CHAPTER 3 : SERVICES AND CONNECTIVITY

This chapter looks into connectivity services in Malaysia, namely broadband, fixed and cellular services including MVNO services. With a focus on the development of these services, it details the number of subscription market share by service providers and penetration rate. This chapter also highlights the Government initiatives on high speed broadband for digital connectivity, particularly 5G and National Fiberisation and Connectivity Plan (NFCP).

KEY HIGHLIGHTS 2019

Broadband Subscriptions

43.38 million ↑ **10%**
(2018: 39.45 million)

131.7% penetration rate per 100 inhabitants
(2018: 121.1%)

Fixed Broadband

2.95 million ↑ **10.9%**
(2018: 2.66 million)

8.9% penetration rate per 100 inhabitants
(2018: 8.2%)

Mobile Broadband

40.43 million ↑ **9.9%**
(2018: 36.79 million)

122.8% penetration rate per 100 inhabitants
(2018: 113%)

Coverage in Populated Areas

3G
95.5% Coverage in Populated Areas
(2018: 94.7%)

4G LTE
82.2% Coverage in Populated Areas
(2018: 79.7%)

DEL Subscriptions

2.2 million ↓ **13.7%**
(2018: 2.55 million)

6.7% penetration rate per 100 inhabitants
(2018: 7.8%)

Mobile Cellular Subscriptions

44.6 million ↑ **5.2%**
(2018: 42.41 million)

135.4% penetration rate per 100 inhabitants
(2018: 130.2%)

Postpaid

13.34 million ↑ **15.3%**
(2018: 11.57 million)

Prepaid

31.26 million ↑ **1.4%**
(2018: 30.84 million)

BROADBAND IN MALAYSIA

MOBILE BROADBAND IS THE PREFERRED CHOICE FOR INTERNET ACCESS

In 2019, broadband subscriptions grew by 10% to 43.38 million. Broadband penetration rate per 100 inhabitants increased from 121.1% in 2018 to 131.7%.

Fixed broadband subscriptions increased by 10.9% to 2.95 million in 2019. Meanwhile, mobile broadband subscriptions increased by 9.9% to 40.43 million in 2019.

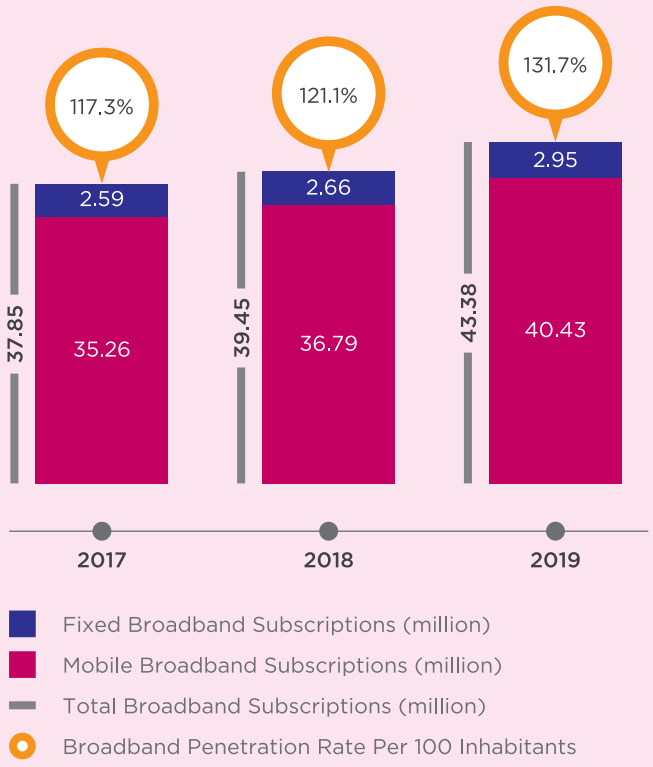
Expanded coverage, greater affordability, better quality of service, increased data and smartphone usage are among the drivers of growth in broadband subscriptions.

Broadband Subscriptions

43.38 million ↑ **10%**

(2018: 39.45 million)

BROADBAND SUBSCRIPTIONS AND PENETRATION RATE 2017 – 2019



Source: MCMC

Figure 3.1 Broadband Subscriptions and Penetration Rate 2017 – 2019

FIXED BROADBAND

Fixed broadband subscriptions were at 2.95 million, with penetration rate per 100 inhabitants at 8.9% in 2019.

Fibre broadband subscriptions increased by 17.2% to 2.04 million.

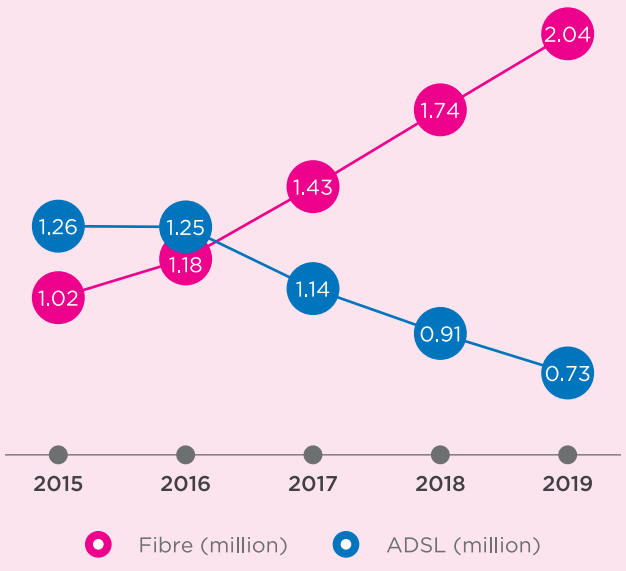
In contrast, Asymmetric Digital Subscriber Line (ADSL) connection take up declined by 19.8% to 0.73 million.

The take up of fibre broadband has accelerated due to:

Reduction of broadband prices
due to efforts taken by service providers and Government

Subscribers migrating to broadband plans with higher speed
In 2019, there are more than 1.5 million fixed broadband subscriptions with speeds of more than 100Mbit/s

ADSL AND FIBRE SUBSCRIPTIONS 2015 – 2019



Source: MCMC

Figure 3.2 ADSL and Fibre Subscriptions 2015 – 2019

MOBILE BROADBAND

In 2019, mobile broadband subscriptions increased by 9.9% to 40.43 million, with penetration rate per 100 inhabitants at 122.8%.

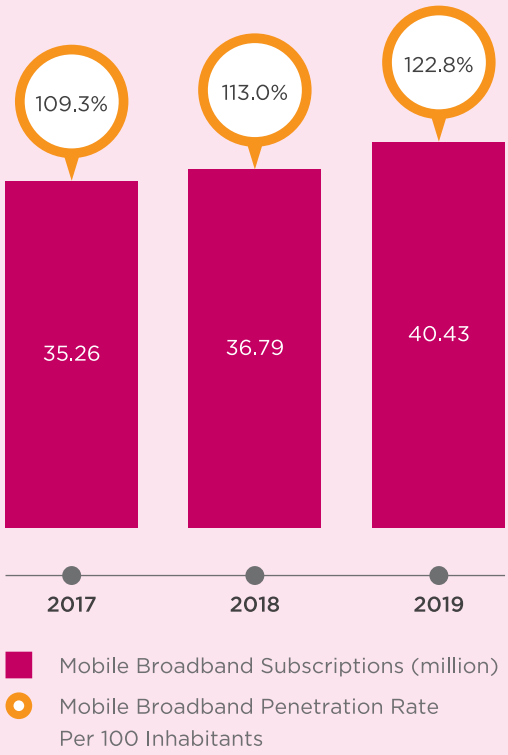
The increase in mobile broadband subscriptions and penetration rate is driven by:

- Greater device and data packages affordability.
- Continued network expansions and improvements by service providers.
- Rising consumption of data-intensive usage such as streaming of video and music on mobile devices.

95.5%
3G Coverage in Populated Areas
(2018: 94.7%)

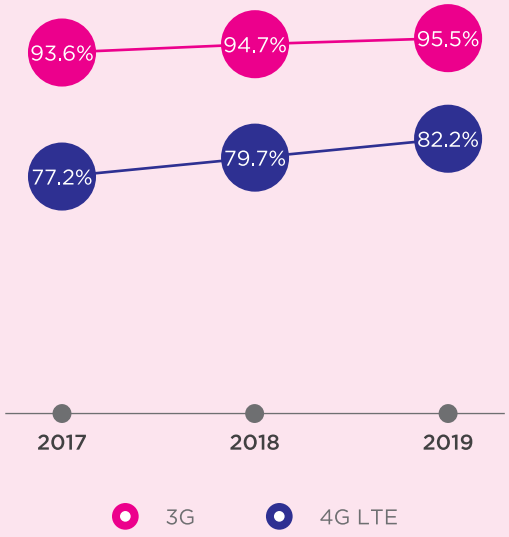
82.2%
4G LTE Coverage in Populated Areas
(2018: 79.7%)

MOBILE BROADBAND SUBSCRIPTIONS AND PENETRATION RATE 2017 – 2019



Source: MCMC
Figure 3.3 Mobile Broadband Subscriptions and Penetration Rate 2017 – 2019

3G AND 4G LTE COVERAGE IN POPULATED AREAS 2017 – 2019



Source: MCMC
Figure 3.4 3G and 4G LTE Coverage in Populated Areas 2017 – 2019

MALAYSIA OFFERS HIGHER BROADBAND SPEEDS IN 2019

The impact of the implementation of the Mandatory Standard on Access Pricing (MSAP) in June 2018 continues to have positive effects on fixed broadband services in 2019.

In April 2019, Digi entered the fixed market and began offering high speed fixed broadband packages for speeds ranging from 50Mbps to 1Gbps. The existing service providers, namely Maxis, TM and Celcom introduced new high speed fixed broadband packages with speeds ranging from 300Mbps to 1Gbps.

The demand for fixed broadband continues to grow. Between January 2019 and October 2019, the number of subscribers for high speed fixed broadband services increased by 13%, of which 76% of subscriptions are on 100Mbps and above.

In October 2019, Global Speedtest Index revealed Malaysia's average download speed increased by 27% to 78.82Mbps, as compared to 2018.

In view of the discrepancy in the prices of high speed broadband and Streamyx services, in June 2019, the Minister of Communication and Multimedia Malaysia had urged TM to come out with a solution for Streamyx subscribers who were paying higher prices for lower speeds as compared to Unifi subscribers.

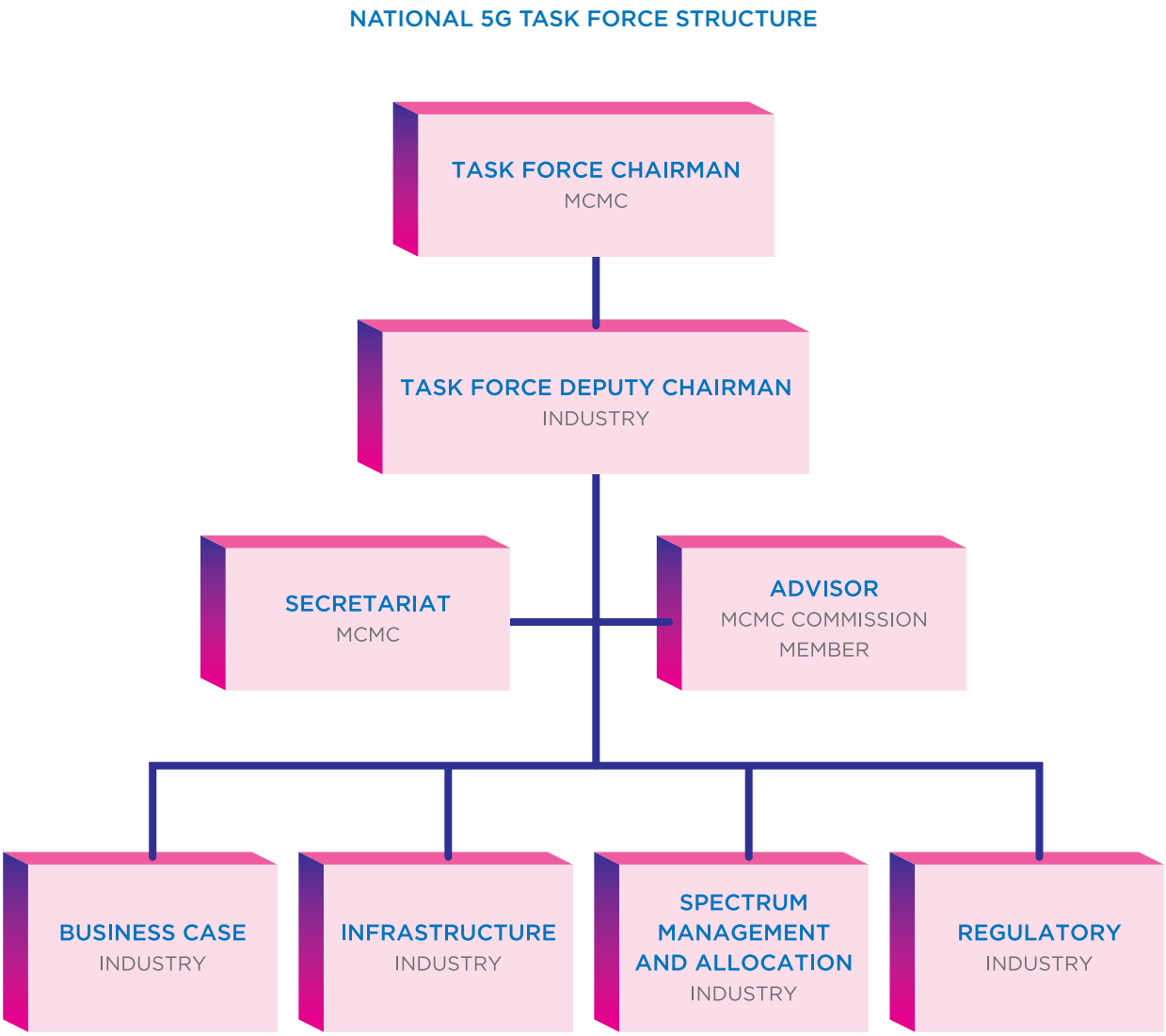
In July 2019, TM announced that the entry level for Streamxy package is now up to 8Mbps at the price of RM89 per month for residential subscribers. Effective September 2019, existing Streamyx residential subscribers are paying at RM69 per month. As a result, more than 600,000 subscribers are enjoying a price reduction from 37% to 57%.

In August 2019, TM launched their Unifi Air, a wireless broadband alternative for their Streamyx subscribers. Unifi Air ipriced at RM79 per month and delivering speeds of up to 20Mbps. From September 2019, Streamyx business subscribers also benefit from a price reduction of 7% to 13% for speed ranging from 2Mbps to 8Mbps.

THE NATIONAL 5G TASK FORCE

The National 5G Task Force (Task Force) was set up by the Malaysian Communications and Multimedia Commission (MCMC) in November 2018 to study and recommend a holistic strategy for 5G deployment in Malaysia. The Task Force comprises members from the private sector, Ministries, agencies, academia and NGOs representing the demand and supply side of the ecosystem.

The Task Force is divided into 4 working groups to look into specific areas, namely, Business Case, Infrastructure, Spectrum Management and Allocation, and Regulatory. The working group leaders and the Deputy Chairman of the Task Force were elected by the Task Force members to facilitate discussions and ensure fulfilment of their Terms of Reference. The structure and focus areas of the Task Force are as follows:



Source: MCMC
Figure 3.5 National 5G Task Force Structure

NATIONAL 5G TASK FORCE WORKING GROUP FOCUS AREAS	
Working Group	**Sub-Focus**
Business Case	• Economic areas and benefit to the nation i.e. GDP growth, creation of new jobs, etc; • User trends, requirements and demand study - industry and general public; • Financial considerations in adoption of 5G; and • Proposals to encourage 5G adoption.
Infrastructure	• Infrastructure requirements and coverage for optimum 5G deployment for different services – eg. retail, wholesale, consumer, industry, etc.; • Gap analysis on current networks to deliver 5G nationwide, including expected cost, challenges, etc.; • Infrastructure planning, approval and addressing right-of-way (ROW) issues; and • Proposed strategy to deliver 5G coverage to rural areas.
Spectrum Management and Allocation	• Current progress for spectrum allocation at ITU, APT and Malaysia; • Required bandwidth to support national targets; • Identified bands for Malaysia; and • Timeline for spectrum allocation.
Regulatory	• Accommodating future business models for network providers and relevant stakeholders; • Technical standards to be adopted; • Optimum number of mobile operators; • Constraints in the current regulatory framework related to communications, i.e. competition, access, consumer protection, security, licensing, and state governments and local council policies etc.; and • Proposed improvements to current regulatory framework.

Source: MCMC

Figure 3.6 National 5G Task Force Working Group Focus Areas

During the year, the Task Force held a total of eight monthly meetings, in addition to the weekly meetings held by each of the Working Groups to discuss and align their recommendations.

In June 2019, the Task Force held a workshop with all the Ministries as part of the 5G initiatives to identify the regulatory impediments and to propose the way forward to enable 5G deployment nationwide. The response from the ministries and agencies has been overwhelming as they were interested to learn what 5G technology is and how it can help to modernise delivery of services to the public. 170 participants from all Ministries, selected agencies and organisations participated in discussions during the workshop, which was divided along seven use cases, namely digital healthcare, smart transport, smart city, smart agriculture, education, manufacturing and retail & services.

The main takeaways from the workshop was the need for all ministries and agencies to either develop new or review existing regulations and guidelines which may be needed in order to adapt to the innovations brought by 5G technology and applications. In some instances, existing frameworks were too restrictive, and these would need to be revised or removed. Additional emphasis was also placed on the need to ensure security and privacy of data and personal information.

In August 2019, the Task Force held a Public Consultation to seek opinion from industry players, interested parties and members of the public on its preliminary recommendations for 5G deployment prior to finalising its proposals to the Government.

In its Final Report, the Task Force explained on the need for additional Spectrum and proposed solutions for Malaysia. The Final Report also touched on the implications for physical infrastructure which will arise from additional sites, new antenna technologies and additional fibre. The Task Force was of the opinion that to mitigate these challenges, to achieve rapid and cost effective 5G deployment in Malaysia, policy and regulatory interventions will be required.

The Task Force submitted its Final Report to the MCMC on 18 December 2019, and it was expected to be handed over to the YB Minister of Communications and Multimedia Malaysia at an event scheduled in January 2020.

During the year, MCMC also engaged the Malaysian Institute of Economic Research (MIER) to undertake a study on the Economic Impact Analysis on the Implementation of 5G Services in Malaysia. The study, which was completed in November 2019, and included in the Final Report[6], highlighted some key findings as follows:

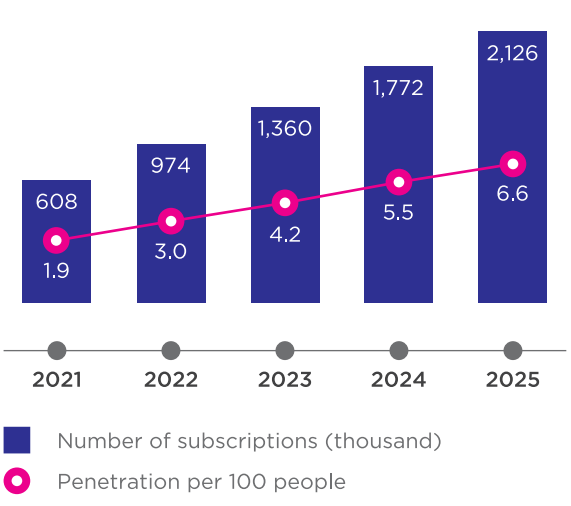
1. New Technologies Transform the Economy

- One of the characteristics of high-income economies is the high rate at which they assimilate new technologies. Investment in communications technology and infrastructure promotes economic growth and national competitiveness. Malaysia must invest significantly in the latest generation telecommunications and other technologies in order to achieve high income status.

2. Contribution to the Economy (2021 – 2025)

- Malaysia is estimated to have 2.1 million mobile 5G subscriptions by 2025, with an estimated penetration of 6.6 mobile 5G subscriptions per 100 people. 5G-related economic activities are estimated to contribute an additional RM12.7 billion to the GDP between 2021 and 2025.

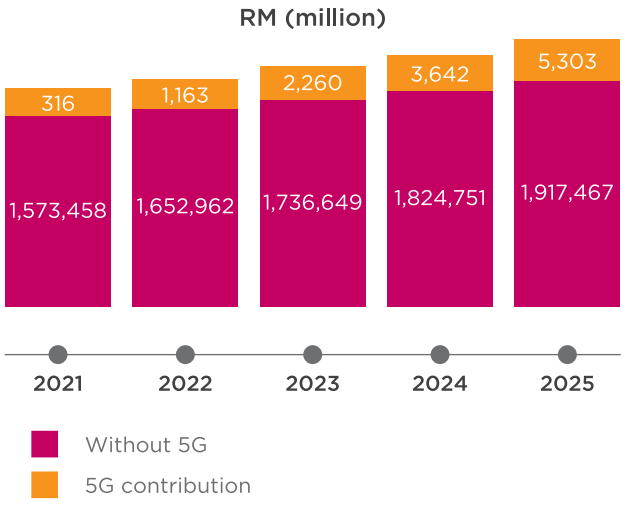
5G SUBSCRIPTION AND PENETRATION 2021 – 2025



Source: MIER[7]

Figure 3.7 5G Subscription and Penetration 2021 – 2025

CONTRIBUTION TO GDP 2021 – 2025



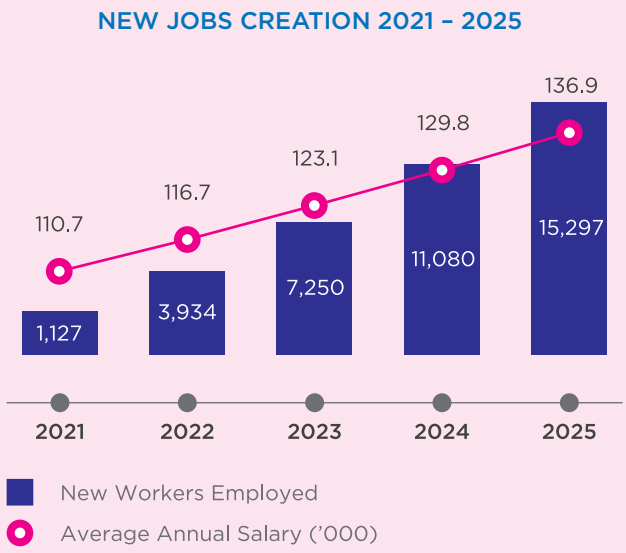
Source: MIER[8]

Figure 3.8 Contribution to GDP 2021 – 2025

6 MIER, An Economic Impact Analysis on the Implementation of 5G Services in Malaysia, 2019.
7 Ibid.
8 Ibid.

3. New Jobs Creation

- Between 2021 and 2025, almost 39,000 new jobs will be created in the economy, with almost 40% of the jobs being available in 2025.
- New jobs will more likely reduce the dependence on low-skilled foreign labour; any job losses to Malaysians should be frictional.



Source: MIER[9]

Figure 3.9 New Jobs Creation 2021 – 2025

4. Socioeconomic Benefits of 5G

- 5G deployment can bring some positive impact to quality of life. For example, improved quality of life can be provided by better healthcare, education, transportation, consumer experience, environment and smarter cities, all of which will enable Malaysians to be more productive for a longer period of time as life expectancy increases.

  The Final Report (National 5G Task Force Report) is available at the following link on the MCMC website: https://www.mcmc.gov.my/en/media/announcements/national-5g-task-force-report

9 Ibid.

5G: ALLOCATING SPECTRUM FOR THE NEXT GENERATION OF MOBILE TECHNOLOGY

The emergence of the next-generation mobile technology such as 5G enables Gigabit speeds and offers low latency with high reliability for multiple types of use cases. 5G connectivity plays an important role in the National Fiberisation and Connectivity Plan (NFCP) key targets, particularly in achieving average speeds of 30Mbps in 98% of populated areas by 2023.

In preparation for the commercial deployment of 5G, it is recognised that timely release of the appropriate spectrum for 5G needs to be prioritised. On 31 December 2019, MCMC released the Final Report on the Allocation of Spectrum Bands for the Next Generation of Mobile Broadband Service in Malaysia[10]. The final position taken in the Final Report reflects both MCMC's deliberation of the responses received from the Public Inquiry held in July to September 2019, and assessment of current developments globally in relation to 5G deployment. This is to ensure that the right foundation is established as early as possible so that Malaysia is able to leverage on both technological advancements and economic benefits that 5G can deliver.

In light of the rapid development of the global 5G ecosystem, the pioneer spectrum bands identified for initial deployment of 5G in Malaysia are:

700MHz

3.5GHz (ranging from 3.4GHz to 3.6GHz)

26GHz (ranging from 24.9GHz to 26.5GHz)

28GHz (ranging from 26.5GHz to 28.1GHz)

An innovative and forward-looking approach on the allocation of these spectrum bands is adopted towards setting a critical foundation for the 5G transition.

With the objective of achieving the goals of NFCP in the most cost-efficient manner as well as encouraging collaboration among service providers, the 700MHz and 3.5GHz bands are being considered for assignment through a tender process (beauty contest) to a consortium formed by multiple licensees, instead of individual licensees. This approach is intended to lower the capex by minimising costs and prevent the duplication of infrastructure while leveraging on and optimising current resources owned and operated by the relevant licensees.

In addition, the 26GHz band will be assigned through a tender process (beauty contest) to licensees on a nationwide basis. As for the 28GHz band, it will be assigned on a first-come-first-served basis and open to any party including non-licensees for the purpose of deploying localised and/or private networks for industrial and enterprise services and applications for, but not limited to, healthcare, ports, transportation, manufacturing, agriculture, public safety and smart city projects.

The assignment for the identified spectrum bands will be made by way of Apparatus Assignment (AA) as it is anticipated that the appropriate spectrum fee through AA is more economical and will encourage network deployment by service providers. Cost savings can be passed on to businesses and consumers to ensure better value of affordable services.

Once the assignment processes are completed, commercial deployment of 5G in Malaysia is ready to deploy.

10 MCMC, Final Report on the Allocation of Spectrum Bands for the Next Generation of Mobile Broadband Service in Malaysia, 31 December 2019.

NATIONAL FIBERISATION AND CONNECTIVITY PLAN (NFCP)

The National Fiberisation and Connectivity Plan (NFCP) is the Government's strategic effort to put in place a robust, pervasive, high quality and affordable digital connectivity for the well-being of the people and progress of the country. NFCP is also aimed to spur the nation's economic competitiveness as well as to prepare the country to embrace Industrial Revolution 4.0 through improved connectivity.

NFCP was officially launched by the then YAB Deputy Prime Minister, Dato' Seri Dr. Wan Azizah Dr. Wan Ismail at the Putrajaya International Convention Center on 19 September 2019. The seven key targets under NFCP are as follows:

NFCP KEY TARGETS	
	Entry-level fixed broadband package at 1% of GNI by 2020
	Gigabits availability in selected industrial areas by 2020 and to all State Capitals by 2023
	100% availability for premises in State Capitals and selected high impact areas, such as public transportation hubs and ports, with a minimum speed of 500Mbps by 2021
	20% availability for premises in sub-urban and rural areas with up to 500Mbps by 2022
	Fibre network passes 70% of schools, hospitals, libraries, police stations and post offices by 2022
	Average speed of 30Mbps in 98% of populated areas by 2023
	Improve mobile coverage along Pan Borneo highway upon completion

Source: MCMC
Figure 3.10 NFCP Key Targets

Based on the above targets, an estimated 4.14 million premises will have access to, or will be upgraded to high speed broadband provided through fibre networks. In addition to this, more than 6,000 base stations need to be deployed or upgraded to achieve broadband coverage in 98% of populated areas with average speeds of 30Mbps by 2023. Fibre networks will also be deployed to at least 25 industrial parks to enable Gigabits speeds.

Updated information on NFCP is also available via www.nfcp.my.

COLLABORATION WITH STATE GOVERNMENTS AND AGENCIES

In order to ensure that the NFCP can be implemented smoothly, MCMC and the industry undertook engagements with all State Governments. As a result of the engagements with Menteri Besar, Chief Ministers and the Minister of Federal Territories, most states have agreed to establish a special taskforce to oversee the coordination, planning and implementation of communications infrastructure, as well as to address communications infrastructure roll out challenges under NFCP.

DEVELOPMENT OF BROADBAND INFRASTRUCTURE FOR DIGITAL CONNECTIVITY

In 2019, the Sub-urban Broadband (SUBB) initiative was completed:

489,004 ports
installed for access of fixed broadband services

Speeds of up to
20Mbps
in suburban areas

Surpassed original target of
420,000 ports
since implementation began in 2015

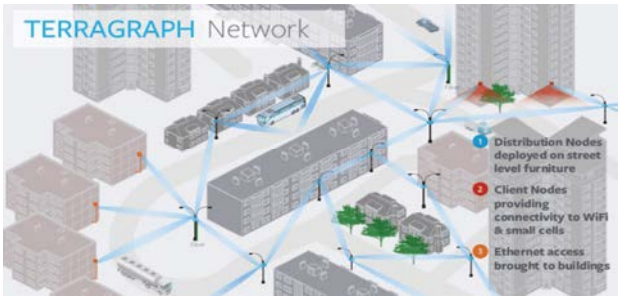
As for the High Speed Broadband (HSBB), 3,018,182 ports have been installed in State Capitals, major cities and high-impact economic areas, capable of providing high speed broadband service up to 100Mbps.

For mobile broadband service expansion, the implementation of Government initiatives funded by the Universal Service Provision Fund (USP Fund) and service providers' commercial roll out have contributed to the expansion of 4G coverage in populated areas from 79.7% in 2018 to 82.2% in 2019.

Several new technologies and models were being tested in 2019 in order to identify alternatives and cost effective solutions to provide high speed broadband services, including:

1. Terragraph market pilot project in Georgetown, Penang

- This pilot project is Malaysia's first wireless "fibre-like" broadband service in collaboration amongst YTL Communications, Penang State Government and Facebook.
- The collaborative effort is in line with the aims of the NFCP to improve broadband quality and coverage, reduce broadband price and enable Internet access for all. The public Wi-Fi and Fixed Wireless Access (FWA) were provided during the trial period.
- This technology utilises existing street furniture to enable the rapid deployment of fibre level connectivity without the need to build more towers or to open up roads to lay fibre which is both costly and environmentally impactful. Terragraph is also extremely green – a single Terragraph node consumes the same amount of electricity as an LED street lamp[11].
- Terragraph is a wireless technology developed by Facebook in 2016. Malaysia is the second country in the world to kickoff large scale Terragraph trials after Hungary.



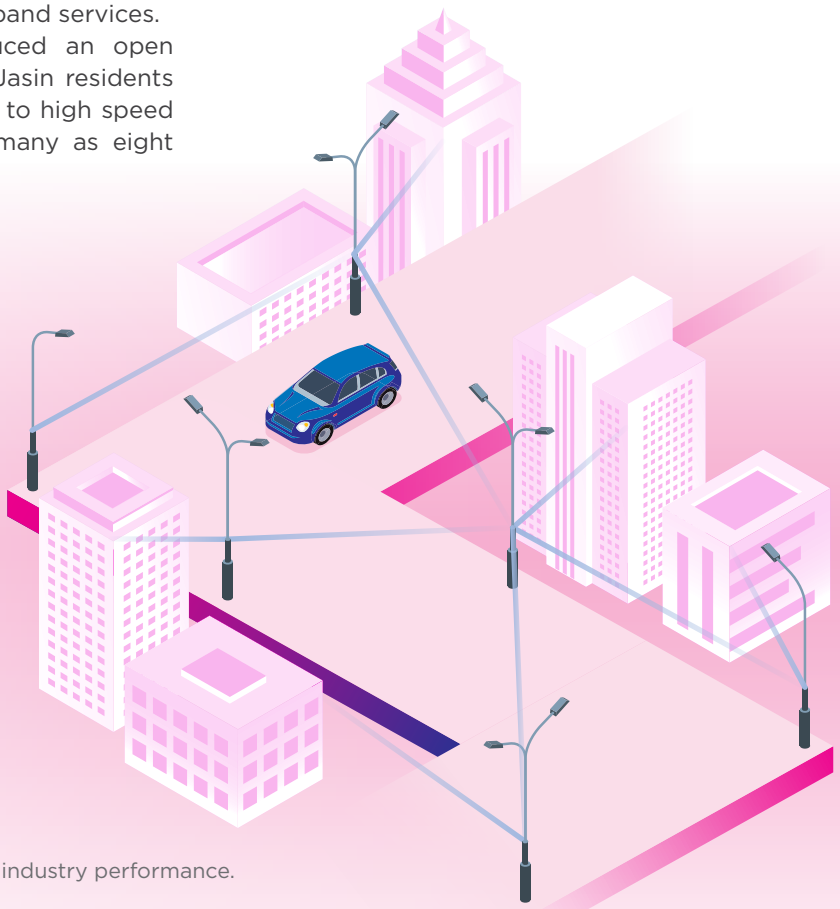
Source: Facebook Engineering[12]
Figure 3.11 Terragraph Network

11 YTL Corporation Bhd, Sustainability Report 2019, October 2019.
12 Facebook Engineering, Introducing Facebook's new terrestrial connectivity systems — Terragraph and Project ARIES, 13 April 2016.

- Georgetown, Penang was selected for the Terragraph trial due to its legacy infrastructures and a prestigious UNESCO status, which makes it difficult to deploy fibre.
- YTL Communications and Facebook Connectivity teams have deployed Terragraph on 163 lamp poles in Georgetown to build a Gigabit wireless mesh network, delivered high quality FWA services to 120 businesses and government offices; and provided free public Wi-Fi services across 50 popular landmarks and tourist hotspots in Georgetown[13].
- The Terragraph network has been commercialised since 1 January 2020. To date, 83% or 99 of 120 trial businesses/users opted to subscribe to the commercial packages[14].
- The Terragraph powered free public Wi-Fi service has provided connectivity to 47,000 unique users to date with amazing peak speeds of up to 200Mbps[15].
- Following the success of its pilot project, YTL Communications is eyeing the deployment of its 5G-ready Terragraph network in more cities in Malaysia[16].

2. NFCP Pilot Project with Tenaga Nasional Bhd (TNB)[17]

- The pilot project for NFCP in collaboration between the Government and TNB (through its subsidiary ALLO Technology Sdn Bhd) to enable high speed broadband up to 1Gbps in Jasin, Melaka.
- The project evaluated the feasibility of leveraging on TNB's electrical infrastructure such as poles and power distribution stations. It is also important to assess NFCP technical, safety and commercial viabilities to deliver wider, faster and cheaper broadband services.
- The pilot project also introduced an open access concept which enables Jasin residents in supported areas to subscribe to high speed broadband packages from as many as eight retail service providers.
- Thus, the open access concept can create healthy competition among broadband service providers and provide more options for customers to choose their preferred packages and services.
- To date, 1,131 homes were connected with high speed broadband in Jasin, Melaka. More than 160 consumers have subscribed to broadband packages offered by ALLO, ASTRO and Digi[18].



13 MCMC questionnaire to licensees on industry performance.
14 Ibid.
15 Ibid.
16 The Edge Markets, YTL Communications to expand Terragraph network, 20 September 2019.
17 MCMC, State Government Support And Cooperation Is Critical For The Expansion Of Broadband To The Rakyat, 10 January 2019.
18 MCMC questionnaire to licensees on industry performance.

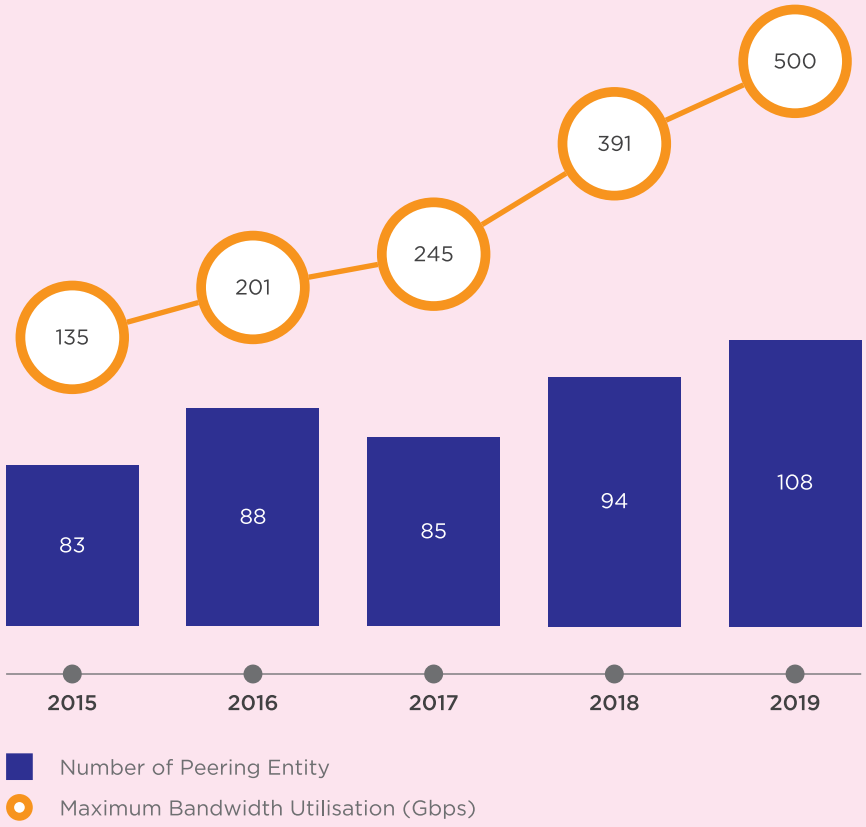
MALAYSIA INTERNET EXCHANGE (MYIX)

MyIX aims to keep domestic Internet traffic and to promote the exchange of global Internet traffic in the country. It is a non-profit and neutral Internet Exchange platform started in 2006, whereby Internet Service Providers (ISPs) and content providers connect and peer to exchange domestic Internet traffic.

Over the years, MyIX bandwidth utilisation and peering entities have increased. As at December 2019, the number of peering entities is 108 peers, compared with 94 entities as at December 2018.

In terms of exchanged domestic Internet traffic, the highest maximum bandwidth utilisation was at 500Gbps by end of 2019, a 27.9% traffic growth from 2018.

MYIX MAXIMUM BANDWIDTH UTILISATION AND PEERING TREND 2015 – 2019



Source: MyIX, MCMC

Figure 3.12 MyIX Maximum Bandwidth Utilisation and Peering Trend 2015 – 2019

Throughout 2019, MyIX has several new members including provider of telecommunications services and international companies as follows:

- Netflix
- Yahoo!
- China Mobile International (M) Sdn Bhd
- Jastel Network Co. Ltd
- NewMedia Express Pte Ltd
- Orient Telecoms Sdn Bhd
- SMARTSEL Sdn Bhd

FIXED AND MOBILE CELLULAR SERVICES

The declining trend in Direct Exchange Line (DEL) subscriptions continued in 2019, down by 13.7% to 2.2 million in 2019. DEL penetration rate per 100 inhabitants was at 6.7%. The decline of DEL subscriptions were due to:

- Mobile access becoming more predominant as consumers prefer other communications platforms such as social media and OTT messaging applications.
- Businesses switching to mobile and VoIP-based voice services.

DEL Subscriptions

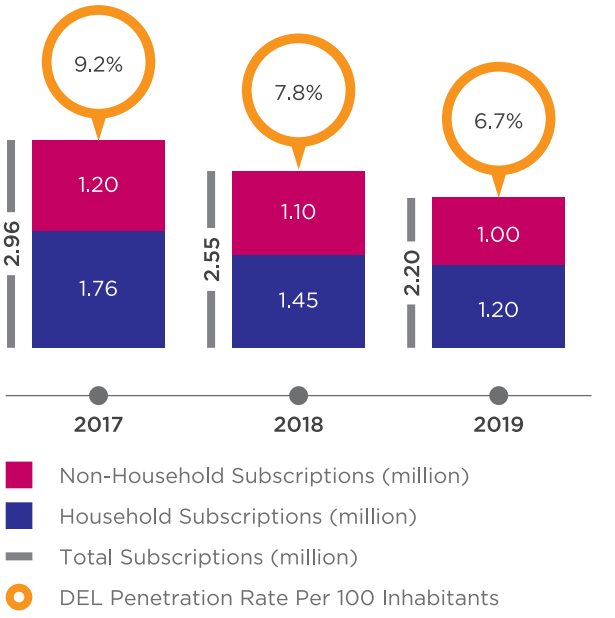
2.2 million ↓ **13.7%**

(2018: 2.55 million)

6.7% **penetration rate per 100 inhabitants**

(2018: 7.8%)

DEL SUBSCRIPTIONS AND PENETRATION RATE 2017 – 2019



Source: MCMC

Figure 3.13 DEL Subscriptions and Penetration Rate 2017 – 2019

Mobile cellular market in 2019 has a penetration rate per 100 inhabitants of 135.4%. The number of mobile cellular subscriptions reached 44.6 million, an increase of 5.2%. The growth is driven by:

- Advancement of mobile network technology.
- Increasing affordability of mobile devices and services.
- Expansion and availability of mobile networks.
- Multiple subscriptions or device ownership.

The postpaid market continues to perform well with subscriptions growing by 15.3% to 13.34 million. At the same time, the prepaid market also saw an increase of 1.4% to 31.26 million subscriptions in 2019.

Mobile Cellular Subscriptions

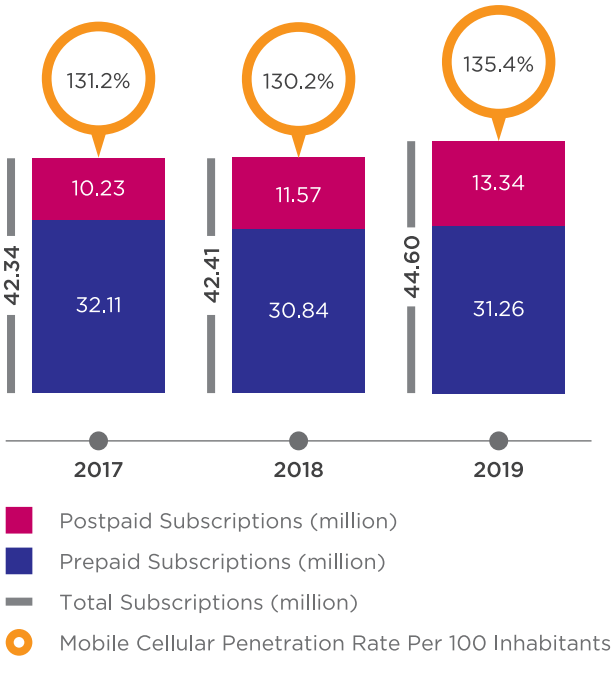
44.6 million ↑ **5.2%**

(2018: 42.41 million)

135.4% **penetration rate per 100 inhabitants**

(2018: 130.2%)

MOBILE CELLULAR SUBSCRIPTIONS AND PENETRATION RATE 2017 – 2019

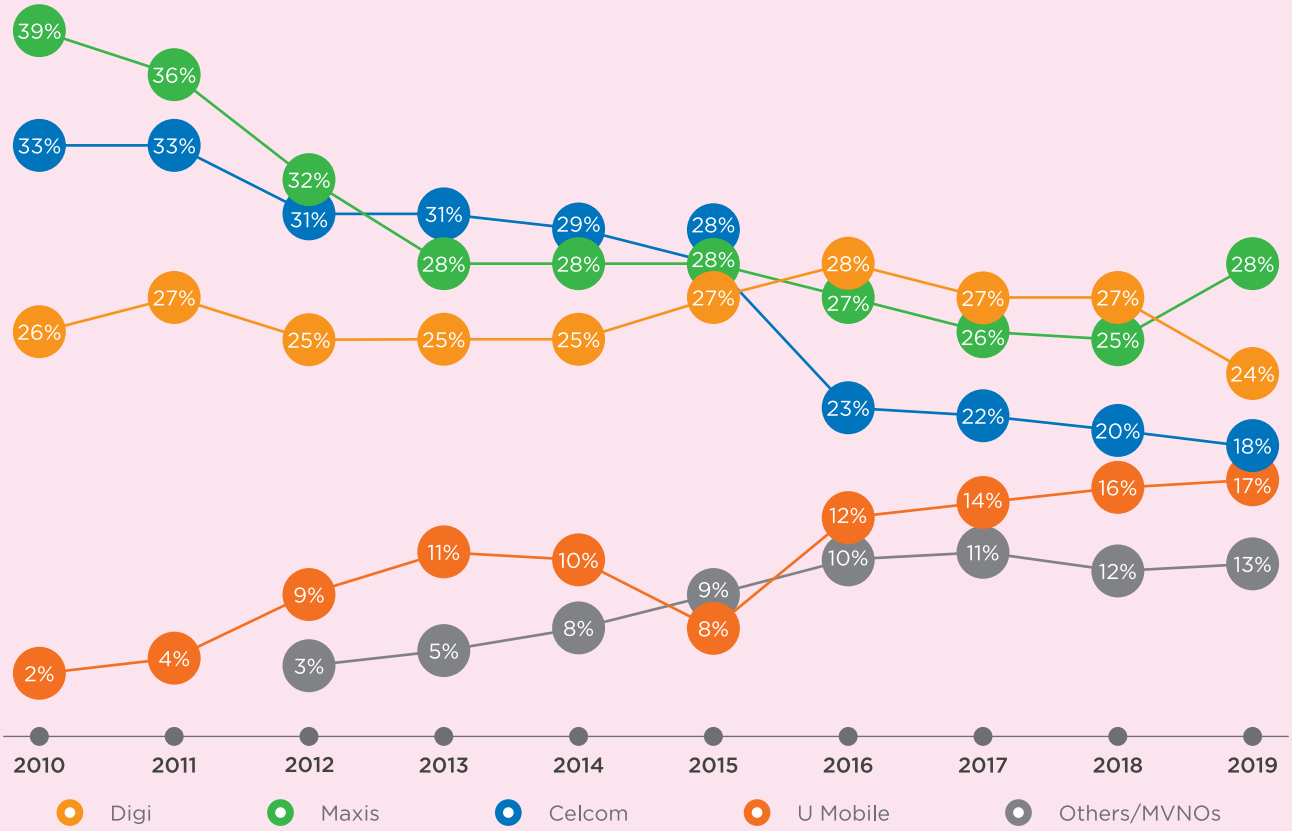


Source: MCMC

Figure 3.14 Mobile Cellular Subscriptions and Penetration Rate 2017 – 2019

For subscriptions market share, Maxis commands the highest share of 28%, followed by Digi (24%) and Celcom (18%). The remainder is from U Mobile and MVNOs, with 17% and 13% share respectively.

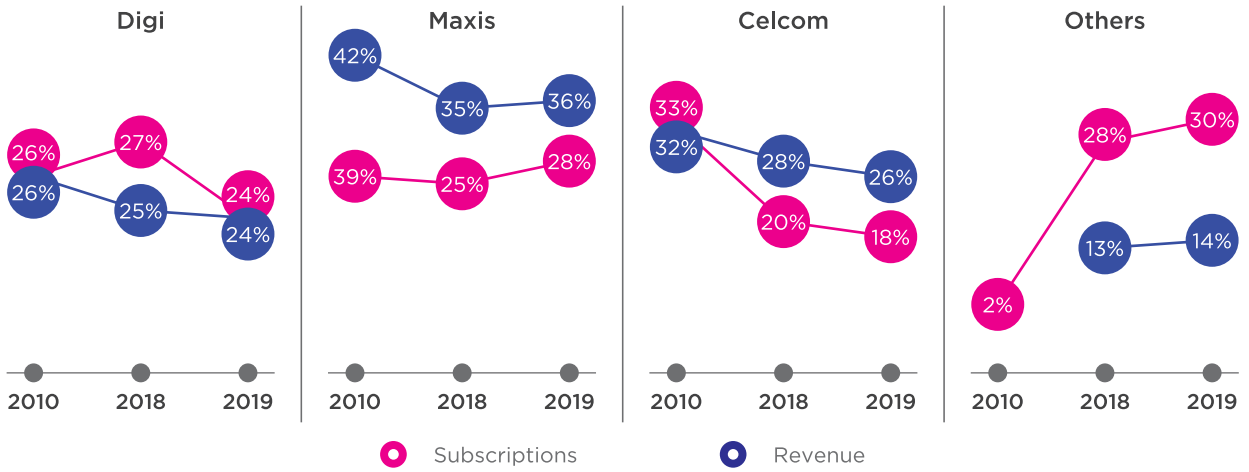
MOBILE CELLULAR SUBSCRIPTIONS MARKET SHARE BY SERVICE PROVIDERS 2010 – 2019



Source: MCMC

Figure 3.15 Mobile Cellular Subscriptions Market Share by Service Providers 2010 – 2019

MOBILE MARKET SHARE BY SUBSCRIPTIONS AND REVENUE



Note: Others include U Mobile, Webe and MVNOs

Source: Industry, MCMC

Figure 3.16 Mobile Market Share by Subscriptions and Revenue

Maxis remains the revenue leader in 2019, with revenue market share at 36% in 2019. This reflects Maxis' strategy in capturing high value market segment. Celcom and Digi revenue market share declined marginally to 26% and 24% respectively in 2019. This is due to other players are gaining ground on the back of aggressive marketing, continuously making improvement in their product offerings and pricing.

MVNO SERVICES

LICENSEES OPERATING MVNO SERVICES REDUCED BY HALF

MVNO is a wireless communication service operator that provides telecommunications services through the infrastructure and network of existing Mobile Network Operators (MNO). One of the main benefits of MVNOs is that they provide competition, which can result in lower prices for consumers.

Mobile Virtual Network Operator (MVNO) subscriptions was at 5.85 million in 2019, a growth of 14.5% compared with 5.11 million subscriptions in 2018. Notably, MVNOs recorded market share of 13% out of total mobile subscriptions of 44.6 million in 2019.

In 2019, only eight licensees are providing Mobile Virtual Network (MVN) services compared with 19 licensees in 2018. List of active MVNOs in 2019 are as follows:

LIST OF MVNOs 2019

Mobile Network Operator (MNO)	Thick MVNO[19]	Thin MVNO[20]
Celcom Axiata	• Altel Communications Sdn Bhd (Altel) • Red ONE Network Sdn Bhd (redONE) • Tune Talk Sdn Bhd (Tune Talk) • XOX Com Sdn Bhd (XOX)	• Merchantrade Asia Sdn Bhd (Merchantrade Asia)
U Mobile	• Telekomunikasi Indonesia (Malaysia) Sdn Bhd (Telin)	-
Digi	-	• Pavo Communications Sdn Bhd (SpeakOut Wireless and Mcalls)
Maxis	-	• REDtone Engineering and Network Services Sdn Bhd (ANSAR Mobile)

Source: MCMC
Figure 3.17 List of MVNOs 2019

Following the winding down of Talk Focus Sdn Bhd and Enabling Asia Tech Sdn Bhd in 2018, another two MVNOs have decided to terminate their MVN services through the issuance of Stage 2 Termination notice in 2019:

- PLDT Malaysia Sdn Bhd (brand name Smart World/Smart Pinoy)
- Ceres Telecom Sdn Bhd (with brand name Friendi/Mukminfon/Myprepaid/GetFi/SmartPAS)

Both companies have indicated that the decision to stop providing MVN services was mainly due to commercial and financial reasons.

19 Thick MVNO is defined as a service provider who owns ASP (C) and NSP (I) licences.
20 Thin MVNO is defined as a service provider who owns ASP (C) licence only.

OVERCOMING CHALLENGES AND NEW OPPORTUNITIES FOR MVNOS

The MVNO market has seen a number of failures, as companies struggle with issues of scale, increased competition and maintaining profitable longevity, especially in saturated markets. One of the competitive challenges stem from the Mobile Network Operators (MNO) as the MNO launch sub-brands to directly compete with MVNO offerings.

The MVNO market has evolved and it is not just the low-cost and prepaid offerings whereby a SIM card is available almost anywhere. In the current digital evolution with new technologies including AI, Big Data, Connected Cars and IoT, there are increasing opportunities for MVNOs to develop and appeal to new user segments.

In addition, soon-to-launch 5G is about to transform the business models of mobile operators and MVNOs. According to experts, this will see capabilities such as network slicing allowing MVNOs to run 'mini networks' for customers in specific sectors. Unlike its predecessors 3G and 4G, the 5G technology is not just about faster speeds. Based on virtualised infrastructure, 5G offers the ability to 'slice' the network and assign each part, offering a specific level of bandwidth, latency and reliability to benefit various use cases.

Hence, MVNOs can pursue new verticals, expand connectivity to emerging markets to connect the unconnected and offer key services to specific users.