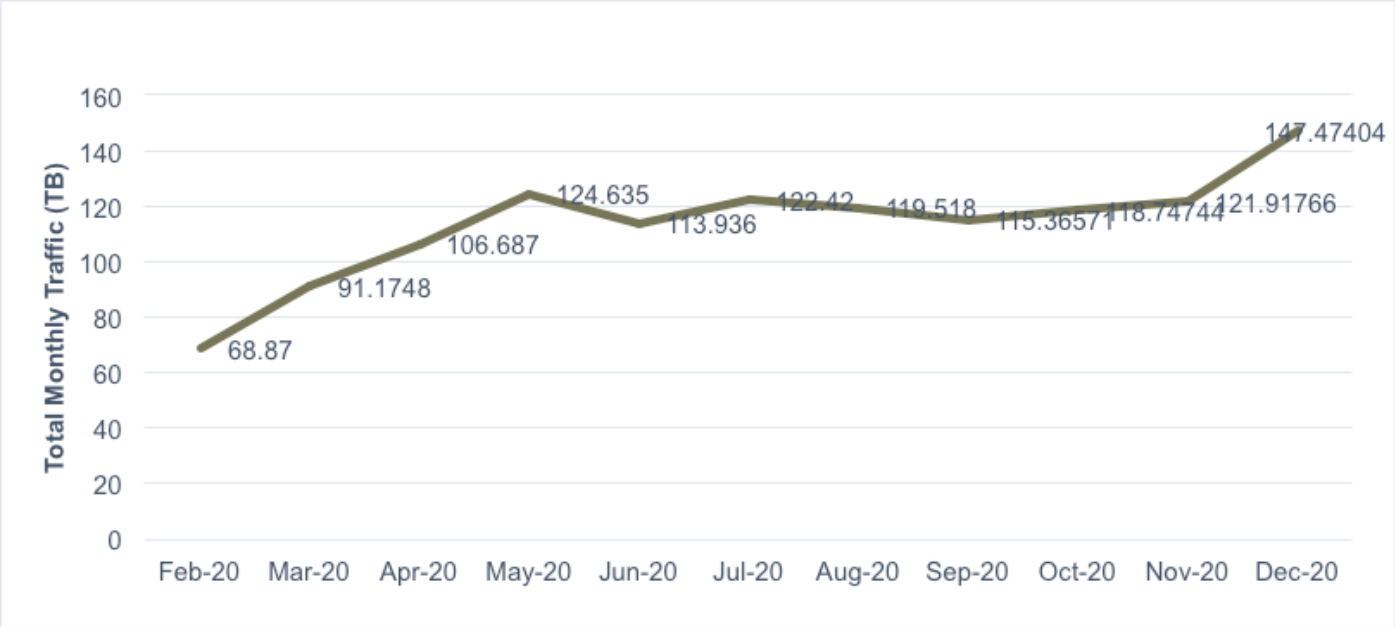


Solomon Islands Domestic Network (SIDN)

Domestic traffic usage totalled 1250.8 TB in 2020 since SIDN went live in February. Movements in monthly traffic usage for SIDN per Figure 3.13 highlighted surges in traffic for the first 4 months and a moderate increase in the latter months of 2020. On average, the monthly traffic usage capacity is 113.7 TB.

In contrast, monthly SIDN traffic usage is lower than CS2 traffic usage which indicates that the CS2 generated more internet traffic than SIDN. The lower SIDN traffic usage could be attributed to the limited widespread of the retail 3G/4G network to capture more provinces, customers in the domestic network ability to afford prices offered by mobile operators, and or limited economic activities which spur little or no income for customers to purchase data.

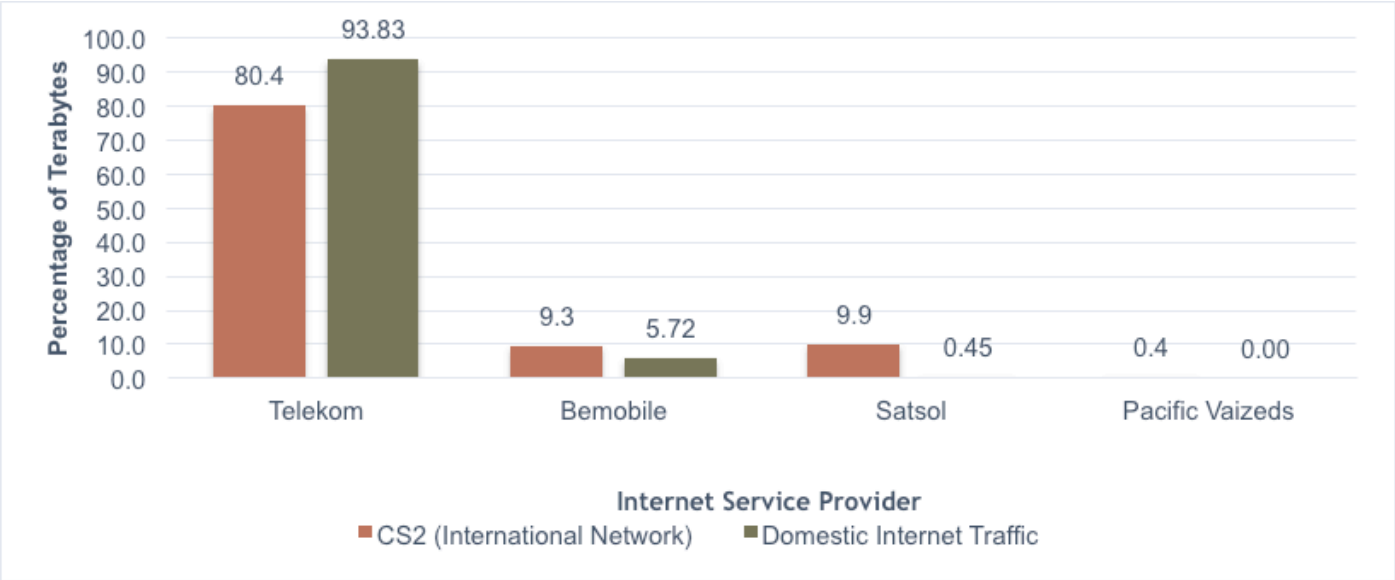
Figure 3.13 : Total Monthly Traffic for CS2 (Terabytes - TB)



Network Traffic by Service Provider

In terms of traffic usage per internet service provider, Figure 3.14 exhibits the aggregated domestic and international traffic for each of 4 internet service providers. Solomon Telekom generates more international and domestic traffic compared to other providers in the market. Categorically, Solomon Telekom generated 8 times more international traffic than its nearest rival Satsol and 16 times more domestic traffic than Bmobile. The overwhelming increase in domestic internet traffic usage by Solomon Telekom could be attributed to their wide 3G/4G coverage all over Solomon Islands.

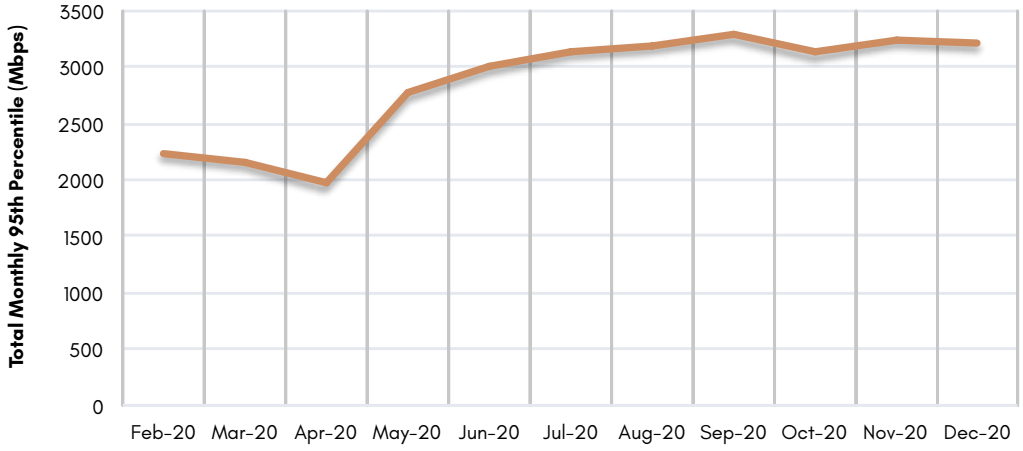
Figure 3.15 : Domestic vs International Network Traffic



95th Percentile for CS2

Overall, the increase in network traffic capacity usage is a great indication that the more users are using internet data than before and this may be influenced by drop in prices and increase in data plans. Both international and domestic traffic usage is dominated by Our Telekom. The 95th percentile represents the total value or capacity of bandwidth usage which was either fully utilized or underutilized 95% percent of the time based on the actual bandwidth paid for by service providers (committed information rate) and the bandwidth cap ceiling (Peak information rate) set by Solomon Coral Sea Cable Company which allows service providers to utilize beyond their actual bandwidth (burst) 5% of the time.

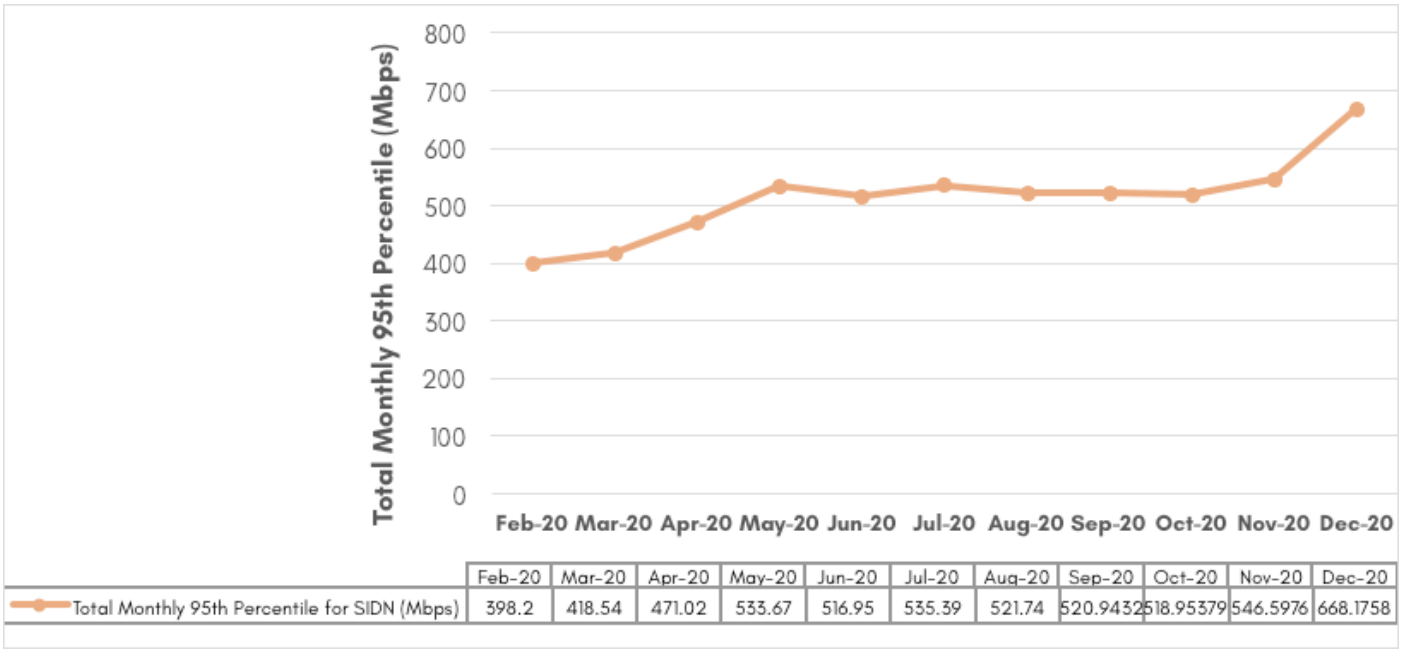
Figure 3.16 : Total Monthly 95th Percentile for CS2 (Mbps)



	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20
Total Monthly 95th Percentile for CS2 (Mbps)	2245.2	2167.6	1975	2770.2	3005	3142.3	3193.2	3289.4	3126.6	3246.6	3212

The yearly 95 percentile bandwidth usage for CS2 in 2020 is 31373.1 Mbps while the monthly average is 2852.1 Mbps, indicating that the total monthly bandwidth usage by users was at or below 2852.1 Mbps 95% of the time. Figure 3.16 shows the monthly 95 percentile bandwidth usage trend for 2020 which almost replicated similar trend observed in Figure 3.13, except for the moderate fluctuation in the final three months.

Figure 3.17 : Total Monthly 95th Percentile for SIDN (Mbps)



	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20
Total Monthly 95th Percentile for SIDN (Mbps)	398.2	418.54	471.02	533.67	516.95	535.39	521.74	520.9432	518.95379	546.5976	668.1758

For the SIDN, the yearly 95 percentile bandwidth usage is 5,650.18 Mbps while the monthly average is 2852.1 Mbps, indicating that the total monthly bandwidth usage by users was at or below 2852.1 Mbps 95% of the time. As indicated in Figure 3.17, 95th percentile experienced moderate increasing usage during the first 4 months prior to a declining slope in the later months of 2020 and started increasing again in December 2020.

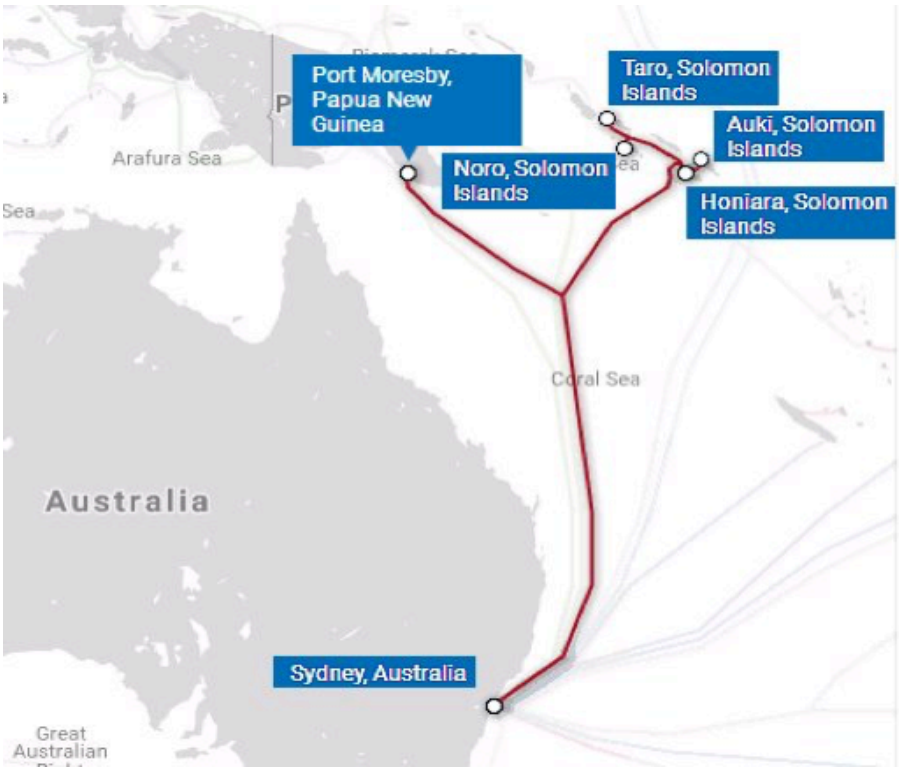
4

International Connectivity

4.1 Submarine Cable Service

Coral Sea Submarine Cable (CS2) and Solomon Islands Domestic Network (SIDN) are now in operation in 2020 and have essentially taken over international connectivity for Solomon Islands.

With the Coral Sea Submarine Cable (CS2) and Solomon Islands Domestic Cable Network (SIDN) completed in 2019, 2020 saw the transfer of ownership of the CS2 and SIDN to the Solomon Islands Submarine Cable Company (SISCC), and following the issuance of an interim licence issued by the Commission on 31 January 2020, the SISCC went into full operation thereafter. The interim licence will expire on 30 June 2021 although it is expected that the Commission will renew it or issue a full license altogether.



Submarine Cable List

Coral Sea Cable System (CSCS)

Email link

RFS: Q4 2019
Cable Length: 4,000 km
Owners: Vocus Communications
URL: n.a.

Landing Points

Auki, Solomon Islands
Honiara, Solomon Islands
Noro, Solomon Islands
Port Moresby, Papua New Guinea
Sydney, Australia
Taro, Solomon Islands

The CS2 submarine cable:

The CS2 system links both Solomon Islands and PNG to the major East Coast Internet Hub at Sydney, with each country using two fibre pairs on the system from their respective capitals, Port Moresby and Honiara to Sydney, giving each country up to 20 Terabits/s in capacity.

The CS2 construction project was co-funded by Australia, PNG and Solomon Islands under the terms of an MOU signed on 11 July 2011. Australia grant funded 66.7% of the total cost with the remainder being contributed by Solomon Islands and PNG.

An Engineering, Procurement and Construction Contract (EPC) was signed on 18 June 2018 with Vocus Communications, who then sub-contracted Alcatel Submarine Networks (France) to construct and install the cable system. The construction of the system was completed on 29th November 2019.

The CS2 cable is owned and operated by the Coral Sea Cable Company Pty Limited in Australia. This company is owned equally by The Commonwealth of Australia, SISCC and PNG DataCo. PNG DataCo and SISCC have each been granted Indefeasible Rights of Use (IRU) over two fibre pairs for the full lifetime of the Cable system (25 years) by The Coral Sea Cable Company.

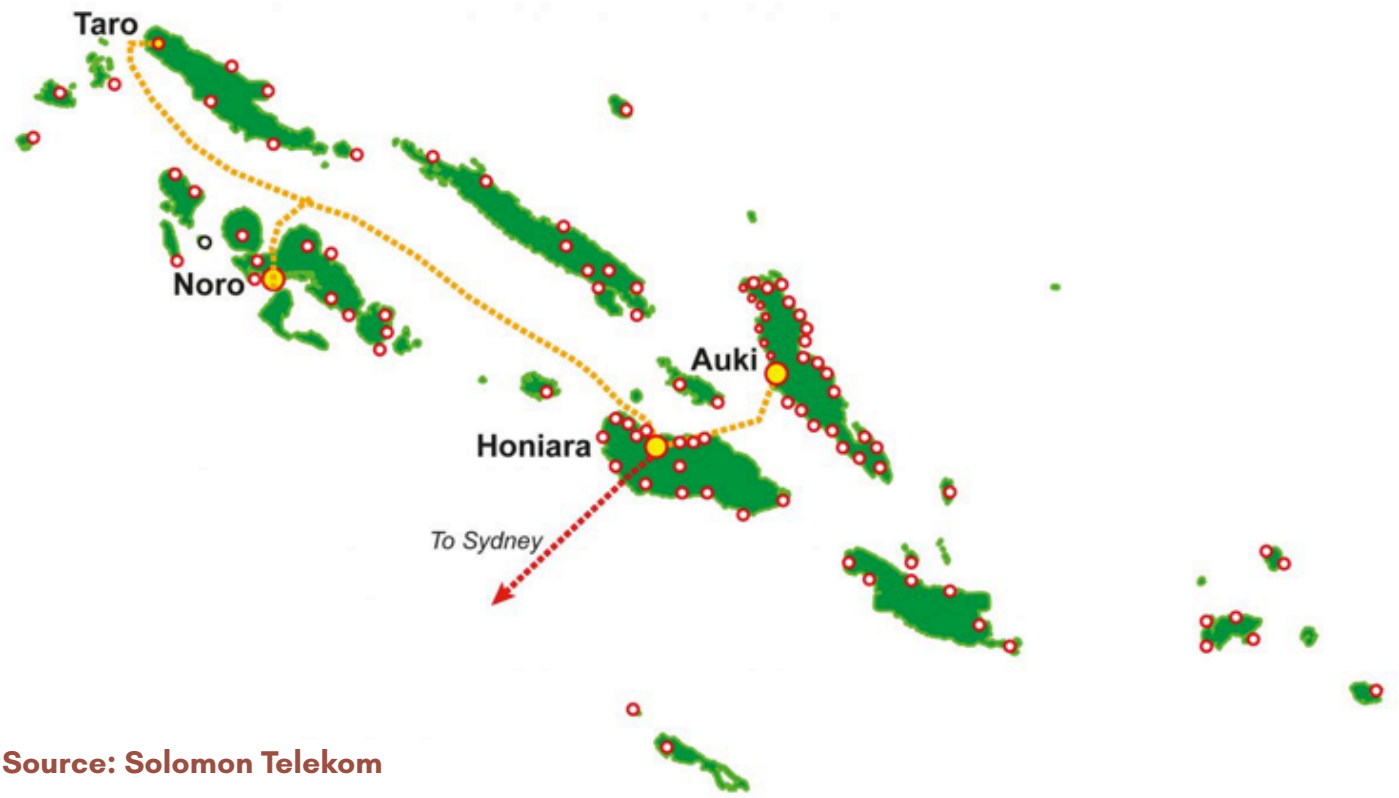
SIDN submarine cable:

Four Provinces of Solomon Islands are joined by the Solomon Islands Domestic submarine cable Network (SIDN), which was constructed in parallel with the International CS2. The SIDN ensures that key Provincial Centres benefit also from the International cable system.

SIDN is an unrepeated multi core fibre network with two branching units links to Auki in Malaita Province, Noro in Western Province and Taro in Choiseul Province with Honiara. The length of the longest segment from Honiara to Noro is 430km and is one of the longest unrepeated segments in the world. The system was 66.7% grant funded by The Commonwealth of Australia with the remaining 33.3% provided by the Solomon Islands Government through SISCC.

SISCC constructed all the landing party infrastructure required to install the cable system using local Solomon Islands contractors. The land infrastructure includes beach landings, land cable duct routes from the beach landings to landing station sites. Prefabricated Cable Landing Stations for the cable system electronics in each of the four locations was sourced from a specialist vendor in USA. After commissioning in late 2019, the title of the Solomon Islands Domestic Network was transferred to SISCC. The system has an expected life of over 25 years.

Source:
Solomon Islands Submarine Cable Company



Source: Solomon Telekom

The SISCC is owned by two government-controlled entities; the Solomon Islands National Provident Fund (SINPF) and Investment Corporation Solomon Islands (ICSI).

With the newly launched services rolled out by SINPF in 2019 and 2020, including the Solomon Finance Limited (SFL) now being granted an interim licence by the Central Bank of Solomon Islands in November 2019, as well as the 'youSave' superannuation saving scheme for the informal sector, the future of e-finance and mobile banking will have greater demands for stable internet, most particularly, the SIDN, as the market for these services lies in provincial centres. Consequently, the Commission is increasingly consulted on new e-banking models to support these initiatives.

Satellite Service Update

Solomon Islands Domestic Network Satellite Services in Solomon Islands move into Redundancy

International: With the introduction of the submarine cable, telecommunication operators have all but migratd over to the cable for international connectivity, resulting in a significant reduction in use of satellite services in the last year alone. The majority of operators have switched to the CS2, and only use satellite links (contracts/ agreements) redundancy (backup) purposes.

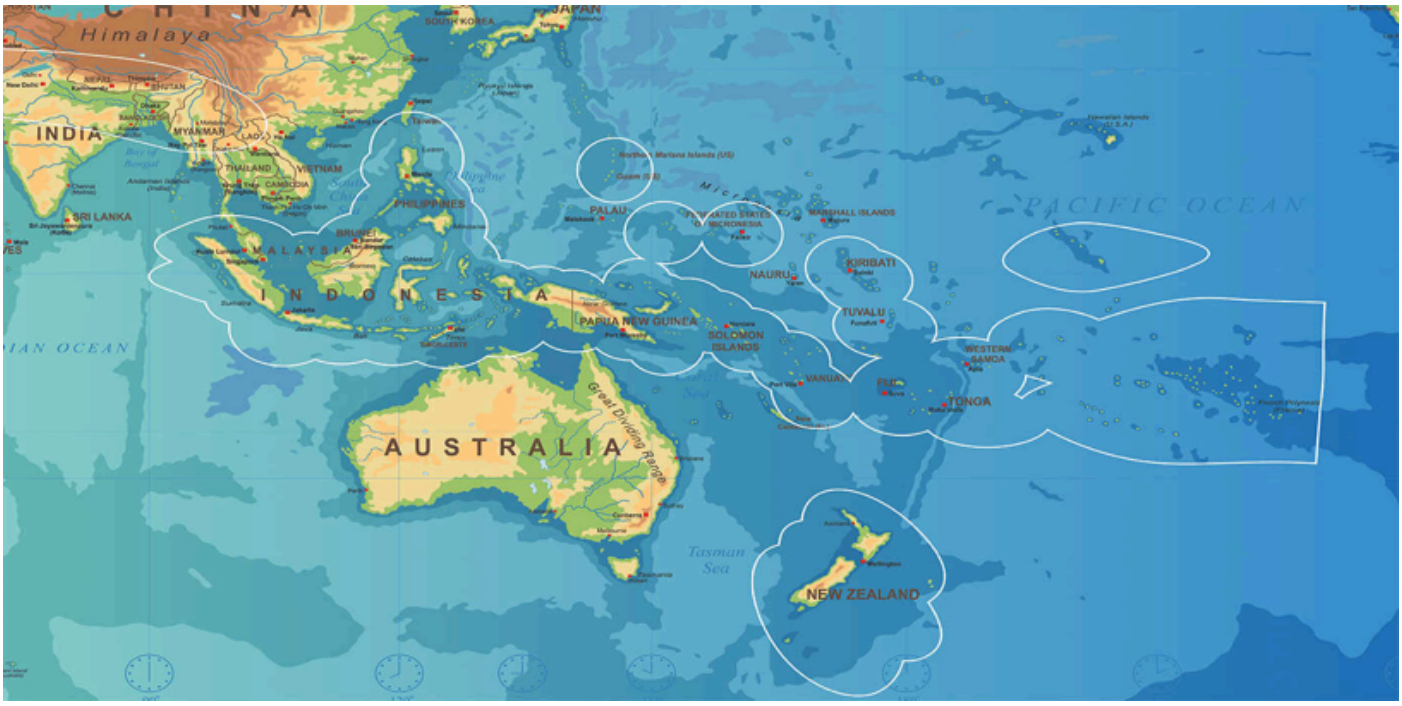
Domestic Networks: But in terms of domestic connectivity, satellites serve rural outlying area areas with no access to fiber or terrestrial Microwave. Similarly, mobile network operators continue to rely on satellite for backhaul, meaning the connection from site to office (exchange). New entrants Solkonet continues to use VSAT satellite services from Kacific-1.

Kacific-1 and O3B into Redundancy

In 2020, the Commission was notified by Patrico Communications (trading as Solkonet) of its partnership with Kacific-1 satellite to provide telecommunication services in Solomon Islands.

Kacific1 launched in December 2019, is a geostationary satellite orbiting at 35,786km above the equator reaching coverage over 25 countries in Asia Pacific targeting populations spread across islands, mountainous and rural regions. As a satellite service company, Kacific, like the O3B network, remain in a market where the move to submarine cable is heavily favoured. Consequently, there is an increasing emphasis by satellite providers to focus on alternative business models in the Pacific, including Solomon Islands, following the migration from satellite to submarine cable by most operators. With the prospects of future submarine cables connecting to the SIDN from Papua New Guinea, and the CS2 from Vanuatu, satellite use will only decrease.

In Solomon Islands, Kacific and O3b continue to explore services focused on schools and clinics in remote rural areas where it is costly to provide access traditional telecommunications towers or where the existing internet is poor or non-existent. Arguably as newer satellites, they will have low signal latency, and therefore suitable for applications such as financial transactions.



Source: Kacific. Kacific satellite coverage over 25 nations including Solomon Islands

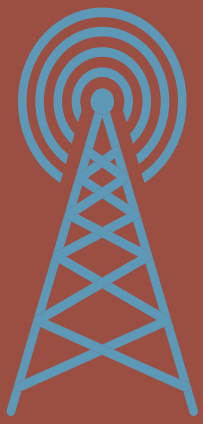
Solomon Islands Service Providers Use of Satellite

Cable and satellite services in Solomon Islands for telecommunication operators are as follows:

Table 3.6 : Cable and Satellite Services Use in 2020

Operator	Cable	Satellite
1. Solomon Telekom Company Ltd	CS2	Redundancy
2. Bmobile SI Ltd	CS2	Redundancy
3. Satsol Limited	CS2	Redundancy
4. Pacific Vaizeds Enterprises Ltd	CS2	-
5. Patrico Communications Ltd	-	Kacific
6. Solitech Limited	CS2	-

Satellite Service in Region



The telecommunication infrastructure and services costs are naturally high in Solomon Islands because of small scale, dispersed populations, remoteness, and susceptibility to natural disasters.

In the last 30 years, whilst Satellite Telecommunication has been the main means of telecommunication in Solomon Islands, with the operation of the CS2 submarine cable use of satellite has significantly decreased given much higher bandwidth and prices of scale by international cable..

Fibre optic submarine cable has changed the landscape of connectivity in the Pacific, Satellite Service Providers need to diversify their services exploring alternative business models in the country to provide full cloud services (internet, telephony, billing, etc). Satellite providers also seek to capitalize on the massive area of sea, lower deployment costs (Ku-band), to reducing of Security threats in the Pacific hrough tracking and imagery technologies which are able to reach places telecommunications towers cannot.

Though the Pacific Islands broadband access landscape has changed with most countries are connecting and planning to be connected by submarine cables, the Pacific region will continue to provide Business opportunities to the Satellite Services Providers.
Especially those which:

(a) Change their Business Plan model to the Pacific

(b) Capture the massive area of Blue Ocean

(c) More than 60% of islands are not connected

(d) Satellite and submarine cables should be complimenting each other

(e) Satellite Technology evolves rapidly.

Key Activities 2020

5

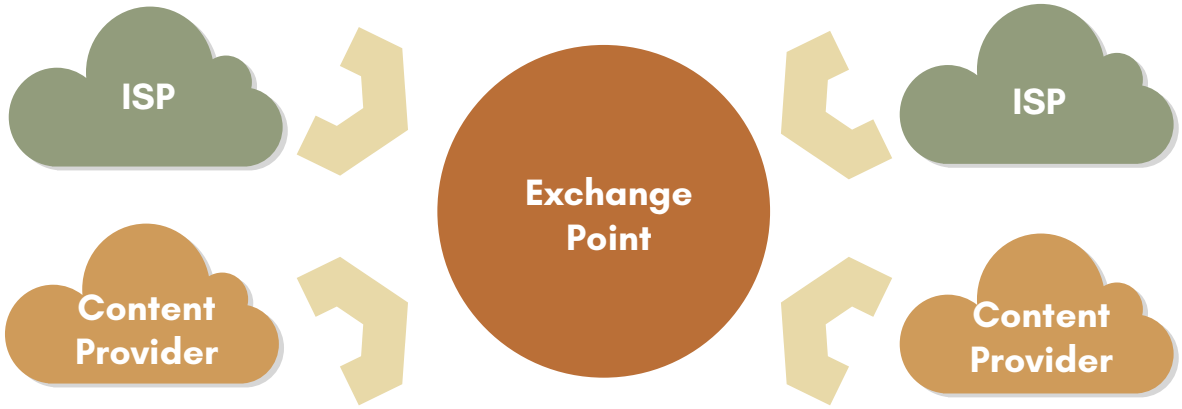
SCC Interim License and Transmission Pricing

Under the Interim Licence to the SISSC, international Ethernet service is charged on the basis of volume of service used rather than just service capacity, as at present. The Interim Licence granted to SISCC to operate the CS2 cable required it to monitor both capacity sales and traffic (Gigabytes, GB) each way. The monitoring requirement was imposed so that SISCC could consider moving from capacity pricing to volume pricing. With the Interim Licence due to expire in June 2021, the Commission and SISCC have entered into negotiations over the proposal for the Interim Licence to be amended.

SISCC has reported that new entrants have struggled with the minimum 100Mbps capacity required for access to CS2. Issues surrounding the 100 Mbps minimum are being reviewed, as the 100 Mbps is minimum size port for capacity pricing. On the converse though this is not relevant for volume pricing. Interests of all parties are being reviewed with consultations having begun.

In 2021 the Commission will conclude these Negotiations regarding charging mechanisms in clause 5 of the Interim Licence issued to SISCC to operate the CS2 regarding permit volume billing.

Solomon Islands Internet Exchange Peering Point



In 2019, the Commission reported that the role it was taking to establish a Solomon Islands Internet Exchange Peering Point (SIIXP) after a December 2019 training attended in Suva around IXP in Pacific Island Countries.

The SIIXP would complement the submarine cable and allow local content caching that will improve the quality of service for Solomon Islanders and thus a very important system that would negate the requirement for local content to proceed to the internet, but rather remain in-country. Though locally created data or content is not comparatively significant at the outset, the increased technology file sizes from video or photos will only increase the importance of IXP over time. In 2020, the Commission and other relevant stakeholders, namely the SISCC and consultants to the Office of the Prime Minister & Cabinet (OPMC), commenced discussion on advancing the proposal for the establishment of the SIIXP.

In January 2020 a SIIXP Framework was developed for discussion, which would lead to a possible SIIXP Hosting and Participation Agreement. There were numerous models proposed by various parties on how the SIIXP should be established, hosted and funded. Local carriers are already exchanging traffic at the new SIIXP even though the formal SIIXP Agreement has not been completed. Future participation in the SIIXP could quickly grow beyond the initial carriers providing significant economic benefits, as participation in the SIIXP open to all networks (e.g., CDNs, Government Departments, banks and hospitals).

It has been determined that the SISCC is the ideal inaugural Host for the SIIXP which will be not-for-profit. There is ongoing discussion on how the project will be funded. There may be more than one SIIXP location in the future and the SISCC's role as a Host will be subject to SIIXP governance. The Solomon Islands is a small market, but should anticipate the arrival of additional submarine cables and perhaps additional IXPs. Arrangements should therefore be kept as scalable and as simple as possible.

SIIXP issues for further consideration

There are a number of issues that have to be considered in 2021, including:

1. Whether the SIIXP will connect to the CS2

2. Whether the scope of the SIIXP Agreement should be limited.

3. Whether caching, transit and business relationships between Parties at the IXP should be separate from the SIIXP or covered by the SIIXP Agreement.

4. Whether the SIIXP Agreement will only govern participation in the SIIXP

5. Whether each Participant set its own peering policy independent of the SIIXP Agreement

6. Whether each Participant can select which other Participants it peers with through the SIIXP switch SIIXP issues for further consideration

Content Caching

In 2020, the Commission continued to work together with the SISCC and Satsol on Content Caching, which has been a discussion held in conjunction with that on the SIIXP.

Caching allows servers in the Solomon Islands to hold a copy of content brought into the country, hence there are key synergies with the IXP. Content Delivery Networks (CDNs) will allow the installation of a cache on a network or IXP upon that network reaching a certain amount of data across the CDN.

SatSol currently hosts a Google Global Cache (GGC) at its own premises. This means that google or Youtube searches save a copy of the first search into the local cache. Then the second person searching for the same video can access this locally rather than going to the internet.

This GGC is non-exclusive. Satsol has informed the Commission of its preparedness to move its cache to the SIIXP. Currently outstanding is the discussion on payment structure.
Once an IXP exists, it makes the Solomon Islands more attractive for CDNs to locate local caches in the Solomon Islands to improve service to end users. Co-locating caches at the IXP where a switching fabric already exists enables sharing. But the Commission recognises that this is not inevitable.

The Commission would prefer to see IXP and cache services hosted by a trusted, independent party - like the SISCC with appropriate demarcation of costs - and cache costs shared on volumes drawn ('egress') from the caches. ISPs like Satsol would benefit from sharing their caches because the costs are shared.

The major expense with any cache service is updating content from overseas ('ingress'). The caches will be accessed through the peering exchange switch fabric, be filled through a dedicated link over CS2 to SISCC's IP transit solution in Sydney.

Summary Global Google Cache

GGC stands for Google Global Cache.
Without GGC, every user request from an ISP's network to YouTube videos, Google Apps, etc. creates a transit of this video instance over the network, from Google to the user across the backbones (upstreams).

• With GGC, only the first copy of the video passes through the entire network. If another user requests the same video, Google serves it from the local GGC node.

• GGC allows ISPs to serve certain Google content from within own network. This eases congestion within the network, and reduces the amount on traffic on peering, backbones and transit links.

GGC Features

• Reduction of traffic through networks: the percentage of requests through cache varies depending on the usage pattern of users, but typical performance is close to 75%.

• Quick response, transparent to users: Google transparently serves users requests from the cache within the network.

• Easy installation: installation requires a rack, a laptop, a copy of a disk image from Google, as well as an Internet connection. Once the servers have been configured and accessible from the network, Google does the rest of the work and monitor it remotely.

• Reliability: the node has several levels of redundancy. If the GGC node is unavailable for any reason, user requests will be sent transparently to Google.

How a GGC Works

• When a user requests parts of content - for example, video, web pages, or images - Google systems determine if this resource can be provided from a GGC node within the network, and if the user has access to the GGC node.

• If the GGC node already has a cached version of the requested content in its local cache, it will provide the content directly to the end user, improving user experience and saving money for Internet transit.

• If the content is not stored on the GGC site, the site downloads them from Google, provides it to the user, and stores it for future requests.

Source: Satsol, 2020

Competition Pricing

While there was an enormous surge in the use, quality and coverage of mobile services in 2020, competition for the purposes of pricing appears to have dropped, largely due to the lack of competition between the dominant service providers, STCL and Bmobile.

In 2019, the Commission reported a general lack of price competition within the telco market, and highlighted that the retail cost of data in Solomon Islands was excessively greater than other Pacific Islands markets. In contrast, 2020 has seen a drop in the price of data, with ISP data suggesting that the price per megabyte has significantly lowered whilst the volume of megabytes has increased causing excess internet data available in the market.

Notwithstanding contrasting arguments on the same, the Commission accepts that with the introduction of the CS2, this could indeed be the case. Should the traditional bandwidth pricing of the CS2 change to volume pricing, competition could improve with new entrants.

Solomon Islands National Broadband Infrastructure Project (SINBIP)

The Commission has been involved with government on the Solomon Islands National Broadband Infrastructure Project (SINBIP), a national initiative based on the NDS MTS 3, Goal 9, which sets out the need for infrastructure that would improve internet coverage for the benefit of the rural dwellers, and the "Last Mile" demographics of Solomon Islands. The Working Group consists of the Permanent Secretaries of the Ministry of Communication and Aviation, Ministry of Finance and Treasury, Ministry of Lands, and Ministry of Environment. The Commissioner currently sits in as member of the Working Group.

Engagement with OPMC Projects

Update on Australia's Solomon Islands Governance Program Strategic Projects

In the last 12 months (2020/2021), the Office of the Prime Minister and Cabinet established the Cable Adoption Working Group (CAWG) comprising representatives from the Telecommunications Commission of Solomon Islands, the Ministry of Communications and Aviation (MCA), the Australian Department of Foreign Affairs and Trade (DFAT), SISCC, the Information and Communications Technology Support Unit (ICTSU). In the last 12 months, the Commission has worked with the Working Group in a number of activities.

1. The Adoption of the submarine cable: The Commissioner TCSI has a strategic role in the success of the industry and access to all Solomon Islanders, in pursuit of the government's desire for affordable, reliable and fast Internet to a majority of the country by 2023. Two outstanding decisions of CAWG remain (a) Traffic pricing - the Interim Commissioner has moved to adopt that decision, and when actioned, it will make Solomon Islands the first country to adopt wholesale traffic pricing for submarine cable; (b) Solomon Islands Internet Exchange (IXP) - as mentioned earlier in this Report. this work continues under the stewardship of the Commission and SISCC. OPMC supports as requested by TCSI.

2. Extending 4G and Internet to cover the provinces. This will be a milestone achievement for the nation and is one of the main strategies pursued by government. It is an area in which the government aims to support the private sector. We have witnessed the entry of smaller ISPs with new technologies and plans particularly offering fixed mobile 4G and Internet services that are reliable, fast at affordable prices. The decision of the Commissioner to adopt wholesale traffic pricing is congratulated. It encourages innovation and expands the services and options available to consumers in Honiara. The same can be applied to many areas in the provinces.

The OPMC supports TCSI in its mission, while staying away from the decision-making process, which is a prerogative of the Commissioner. But the OPMC is able to respond to specific requests from TCSI on several matters at the technical or policy level. It is a mutual relationship with the overall effort in support of the government's digital transformation objective.

Mr. Samuelu Taufao
Strategic Projects Manager / Advisor ICT
Australia's Solomon Islands Governance Program

SIM Card Registration

The Government is progressing with its proposal for SIM Card Registration through an amendment of the Telecommunications Act 2009. An Amendment has been developed and consultations on the Bill ongoing with provincial consultations and dialogue spearheaded by the Ministry of Communication nears its finality in the first half of 2021.

SIM card registration has political will, and therefore the pace of the proposed reforms is a reflection of that. Although sim card registration is implemented all over the world, it must be established on policy, if it is to avoid criticism and backlash as a tool for political agenda.

As Regulator, the Commission is concerned primarily with two critical points – firstly, that customers must have confidence that the privacy of their personal user information is properly protected; and that secondly, telecom operators have a framework with clear specification that is practical for them to develop and implement.

A greater working partnership between government authorities and the stakeholders, including operators will commence early in 2021 to ensure proper rolled-out.

Changes to the Telecommunications Amendment Bill 2020

The Interim Commissioner, Calvin Ziru and the Honourable Minister for Communications, Peter Shanel have agreed in principle to amend the Telecommunications Amendment Bill by separating the SIM Card Registration component of the Bill, from the administrative reforms' component of the Bill. They agreed that a review of the Telecommunications Act of 2009 was timely, but that it needed to be a separate comprehensive process for both the government and the regulator. This general consensus between the Minister and Commissioner means that other aspect of the Act that need to be improved and or strengthened, will now be considered and included. A steering committee on the comprehensive reform will be established later in 2021.

Profile Focus: New and Small Operators

Pacific Vaizeds

www.pacificvaizeds.com

Services: Wireless internet, Telecommunications Networking, Telco Support Services
Head Office:
Contact: Wilson Leguvaka, pacificvaizeds@gmail.com

Solkonet

www.solkonet.com

Services: VSAT internet services
Head Office: Hatanga Road, Ngossi, Honiara, Solomon Islands
Contact: Richard Martin, info@solkonet.com
Tel: +677 7520386

Solitech

www.solitech.solutions

Services: Wireless Internet, Cloud Migration, Security Camera Monitoring
Head Office: BJS Building, Commonwealth Street, Honiara
Contact: Damien Kirchner, damien@solitech.solutions

Institutional Strengthening

In order to meet the rigors and demands on telecommunications over the next 10 years, the telecommunications sector, it is imperative that major legal and structural reforms must be undertaken sooner rather than later.

Despite the achievements of the previous administration over the last decade under former Commissioner Bernard Hill, the former Commissioner's absence in March 2020 revealed a number of concerns, but also opportunities for greater results moving forwards after a detailed review for institutional strengthening.

These issues were pointed out by the Evaluation Committee who were tasked with recruiting the new Commissioner, as well stakeholders in government and internet service providers.

An assessment undertaken by the Evaluation Committee revealed the urgent need for institutional strengthening of the legal and legislative framework to ensure greater oversight over the work of the Commissioner, the need to develop the capacity and competency of our key local technical and administrative staff, as well as the need for better administrative and management systems to be developed to protect against mismanagement, fraud and poor governance and accountability. These challenges informed the Evaluation Committee's decisions in developing the scope of work for the incoming Commissioner.

A summary of the proposed scope of work that must be undertaken by the incoming Commissioner in 2021 includes the following:

Institutional Strengthening	Capacity Development	Operational Systems	Technical Capacity
• Legislative Needs Analysis • Structural Review and Reforms • Corporate Planning • Financial Audit	• Department KPIs • Staff JDs and TORs • Staff Contract Review • Skills Assessment • Telco training development • Legal Training	• Corporate Needs Analysis • Management Systems • Procedural and Protocols • Operational Systems • Policy Development	• Regulatory Framework • Licensing Framework • Equipment and Technology • Technical Support

6

Section 23
Reporting

6.1 Activities of the Commission

The activities requiring specific report further to Section 23 of the Telecommunications Act 2009.)

Determinations, Orders and Directions

Gazettes: The appointment of the interim Commissioner Order was gazetted on the 10 February 2021, appointing Calvin Ziru as the new Interim Commissioner of the Commission.

Orders: The Order was made for the Interim Licence to the Submarine Cable Company be amended to allow the company to implement volume billing as opposed to the current capacity billing system. This proposal was requested by the SCC following observed difficulties in new entrant licenses to remain competitive as costs under the capacity billing model are too high for them. The Order has been approved by the SCC, and submitted to the Attorney General's Chambers for formatting and gazetting.

Applications, Disputes and Complaints Filed

In December 2020, a class licence and internet service license were issued to new entrant Solitech Solutions Ltd, a company established to provide wireless internet services in Solomon Islands. The licence was issued following a long process of negotiations for the 5G spectrum frequency range. The specific range requested by Solitech has already been issued to Pacific Vaizeds. This spectrum range falls under a category of free and open frequencies. Solitech was granted and assigned the spectrum after the same was surrendered to by Pacific Vaizeds. A number of applications and complaints have been raised in 2020/2021 (prior to 31 March 2021), but as preliminary points for possible contention.

Material Procurement and Outsourcing Activities

In 2020 no major procurements were made. There have been a number of procedural concerns associated with the current procurement of services and consulting.

These matters are now the subject of audit of finances and internal operational and administrative reviews. A number of consulting services arrangements will be reviewed in the coming year.

Material Litigation

No material litigation eventuated during 2020. Under the previous administration of the Commission, external overseas legal counsel was engaged to provide legal support to the Commission. Although the Commission intends to retain international services the Commission is pursuing internal restructuring that will see the recruitment of legal and compliance officer, as well as locally engaged legal counsel on retainer for domestic litigation instructions.

Statutory Objectives and 2021 Plan of Activities

The objectives and purpose of the Telecommunications Act 2009 continue to underpin the workplan of the Commission, and the basis by which all matters are considered, reviewed and decisions are made. However, in 2021 the Commission priorities will be informed by the planned operations review and legislative needs analysis that must be undertaken by the 2nd quarter of 2021. As alluded to in this Annual Report above, significant institutional strengthening work must be carried out to improve the operational capacity of the Commission. Management and administrative procedures need to be introduced, new licensing and regulatory framework need to be developed, and standard operating procedures must be established to ensure effective and efficient running of the office.

The 2021-2023 Workplan of the Commission is being developed, although the general outline of the internal activities of the Commission are as below:

Initial Bilaterals

1.1 Recruitment of Interim Commissioner

Institutional Strengthening Needs Support

1.2 Internal review of legislation, regulations and

1.3 Development of 2021-2026 Corporate Plan

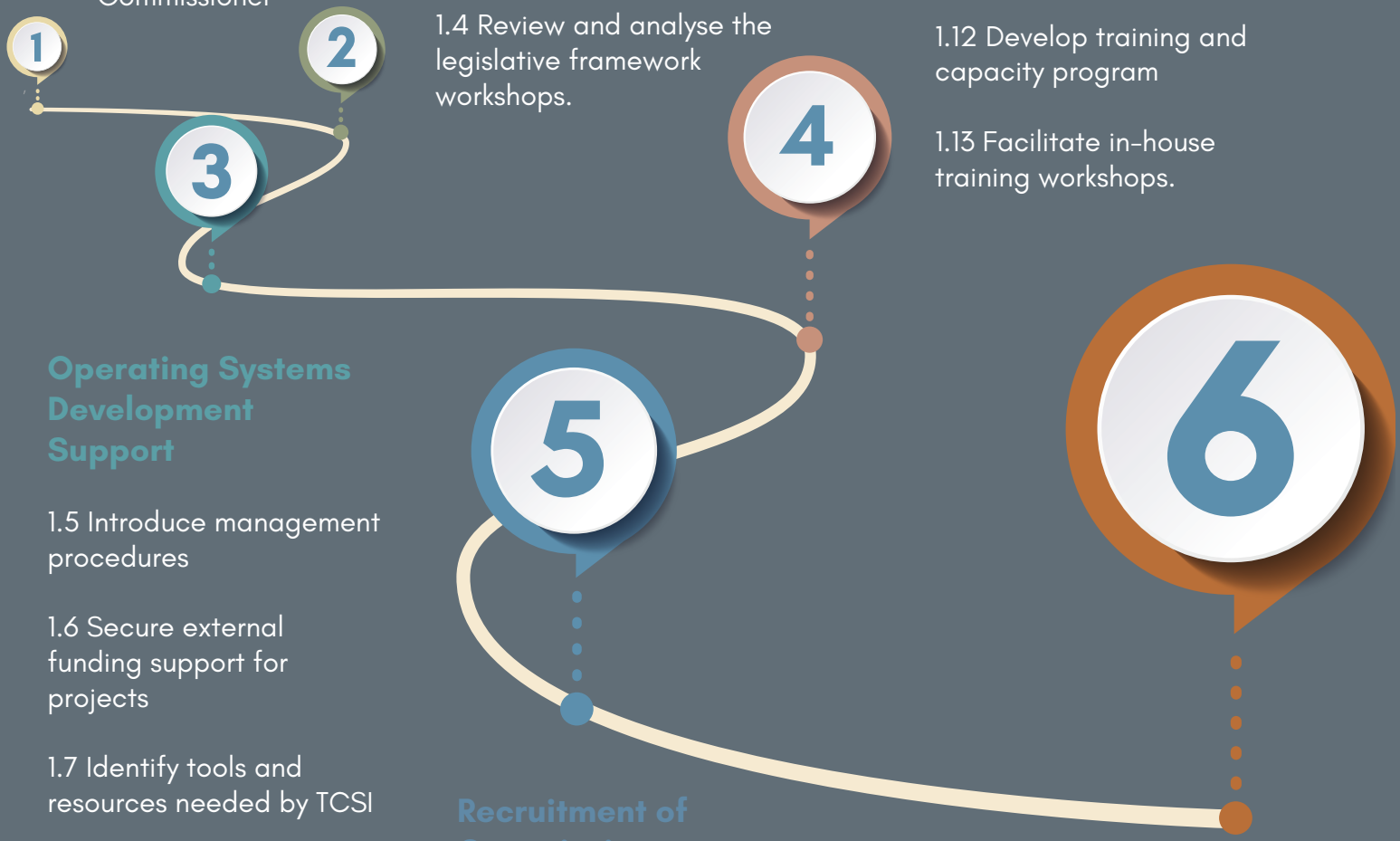
1.4 Review and analyse the legislative framework workshops.

Training and Capacity Building Support

1.11 Carry out a skills-in-demands analysis

1.12 Develop training and capacity program

1.13 Facilitate in-house training workshops.



Operating Systems Development Support

1.5 Introduce management procedures

1.6 Secure external funding support for projects

1.7 Identify tools and resources needed by TCSI

1.8 Develop SOP Handbook / Manual

1.9 Develop Guidelines and Checklists

1.10 Introduce new Licensing Framework

Recruitment of Commissioner

1.14 Commence recruitment process

1.15 Facilitate in-house training workshops

2021 Annual Report

1.16 Quarterly compilation of data

1.17 Compile 2021 Annual Report

Externally, the Commission needs to:

• Amend the Interim Licence to SISCC to enable volume billing

• Issue Full Licence to SISCC in June 2021

• Implement SIIXP Framework and Agreement

• Transfer Content Caching from Satsol to SISCC and signup participation

• Issue 2021 National Bandwidth Plan for Spectrums and Frequencies

• Support establishment of Association and collaborative working group for Service Providers and Telecommunication Operators

• Develop ISP and Operators Core Issues Register for monitoring

• Work with Government on ongoing projects with Ministry of Communications and OPMC

• Review of licensing fees and conditions suitable for the expansion of the wholesale market for broadband capacity, and fee regulations for licensing applications and retail and wholesale services

• Establish joint working group to pursue comprehensive review of the Act

• Support the implementation of the SIM card registration process

6.2 Summary of Income and Expenditure

Under the Telecommunications Act, the Commission is to be funded primarily by annual telecommunications licence fees and special levies. The annual fee level is currently set at the statutory maximum of 2% of a licensee's gross revenue. The Commission's statutory rolling budget is for three (3) years and is approved by the Evaluation Committee annually.

Though expenditure was below budgeted expenditure, meaning we have kept expenditure leaner than previous years - the unprecedented COVID-19 effect on the economy has meant a commiserate reduction of income.

The statement of cash receipts and payments for financial year 2020 appears in Appendix 1 to this report, which is summarised in the table of income and expenditure below:

	Actual 2020	Budget 2020*	Variance
Income	7,844,653	8,865,234	Shortfall : (1,020,581)
Less: Expenditures	(8,184,147)	(8,593,244)	Surplus : 353,742
Surplus / Shortfall	(339,494)	271,990	Shortfall Total : 1,374,323
**Based on 3 years rolling budget annualized.*			

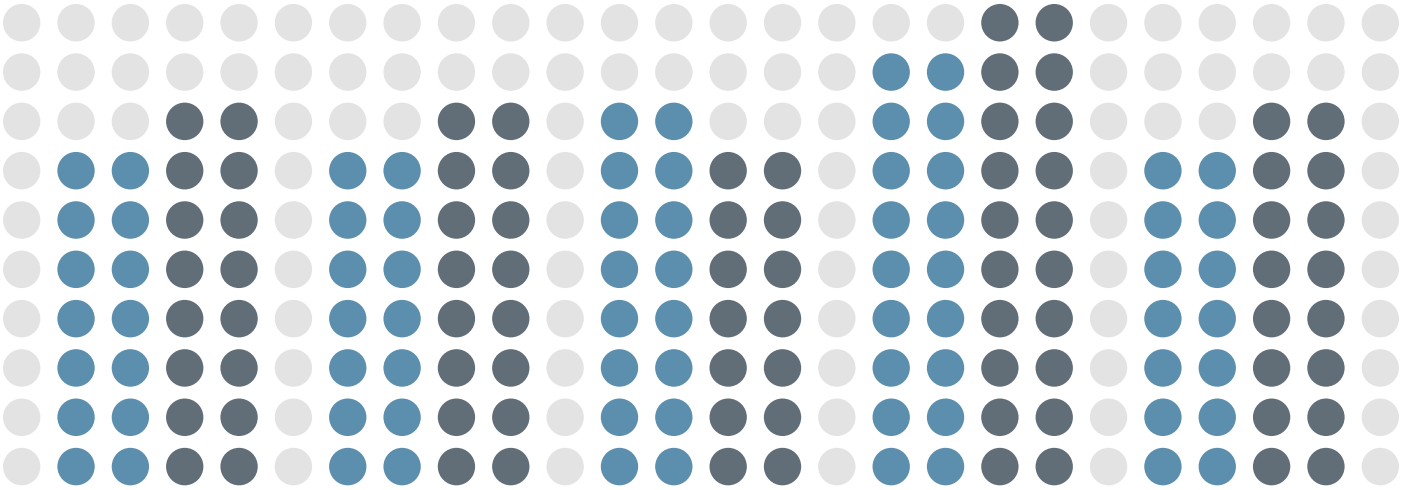
Commission Revenue

The Commission earned its source of revenue from various telecommunication services and levies such as Service Licensed fees, Radio application fees, Supplementary fees and others. The Service Licensed holders are the key contributors to the Commission's source of revenue by an average of 91% in the last 5-year period from 2016-2020. In addition, during the given 5-year period, Solomon Telekom Ltd has recorded an average of 84% of the Commission's total annual revenue.

The Gross revenues' is defined in the Act as *"revenues earned by a service provider from the provision of telecommunications services and access, after deducting amounts paid on an arms' length basis to domestic and foreign service providers for telecommunications services and access but before any deduction for costs (COGS), taxation (GST/Sales), accounting or other purposes (Unearned/Deferred)"*.

The three tables below illustrate the 5-year data trend report of:
(1) the total annual revenue and total annual expenditures,
(2) annual revenue by sources and;
(3) annual service licensed revenue by Service Licensed holders.

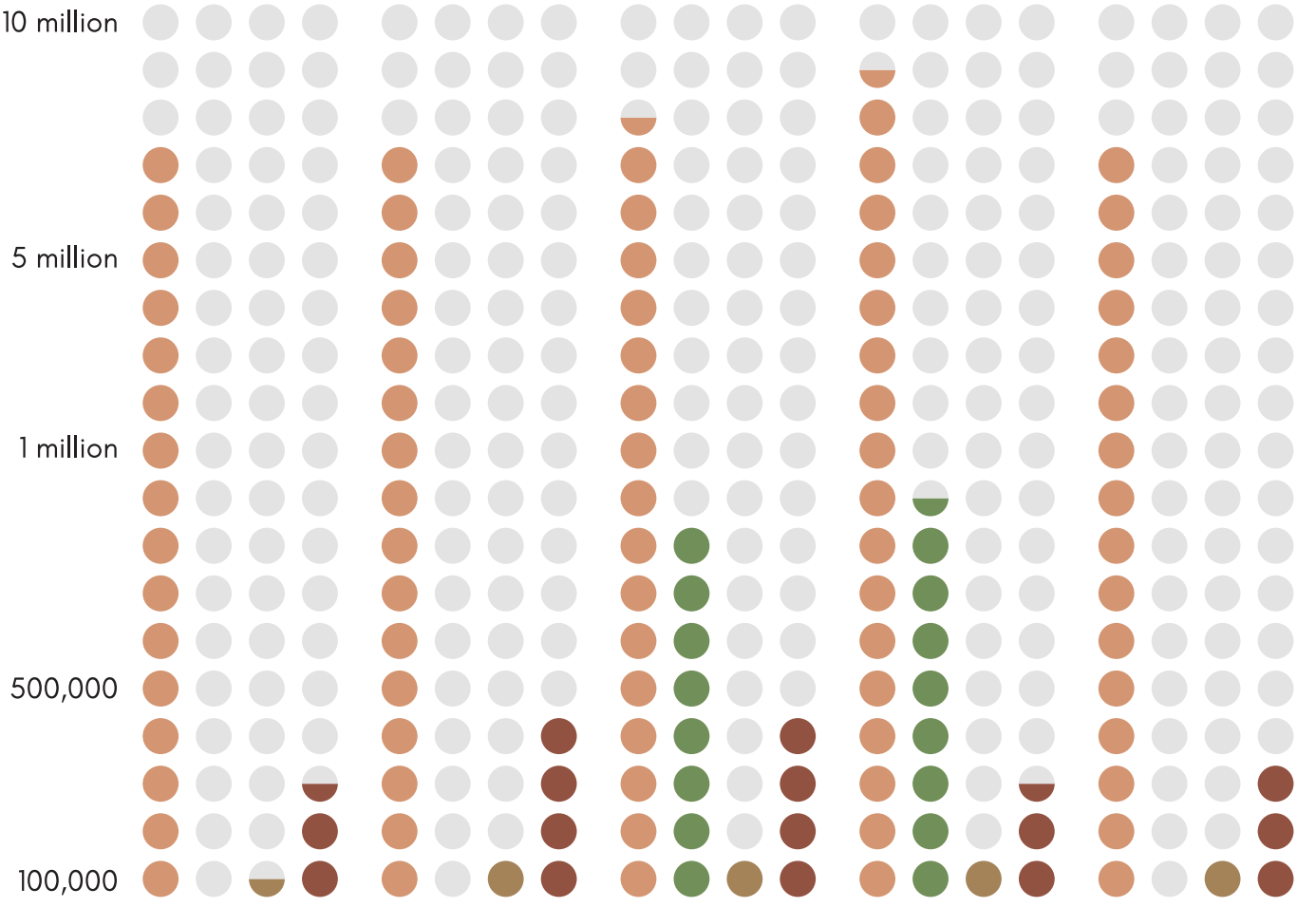
Table 6.1 : Revenue & Expenditure on a 5-Year Trend



2016	2017	2018	2019	2020
Revenue **$7,869,805**	Revenue **$7,730,926**	Revenue **$8,991,266**	Revenue **$9,892,753**	Revenue **$7,844,653**
Expenditure **$8,567,576**	Expenditure **$8,548,069**	Expenditure **$8,645,105**	Expenditure **$10,380,416**	Expenditure **$8,184,147**

The revenue and expenditure of the Commission over the last 5 years have been relatively consistent and stable with minimal fluctuation year on year. However, as per the graph above there was a significant increase in revenue in 2019 as a result of the implementation of Supplementary Fees provision on Service Licensed Providers. The Supplementary Fee was approved by the Evaluation Committee to meet expected shortfalls in payment of legal representation for the Commission in the Solomon Telekom and Bmobile litigation. That increase in revenue would however offset with the Commissioner Bernard Hill being paid a significant gratuity payment at the end of his employment.

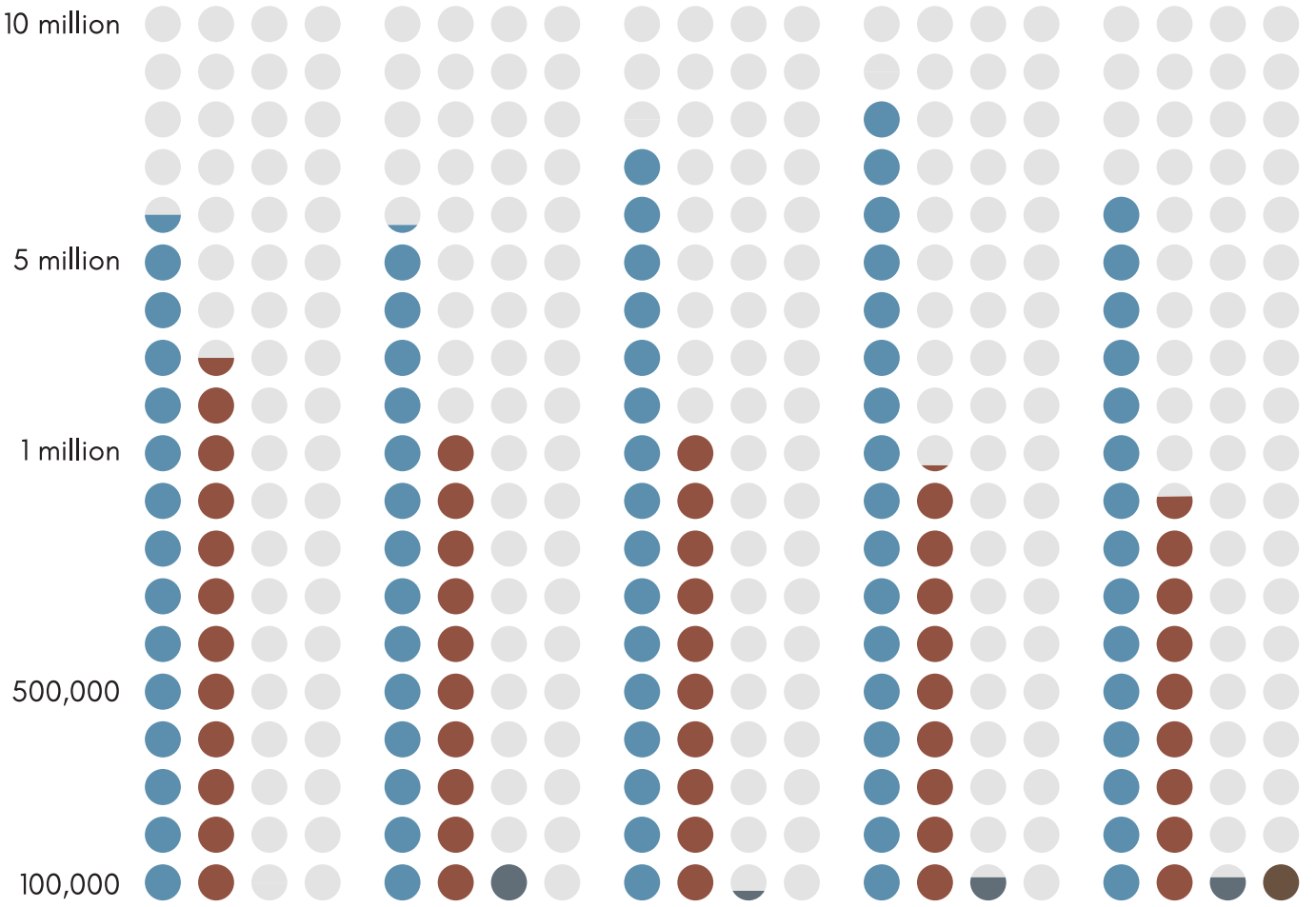
Table 6.2 : Sources of Revenue on a 5-Year Trend



	2016	2017	2018	2019	2020
Service Licence Fees	**$7,519,455**	**$7,224,773**	**$7,680,007**	**$8,616,022**	**$7,388,824**
Supplementary Fees	**$0.00**	**$0.00**	**$798,260**	**$894,087**	**$0.00**
Radio Application Fees	**$98,800**	**$104,500**	**$110,500**	**$121,044**	**$109,839**
Other Income	**$251,550**	**$401,653**	**$402,499**	**$261,599**	**$345,989**

Service Licence Fees remain the largest source of revenue for the Commission, and by an enormous margin. In terms of the source of the revenue, the above table shows that an average of 91% of the total annual revenue of the Commission is earned from Service Licensed providers fees. The average of 84% of the Commission's total annual service license revenue was received from Solomon Telekom Ltd as illustrated in the Table below.

Table 6.3 : Service Licensed Revenue on a 5-Year Trend



2016	2017	2018	2019	2020
Solomon Telekom **$5,974,087**	Solomon Telekom **$5,669,035**	Solomon Telekom **$7,293,623**	Solomon Telekom **$8,449,117**	Solomon Telekom **$6,302,333**
Bmobile (SI) Ltd **$1,545,368**	Bmobile (SI) Ltd **$1,449,419**	Bmobile (SI) Ltd **$1,151,132**	Bmobile (SI) Ltd **$980,678**	Bmobile (SI) Ltd **$860,361**
Satsol **N/A**	Satsol **$106,319**	Satsol **$33,512**	Satsol **$80,314**	Satsol **$86,143**
SISCC **N/A**	SISCC **N/A**	SISCC **N/A**	SISCC **N/A**	SISCC **$139,988**

6.3 Spectrum, Licences and Exemptions

Radio Spectrum Management

The Commission continues to ensure that spectrum is being managed in a manner that is open, non-discriminatory and competitively neutral. The Commission also ensures that the usage of spectrum is consistent with international standards, including those of the International Telecommunications Union (ITU).

In accordance with the outcome of the ITU ratification of the WRC-19 (World Radio Conference) held in 2019, the Commission further progress the review of the National Frequency Allocation Table and Band Plans.

The implementation of a National Spectrum Database using the ITU SMS4DC software will certainly enhance the administrative aspects of the spectrum. The Commission has also updated the online spectrum inventory for Solomon Islands using the APT AFIS web-based platform that can be viewed online.

"Equipment Type Approval" is defined as the technical evaluation of equipment against prescribed specifications with the objective of determining its conformity to these specifications. The ratification of the ITU WRC-19 makes provision for further review of the equipment type approval policy by the Commission, with the review extended to be completed in 2021.

Service Licences and Exemptions

There are two (2) types of service licences provided for by the Act – an individual licence (pursuant to section 39) and class licence (pursuant to section 40) – these licences allow the licensee to conduct telecommunication service in Solomon Islands, under the Act. In Solomon Islands, the only individual licence holder is Solomon Telekom.

All other service licence holders have class licences. There has been anecdotal discussion on the need for the provision on class licencing framework to be improved and strengthened. The Commission intends to review this provision and to explore measures by which better monitoring can be made over licensees. The valid licences that have been issued in 2020 are below, of which most the largest is Solomon Telekom, and the most active in the market being Solomon Telekom, Bmobile and Satsol.

No exemption orders were granted in 2020.

Table 6.4 : Licence Categories Issued in 2020

Type of Services	Type of Licence	No. of Licensee
Fixed telephony	Individual	1
Fixed Internet (ADSL + DSL)	Individual/Class	3
Fixed Internet (Wireless)	Individual/Class	2
Mobile (Voice) 2G	Individual/Class	2
Mobile (Voice + Data) 3-3.9G	Individual/Class	3
Leased lines	Individual/Class	2
TV	Individual/Class	1
TOTAL		14

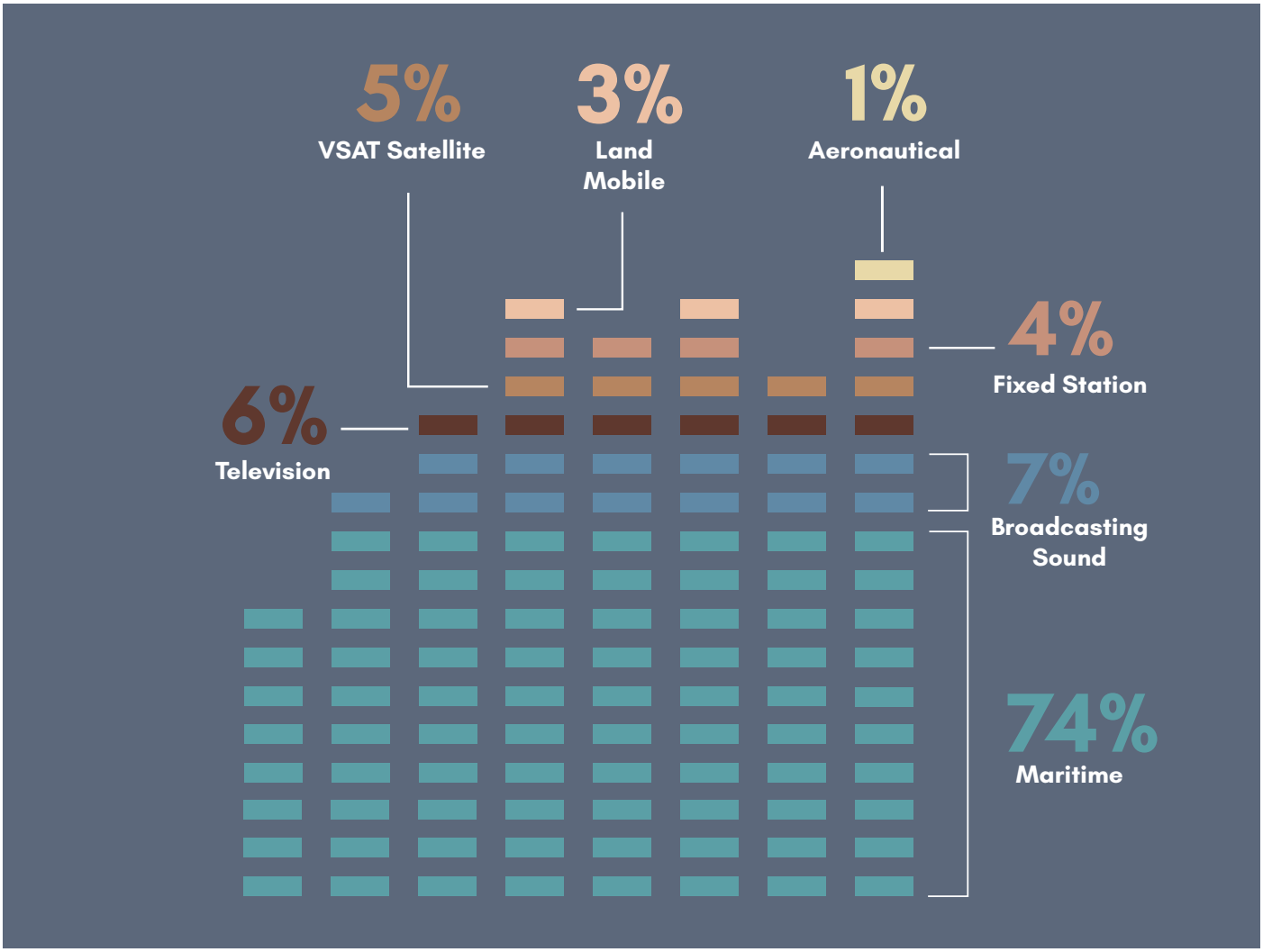
Radio Frequencies Allocated

The Commission continues to see an increase in applications and registration of radio spectrum licences issued in 2020, but largely the result of increasing maritime applicants. As per the graph below, there is a combined total of 87 licensees, holding a total of 125 licences, which is understood given that a number of licences hold several licences at once. Solomon Airlines for example is a single licence but with 4 aircrafts, is allocated 4 separate licences. This is illustrate in the table below, and further still in the Graph below where the percentage share of radio frequencies licences can be better see as maritime services hold 74% of radio licences in Solomon Islands.

Table 6.5 : Licence Types Issued in 2020

Category	Licensees	Licences
Handheld	-	-
Aeronautical	1	4
Land mobile	2	2
Fixed Station	3	3
VSAT Satellite	4	4
Amateur	5	5
Broadcasting (Sound)	5	5
Television	5	5
Maritime	58	97
TOTAL	87	125

Figure 6.6 : Percentage Share of Radio Frequencies Allocated



Internet Country Code Top Level Domain (ccTLD.Sb)

Under the Act, the Commission has administrative responsibility over the country code top level domain,".sb". This however has not been transferred from Solomon Telekom, after the Act was passed. And although the Commission has indicated in previous Annual Reports that consultations on this is to begin (2019 Annual Report), this has not been implemented.

The Commission and Solomon Telekom will need to revisit bi-lateral consultations on this matter to ensure statutory requirements are fulfilled within what is practicable and economically feasible. The establishment of the best practical domain administrative model is to ensure competition and efficient services is maintained in conjunction with evolution of technology and eminent cyber threats and challenges to the Domain Name Services.

The administrative model framework places emphasis on the following key market factors: (a) to provide ongoing conducive competitive environment and efficient service for the domain registry services; (b) to provide ongoing conducive competitive environment and efficient web hosting and internet services, and (c) to promote and provide a conducive environment for investors.

The implementation of the new ccTLD administrative model was a 2020 priority that was not implemented due

Interconnection and Access Agreements

Only 1 Interconnection Agreement is filed and on record – the Solomon Telekom and Bmobile Interconnection Agreement, which was signed on 1 January 2020 and will expire on 1 January 2022.

Summary of Regulated Prices

There were no regulated prices for telecommunications services during 2020.

International Activities

No international and regional travel took place in 2020 due to the Covid-19 travel restrictions. The Commission continues to engage with consultants, licensee, telecommunications companies, as well as key international organisations and partners via email, online zoom conferences and meetings.

Appendix A

STATEMENT OF CASH RECEIPTS AND PAYMENT

TELECOMMUNICATIONS COMMISSION SOLOMON ISLANDS
STATEMENT OF CASH RECEIPTS AND PAYMENTS
FOR THE YEAR ENDED 31 DECEMBER 2020

	Notes	2020	2019
		(SBD)	(SBD)
RECEIPTS			
Services licence fees	3	7,388,824	8,616,022
Supplementary fees	4	-	894,087
Radio spectrum application fees		109,839	121,044
Other income	5	345,989	261,599
Total receipts		**7,844,653**	**9,892,753**
PAYMENTS			
Operational expenses			
Commission remuneration	6	4,434,985	6,658,524
International membership subscriptions	7	316,320	215,370
Office premises rent		640,080	640,080
Telecommunications		439,297	380,140
Utilities-electricity, gas & water costs		188,007	182,649
Stationery, printing and publications		196,308	123,012
Transport maintenance & operation		285,566	159,678
Bank & tax charges		63,321	56,119
General repair & maintenance		39,493	5,600
Insurance		5,300	63,975
Regulatory functions & training	8	242,056	497,009
Workshops & participation	9	-	560,743
Services contracts	10	115,722	81,562
Accounting Services	11	232,200	583,800
Legal Fees		75,583	22,812
Office supplies		89,771	51,508
Miscellaneous	12	139,953	86,737
		7,503,962	**10,369,316**
Capital Expenses			
ICT equipment		108,823	-
ICT maintenance		8,850	1,600
Office equipment		496,849	9,500
Furniture & fittings		65,663	-
Spectrum equipment/software		-	-
		680,185	**11,100**
Total payments		**8,184,147**	**10,380,416**
Net increase/(decrease) in cash and cash equivalent		**(339,494)**	**(487,664)**

tcsi

TELECOMMUNICATIONS COMMISSION
SOLOMON ISLANDS

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