

CHAPTER 5:

Overview of Major Developments in the Communications Market

BROADCASTING

5.1 An Overview of the Developments in the Broadcasting Market

5.1.1 Number of Licensees and Channels

Television Programme Services

As at March 2018, the total number of free TV, pay TV and non-domestic TV licensees was 19. They provided 592 television channels², of which

460 were receivable in Hong Kong, representing a slight decrease of 1% since March 2017. An overview of the channels provided by the television programme service licensees is shown in **Figure 1**.



As at March 2018, there were three **free TV licensees**, viz. Fantastic TV, HKTVE and TVB, and they provided a total of 11 channels³. Three channels (“Fantastic TV Chinese Channel”⁴, “Jade” and “Pearl”⁵) were simulcast in both analogue and digital formats while five were digital channels. HKTVE’s digital channels comprised two HDTV channels, viz. “ViuTV” and “ViuTVsix”. TVB’s digital channels comprised three HDTV channels, namely, “J2”, “TVB News Channel” (formerly “iNews”) and “TVB Finance & Information Channel” (formerly “J5”). Radio Television Hong Kong (RTHK), as the public service broadcaster in Hong Kong, provided three channels and two of them were simulcast in both analogue and digital formats.

² Some channels were provided by more than one licensee at the same time.

³ Fantastic TV launched its second channel, “Hong Kong International Business Channel”, on 30 July 2018.

⁴ Fantastic TV Chinese Channel was renamed as “Hong Kong Open TV” with effect from 27 October 2018.

⁵ The digital simulcast of “Fantastic TV Chinese Channel”, “Jade” and “Pearl” channels is broadcast in high definition television (HDTV) format.

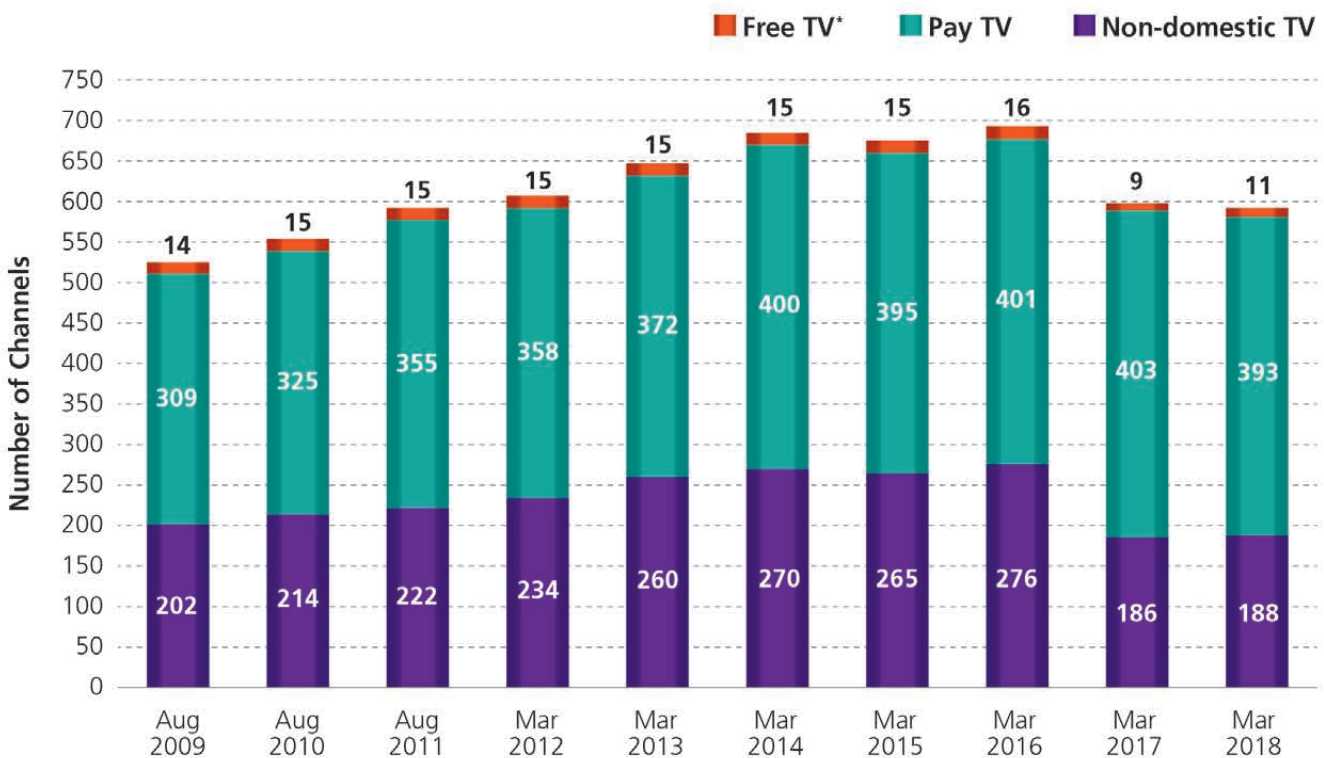


As at March 2018, there were two **pay TV licensees**, viz. Hong Kong Cable Television Limited (HKCTV) and PCCW Media Limited (PCCW Media), providing a total of 393 pay television channels and offering a diversity of local and overseas productions. Over 120 HDTV channels were offered by the licensees within the same period.

As at March 2018, there were 14 **non-domestic TV licensees** providing a total of 188 television channels, 56 channels of which were available to Hong Kong viewers, representing an increase of 6% in the number of channels available to Hong Kong viewers since March 2017.



Figure 1: Television Channels Provided by Television Programme Service Licensees in Hong Kong (as at 31 March 2018)



Sources: Licensees

* The simulcast channels of Asia Television Limited (2009-2016), TVB (2009-2018) and Fantastic TV (2018) are counted for both the analogue and digital platforms.

During the period under review, the number of **other licensable TV licensees** providing television programme services in hotels in Hong Kong decreased by one to 22. Together they provided services to more than 70 hotels in Hong Kong.

In addition to television channels provided by television programme service licensees, Hong Kong viewers can receive free unencrypted satellite television programme channels uplinked from Hong Kong and elsewhere. As at March 2018, there were more than 400 such free-to-air satellite television channels available for reception via the Satellite Master Antenna Television (SMATV) systems in Hong Kong. The list of channels currently available can be downloaded at http://www.ofca.gov.hk/filemanager/ofca/en/content_295/st_smatv.pdf.

Sound Broadcasting Services

During the period under review, there were two **sound broadcasting licensees**, namely, Hong Kong Commercial Broadcasting Company Limited (CRHK) and Metro Broadcast Corporation Limited (Metro). RTHK as the public service broadcaster also provided sound broadcasting service.



As at March 2018, there were 13 radio channels (three by CRHK, three by Metro and seven by RTHK). All channels provided by the commercial licensees and RTHK were broadcast round-the-clock.

5.1.2 Transmission Modes

Television

The regulatory regime for television programme services in Hong Kong as enshrined in the BO is technology-neutral⁶. Licensees are free to choose their transmission arrangements for delivery of television services. Broadcasters can build their own transmission networks to deliver their services and, in such cases, they need to apply for a carrier licence from the Authority to cover the transmission network. Alternatively, they can engage any of the existing carrier licensees to provide the transmission service. Licensees can also provide their television programme services via multiple transmission platforms so as to maximise the coverage.

The transmission modes employed by television programme service licensees are set out in **Figure 2**.

⁶ An exception is that a service provided on the Internet is exempted from the regulatory regime under the BO.

Figure 2: Transmission Modes Employed by Television Programme Service Licensees

Licensee	Transmission Mode	Network Coverage as at March 2018
Free TV		
TVB	Terrestrial UHF⁷, including (a) Analogue PAL-I format; and (b) Digital National Standard format	99% of population
HKTVE	Terrestrial UHF and Fixed broadband network	99% of population
Fantastic TV	HFC⁸ and MMDS⁹	Around 93% of total households
Pay TV		
HKCTV	HFC, MMDS and satellite (Digital)	Around 96% of total households
PCCW Media	PON and DSL¹⁰ Broadband network (Digital)	Around 97% of total households
Non-domestic TV		
All the 14 licensees	Satellite (Digital)	34% of total households (880 568 households) ¹¹

7 Terrestrial Ultra High Frequency.

8 Hybrid Fibre Coaxial Cable.

9 Microwave Multipoint Distribution System.

10 Passive Optical Network and Digital Subscriber Line.

11 The non-domestic TV services mainly serve viewers in the Asia-Pacific region, Europe and Africa and do not target Hong Kong, but some Hong Kong households can receive the unencrypted channels.

Penetration of Different Broadcasting Services

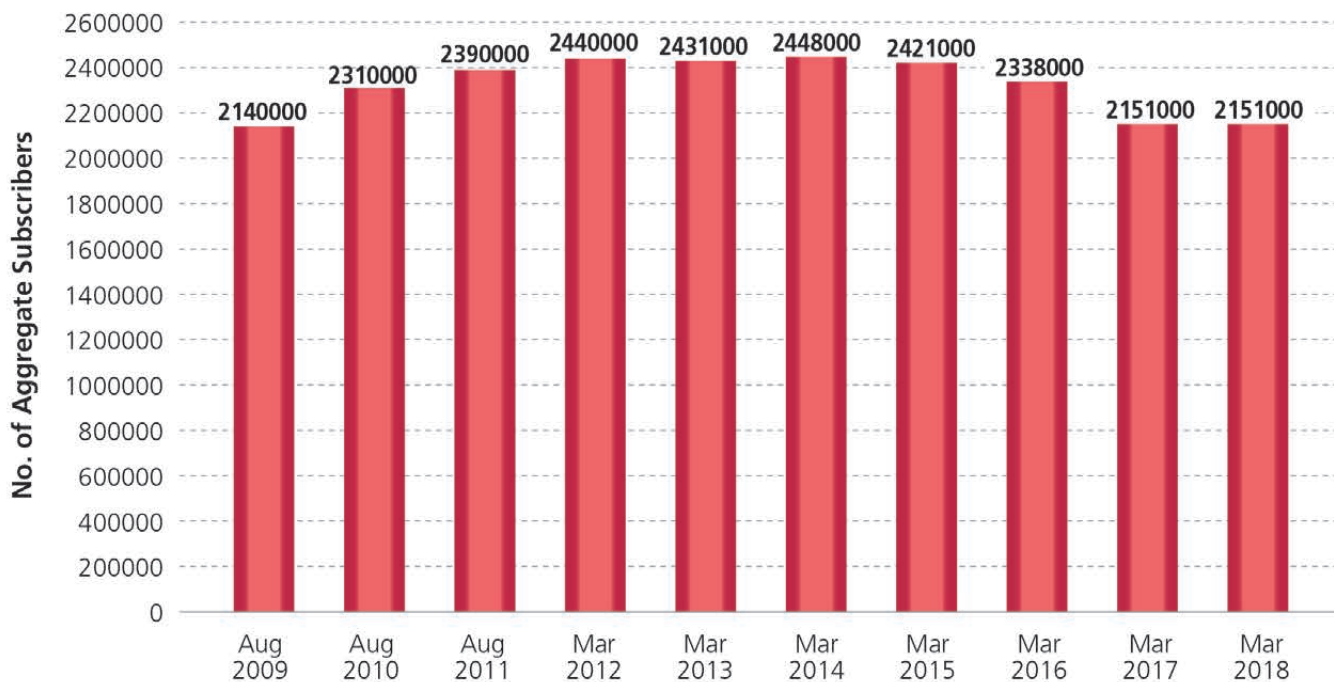
For free TV services, the penetration rate of analogue broadcasting stood at about 98% of the total households as at end of March 2018¹². As regards digital terrestrial television (DTT) services, the take-up rate was about 88% of all the households in October 2017¹³.

The penetration of licensed pay TV services was about 85%¹⁴ of the total households as at end of March 2018. The total number of subscribers to licensed pay TV services stood at about 2.1 million



in March 2018¹⁵. The changes in total number of subscribers from 2009 to 2018 are shown in **Figure 3**.

Figure 3: Subscribers to Licensed Pay TV Services in Hong Kong



Sources: Licensees

12 Source: CSM Media Research.

13 According to a public survey conducted from August to October 2017, about 88% of the households in Hong Kong were receiving DTT services.

14 Penetration of licensed pay TV services is calculated by dividing the total number of subscribers to licensed pay TV services by the total number of households. Some subscribers were counted more than once if they subscribed to more than one pay TV service.

15 Some subscribers were counted more than once if they subscribed to more than one service.

Sound Broadcasting

During the period under review, the radio broadcasters provided their services in FM and AM modes. Seven FM programme channels were provided through seven hilltop sites and supplemented by two low-power FM gap-fillers. In addition, six AM programme channels were broadcast from two island and hilltop sites, supplemented by six low-power AM/FM gap-fillers to improve the AM programme services. The services practically covered the whole territory of Hong Kong.

5.1.3 Broadcasting Revenues and Investment

Licensed broadcasting services contributed an estimated \$8.18 billion¹⁶ to the Hong Kong economy, which represented about 0.3% of the gross domestic product in 2017. There are two main sources of revenues for the provision of broadcasting services, viz. advertising and subscription. The incomes of free TV licensees and sound broadcasting licensees mainly come from sales of advertising spots within programme breaks. Pay TV licensees, on the other hand, derive their incomes mainly from subscription fees while sales of advertising spots remain a secondary income source.



Advertising Revenue

According to the report of admanGo, the advertising expenditures on television and radio accounted for 32% (about \$13.41 billion) and 4% (about \$1.68 billion) respectively of the accumulated \$41.9 billion advertising expenditures in the media in 2017¹⁷.

In 2017, the actual advertising revenues of HKTVE and TVB were around \$185 million and \$2.46 billion respectively. The actual advertising revenues of other licensees were not publicly available.



Subscription Revenue

According to the annual report of PCCW Limited (PCCW), the holding company of PCCW Media, the turnover of its pay TV service and related services provided in Hong Kong under the "now" brand was \$2.75 billion in 2017, representing a decrease of 5% over the figure in 2016.

The subscription revenue of HKCTV is not publicly available.

¹⁶ Source: Company reports of major broadcasting licensees.

¹⁷ Source: Adspend Report for 2017 of admanGo. All the advertising expenditures presented in the report have taken into consideration the discount factor based on an assumption of 60% off rate card rate.

Investment in Broadcasting Industry

Key investment projects in the television industry in recent years include digitisation of the terrestrial broadcasting network, HDTV content and production technology, interactive television services, and regular network maintenance and upgrades that are required to maintain or expand the ever-advancing scope of services. In addition, with the increasingly competitive television industry, the exclusive rights to broadcast premium contents such as sports events have been a major attraction to viewers.

Fantastic TV, HKTVE and TVB have committed to investing a total of \$1.2 billion for the six-year period from 2016 to 2022, \$1.5 billion for the six-year period from 2015 to 2021 and \$6.3 billion for the six-year period from 2016 to 2021 respectively for the provision of free TV services. Investment commitments of Fantastic TV, HKTVE and TVB comprise capital expenditures and programming expenditures. As at March 2018, both Fantastic TV and HKTVE provided a total of 168 hours of HDTV programmes per week, while TVB provided a total of 807 hours of such programmes per week. Fantastic TV and TVB have also committed

to increasing the amount of independent local productions in their programming progressively¹⁸.

As regards the pay TV market, i-CABLE Communications Limited, the parent company of HKCTV, reported in its 2017 Final Results Announcement that the capital expenditure of the group for the year had decreased from \$238 million in 2016 to \$208 million in 2017. Its major items of investment included property, plant and equipment. According to the 2017 Annual Report of PCCW, the parent company of PCCW Media, the capital expenditure for the year on its media business was \$235 million, representing an increase of 22% over the figure in the previous year. Its major items of investment included the upgrading of production studio facilities.

CRHK and Metro have committed to investing a total of \$909 million and \$685 million respectively for the six-year period from 2016 to 2022 for the provision of sound broadcasting services. The investment commitment of CRHK and Metro covers programming improvement and upgrading of infrastructure and facilities and other developments brought by technological advancement to further enhance their service quality.



¹⁸ TVB has agreed to increase its independent local productions incrementally from 20 hours per year in 2016 to 60 hours per year by 2020. Fantastic TV has also agreed to increase such productions incrementally from 20 hours per year in 2018 to 60 hours per year by 2022.



5.1.4 Programme Variety and Positive Programme Requirements

(a) *Programme Variety and Diversity*

Number of Broadcast Hours and Hours of Station Productions

As at March 2018, the licensees broadcast about 67 478 hours of television programmes a week. Among them, the three analogue channels of Fantastic TV and TVB provided a total of 503 broadcast hours per week. The eight digital channels of Fantastic TV, HKTVE and TVB provided a total of 1 293 broadcast hours per week, while the 393 channels of the two pay TV licensees provided a total of 56 274 broadcast hours per week. As at March 2018, the 56 channels of non-domestic TV licensees receivable in Hong Kong provided a total of 9 408 broadcast hours per week.

The weekly number of broadcast hours for CRHK, Metro and RTHK as at March 2018 was 2 184.

For the period under review, there were a total of 39 630 hours of station productions broadcast on

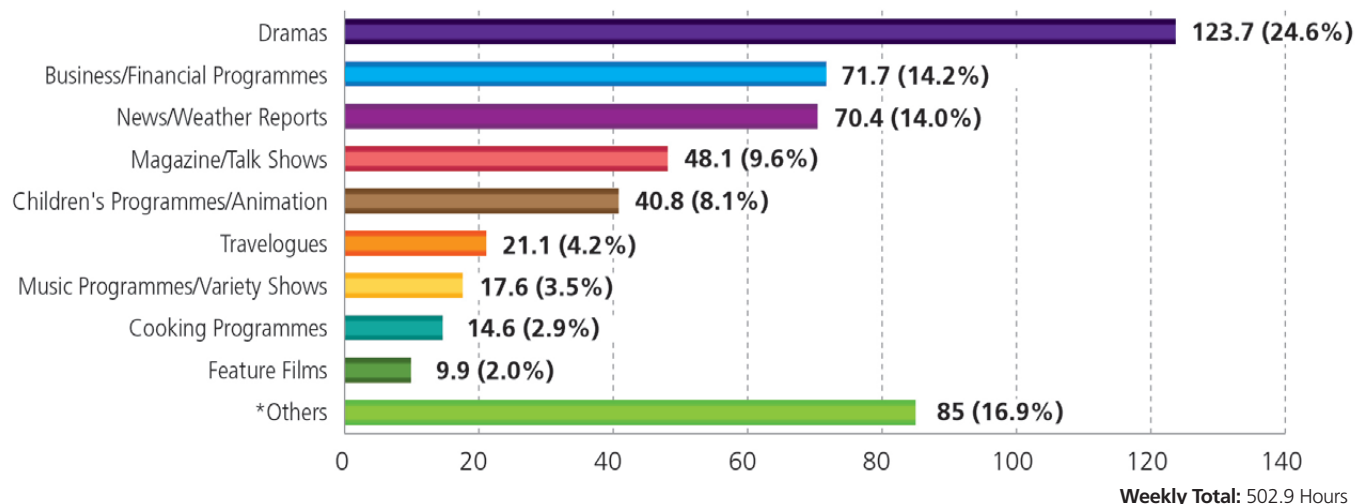
Fantastic TV, HKTVE and TVB, of which 10 370 hours were on analogue channels and 29 260 hours on digital channels. Of the 393 channels provided by pay TV licensees, 76 channels (19.3%) were produced by the licensees themselves.

Free TV Services

Chinese and English Channels

During the period under review, drama series and news/weather reports were the dominating programme genres during prime time on the Chinese channels (viz. "Fantastic TV Chinese Channel", "Jade" and "ViuTV"). Drama series on "Jade" were mostly in-house productions; while "Fantastic TV Chinese Channel", "Jade" and "ViuTV" broadcast Mainland, Korean and Japanese drama series. In addition, children's programmes/animation, magazine/talk shows, business/financial programmes, music programmes/variety shows and feature films, etc. were also broadcast during prime time on the Chinese channels. The three channels provided by RTHK presented a variety of programmes to serve a broad spectrum of audiences and cater to the needs of minority interest groups.

Figure 4: Weekly Hours of Different Types of Programme Broadcast on Fantastic TV Chinese Channel, Jade and ViuTV as at March 2018



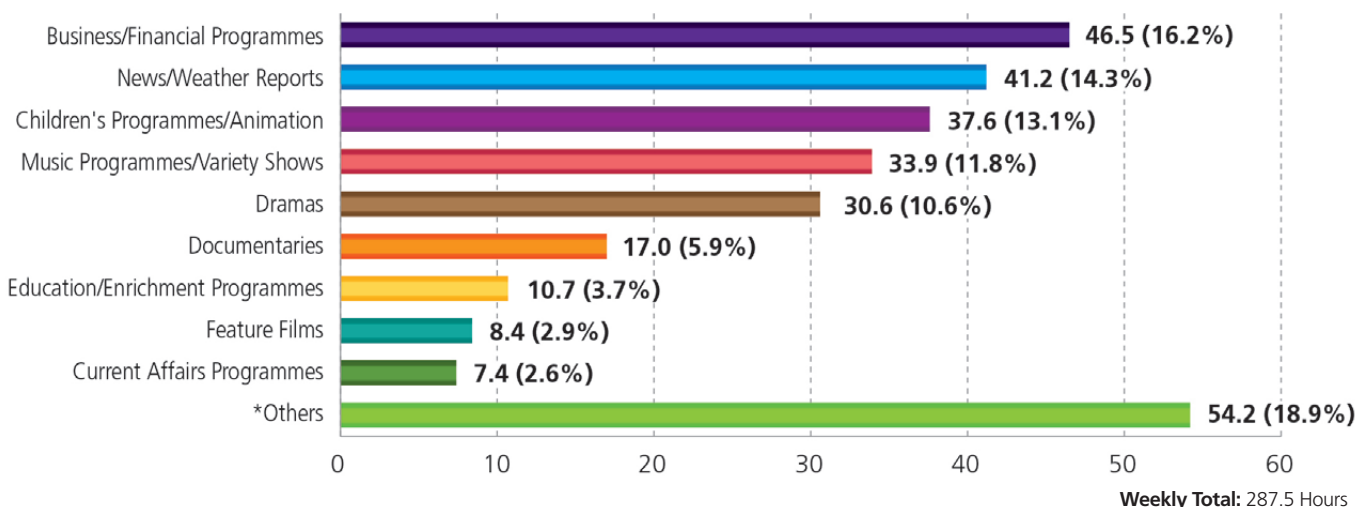
* Other programmes include hobbies and leisure programmes, documentaries and programmes for senior citizens etc.

Sources: Fantastic TV, HKTVE & TVB

The English channels (viz. “Pearl” and “ViuTVsix”) broadcast a wide range of programmes, including business/financial programmes, news/weather reports, children’s programmes/animation, imported

popular drama series, sports programmes, music programmes/variety shows, documentaries, feature films, education/enrichment programmes and current affairs programmes.

Figure 5: Weekly Hours of Different Types of Programme Broadcast on Pearl and ViuTVsix as at March 2018



* Other programmes include sports programmes, travelogues and health/medical programmes etc.

Sources: HKTVE & TVB



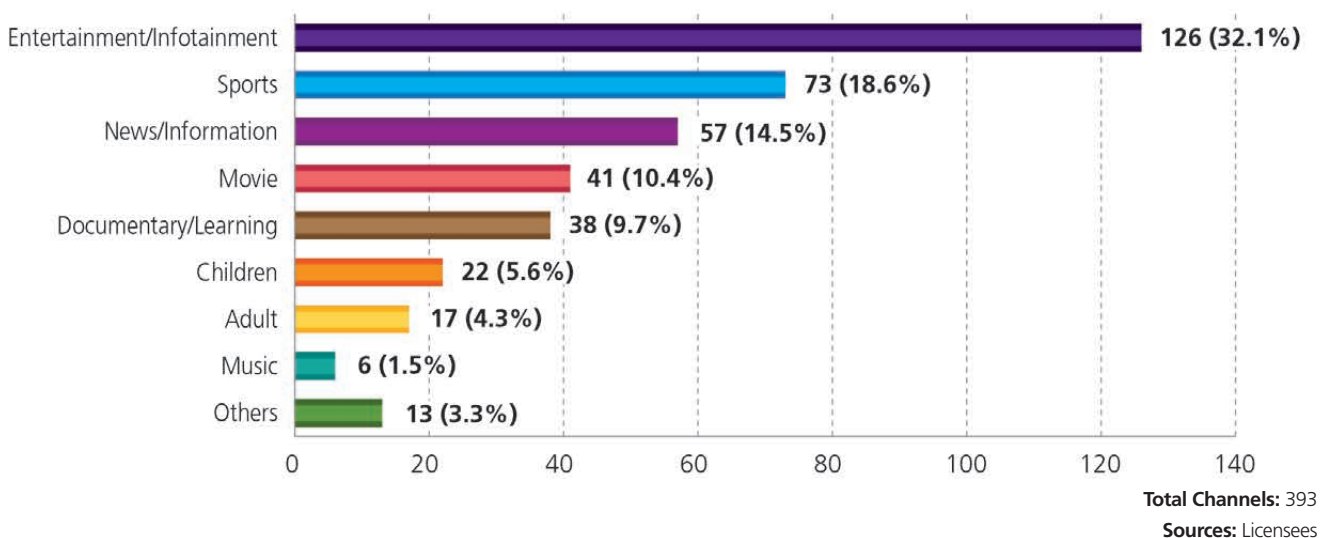
Thematic Channels

During the period under review, TVB provided acquired dramas, documentaries, variety shows, news, finance information programmes, etc. via “J2”, “TVB News Channel” and “TVB Finance & Information Channel”.

Pay TV Services

During the period under review, a wide variety of channels were offered on pay TV services, including entertainment/infotainment channels (32.1%), sports channels (18.6%), news/information channels (14.5%), movie channels (10.4%), and documentary/learning channels (9.7%).

Figure 6: Nature of Pay TV Channels as at March 2018



As at March 2018, HKCTV offered 133 channels (including 38 HDTV channels). PCCW Media's "now TV" service offered 195 channels (including 86 HDTV channels) and 65 video-on-demand services.

Sound Broadcasting

As at March 2018, CRHK operated two FM Cantonese language services, viz. "CR1" and "CR2", and one AM English language service, "AM 864". "CR1" mainly provided news, current affairs, financial and personal view programmes. "CR2" was mainly an entertainment channel featuring pop culture and music targeting young listeners. "AM864" was primarily a music channel.

Metro operated two FM Cantonese language services, viz. "Metro Finance" and "Metro Info", and one AM English language service, viz. "Metro Plus". "Metro Finance" provided real-time, market-moving news and information about financial markets around the world. "Metro Info" provided music and entertainment programmes as well as programmes on lifestyle, health, market news and other information of interest to the public. "Metro Plus" was a music channel which also provided programmes for ethnic groups including the Filipino, Indian and Thai communities in Hong Kong.

RTHK operated seven radio channels, providing Cantonese, English and Putonghua services. It offered a variety of thematic channels ranging from information to general entertainment and culture.

(b) Positive Programme Requirements

During the period under review, free TV licensees (viz. Fantastic TV, HKTVE and TVB) were required to broadcast at least 27.5 hours of positive programmes¹⁹ per week. They all met the requirements²⁰.

The reports submitted by the licensees to the Authority on six types of positive programmes, viz. current affairs programmes, documentaries, children's programmes, programmes for young persons, programmes for senior citizens and arts and culture programmes, are available at http://www.ofca.gov.hk/en/pub_report/compliance_reports/index.html.

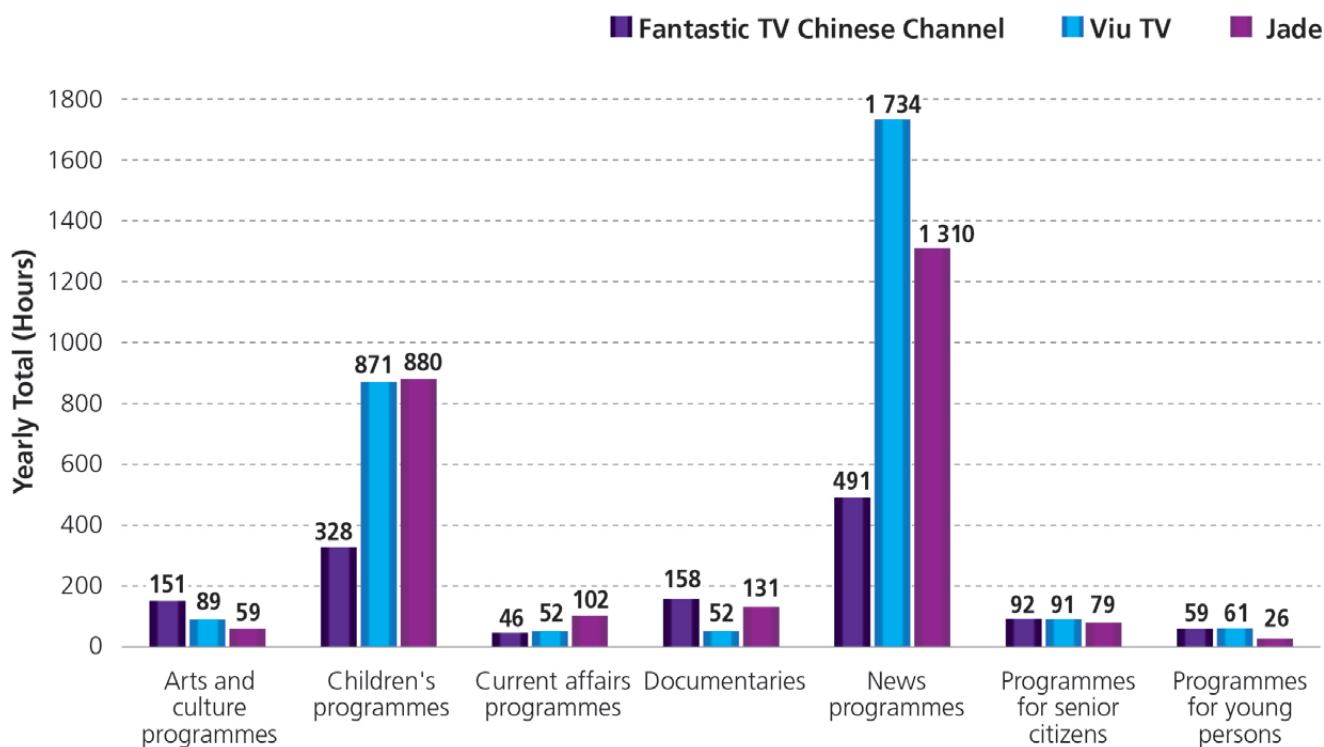
¹⁹ The positive programmes that Fantastic TV, HKTVE and TVB were required to broadcast included news, current affairs programmes, documentaries, arts and culture programmes, children's programmes and programmes for senior citizens and young persons.

²⁰ TVB was required to broadcast at least 45.5 hours of positive programmes per week, including four hours of positive programmes per week on its thematic digital channels (viz. "J2", "TVB Finance & Information Channel" and "TVB News Channel").

To provide more flexibility for new free TV licensees, HKTVE was allowed to gradually increase the broadcast of positive programmes from 34.5 hours per week in 2016 to 41.5 hours per week by 2019.

As Fantastic TV uses a fixed network as its transmission means to deliver free TV service, the programme requirements of Fantastic TV are less stringent than those applicable to other spectrum-based free TV licensees (viz. HKTVE and TVB). It was required to broadcast at least 27.5 hours of positive programmes per week.

Figure 7: Broadcast of Positive Programmes on the Chinese Channels of Fantastic TV, HKTVE and TVB as at March 2018



Sources: Fantastic TV, HKTVE & TVB

Free TV licensees were required to provide Chinese subtitles for all news, current affairs programmes, weather reports and emergency announcements, as well as programmes broadcast during prime time (7:00 p.m. to 11:00 p.m.) on the Chinese channels. They are also required to provide English subtitles for all news, current affairs programmes, weather programmes, emergency announcements and educational programmes for teenagers (two hours per week) on the English channels²¹. HKTVE and TVB were required to provide Chinese subtitling for all drama programmes on the Chinese channels and English subtitling for all programmes broadcast on the English channels

between 8:00 p.m. and 11:30 p.m. As a whole, Fantastic TV²², HKTVE²³ and TVB complied with the requirements on provision of subtitles.

Pursuant to licence requirements, Fantastic TV, HKTVE and TVB were required to broadcast one minute of Announcements in the Public Interest (APIs) in each hour on each channel. Also, they are required to broadcast, on a weekly basis, not more than five minutes in aggregate of publicity material for the Authority on each of the Chinese and English channels²⁴. During the period under review, Fantastic TV, HKTVE and TVB broadcast a total of 1 140 hours of the two types of materials²⁵.

21 TVB is required to provide, on its thematic digital channels, Chinese subtitles for all news, current affairs programmes, weather reports and emergency announcements as well as programmes broadcast during prime time.

22 To provide more flexibility for new free TV licensees, Fantastic TV was allowed to step up the subtitling service incrementally from 2018 to 2020.

23 To provide more flexibility for new free TV licensees, HKTVE was allowed to step up the subtitling service incrementally from 2016 to 2019.

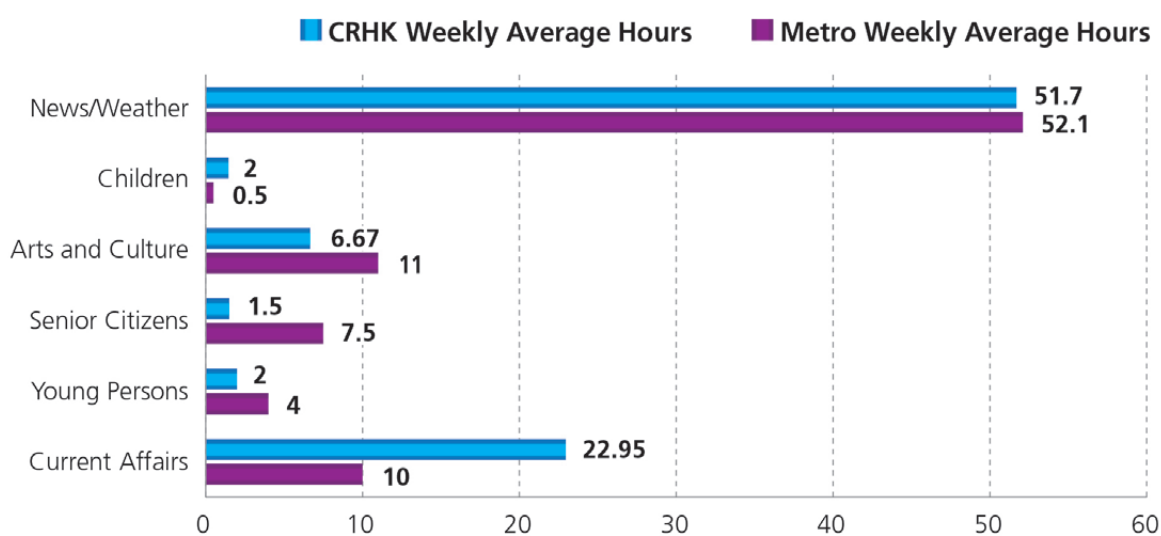
24 TVB is required to broadcast two minutes of publicity material for the Authority per week on its thematic digital channels.

25 If a free TV channel was simulcast in both analogue and digital formats, the total hours of APIs and publicity material for the Authority were calculated only by reference to the materials broadcast in digital format.

As regards sound broadcasting services, sound broadcasting licensees were required to broadcast at least 28.5 hours of positive programmes²⁶ per week. CRHK and Metro reported that they had complied with the licence conditions on broadcast of positive programmes.

All sound broadcasting licensees were required to broadcast one minute of APIs in each hour and not more than five minutes of publicity material for the Authority each week in each service channel. All licensees complied with the requirements.

Figure 8: Broadcast of Positive Programmes on Sound Broadcasting Services as at March 2018



5.1.5 Hong Kong as a Regional Broadcasting Hub

Hong Kong is a broadcasting hub in the Asia-Pacific region, with 14 non-domestic TV licensees operating in and broadcasting from Hong Kong. Altogether they offered a total of 188 satellite television channels with 56 channels receivable in Hong Kong, serving viewers in the Asia-Pacific region, Europe and Africa. A summary of non-domestic TV services as at March 2018 is at **Annex 1**.



²⁶ The positive programmes that CRHK and Metro were required to broadcast included news and weather programmes, current affairs programmes, art and culture programmes and advisory programmes, viz. programmes for young persons, senior citizens and children.

TELECOMMUNICATIONS

5.2 An Overview of the Telecommunications Market

Hong Kong has one of the most sophisticated and successful telecommunications market in the world. This has been an important factor in Hong Kong's development as a leading business and financial centre. In 2017, the telecommunications sector employed around 20 400 persons whilst its gross output amount to \$93 billion in 2016.

All sectors of Hong Kong's telecommunications market have been liberalised with no foreign ownership restrictions. The Authority's objectives are to maintain a level playing field in the open and competitive telecommunications market and to ensure that consumers get the best services available in terms of efficiency, quality and price.

5.2.1 The Telecommunications Regulatory Regime

Carrier Licences

The Authority issues carrier licences to facility-based operators, authorising them to establish and maintain telecommunications networks and facilities which may cross unleased Government land and public streets, for the provision of public telecommunications services.

The unified carrier licensing regime has been implemented since 1 August 2008 as the single licensing vehicle for the provision of

facility-based fixed, mobile and/or converged telecommunications services in Hong Kong.

A Unified Carrier Licence (UCL) for the provision of local fixed service authorises the licensee to establish and maintain fixed network, wireline-based or wireless-based, or a combination of both where applicable, to provide local telecommunications services between fixed points within Hong Kong. A UCL for the provision of external fixed service authorises the licensee to provide external facilities as well as external services operated over external facilities. A UCL for the provision of mobile service enables the licensee to provide two-way communications between moving locations or between a moving location and a fixed location in Hong Kong. The issue of new UCL for the provision of mobile service is subject to the availability of radio spectrum for assignment. An operator may apply for a single UCL to provide all the above services.

Fixed Carrier Licences (FCLs) and Mobile Carrier Licences (MCLs) which were issued before the introduction of the UCL remain valid until their expiry. Holders of FCL and MCL may apply to the Authority for UCL to replace their licences before or upon expiry.

As at March 2018, there were a total of 61 carrier licensees, providing local fixed services, cable-based external fixed services, non cable-based external fixed services and/or mobile services. Among them, there were five holders of FCLs and one holder of MCL and the remaining were UCL holders.

Public Radiocommunications Service Licences

Services which may be authorised under the Public Radiocommunications Service (PRS) Licence include radio paging, community repeater (trunked radio) services, vehicle location information services, oneway data message services and public mobile radio data services.

As the provision of radiocommunications services requires the assignment of suitable operating frequencies, PRS Licences are granted only when the required radio spectrum is available.

As at March 2018, there were a total of seven PRS licensees.

Services-based Operator Licences

Services-based Operators (SBO) make use of the networks and facilities of other licensed facility-based operators for the provision of public telecommunications services, but they are not authorised to establish or maintain any telecommunications means which cross public streets or unleased Government lands.

SBO licence covers three types of services, namely, Class 1 and Class 2 local voice telephony services, and Class 3 services which may include external telecommunications service, Internet access service, international value-added network service, mobile virtual network operator service, private payphone service, public radio communications relay service,

security and fire alarm signals transmission service, teleconferencing service and mobile communications service on board an aircraft.

As at March 2018, there were a total of 522 SBO licensees.

Class Licences

The class licensing regime does not require any licence application. Parties meeting the specified eligibility criteria and conditions would automatically become the class licensees, and are required to comply with the conditions set out in the relevant Class Licence as well as the TO. Currently there are nine types of Class Licences:

- Class Licence for 79 GHz Automotive Radar
- Class Licence for 60 GHz Device
- Class Licence for Citizens Band Radio Station
- Class Licence for In-building Telecommunications Systems
- Class Licence for Medical Implant Communication System Device
- Class Licence for Short Range Device
- Class Licence for Taxi Mobile Station
- Class Licence for Offer of Telecommunications Services
- Class Licence for Provision of Public Wireless Local Area Network Services

Other Licences

Apart from the licences mentioned above, there are a number of miscellaneous licences under the purview of the Authority.

A breakdown of the types and numbers of all telecommunications licences is at [Annex 2](#).

5.2.2 Developments in the Telecommunications Market and Technology Trends

Mobile Communications Services

Competition in public mobile services is keen. As at March 2018, four mobile network operators, namely, China Mobile Hong Kong Company Limited (CMHK), Hong Kong Telecommunications (HKT) Limited (HKT), Hutchison Telephone Company Limited (HTCL) and SmarTone Mobile Communications Limited (SmarTone), were providing a wide range of public mobile services. The availability of mobile number portability since March 1999 has contributed to promoting effective competition among the mobile network operators as it enables customers to retain their telephone numbers when they switch to another mobile network operator.

The four mobile network operators provide second generation (2G), 3G and 4G services in Hong Kong at very affordable prices. As at March 2018, there were about 18.39 million subscribers to mobile communications services. This represents a population penetration of 248.2%, one of the highest in the world. The number of 3G/4G users reached 17 million in March 2018, representing a population penetration of 231.9%. Through spectrum refarming, more spectrum is now used for provision of 4G services with a downlink speed up to 1.1 gigabit per second (Gbps).

With the increasing popularity of smart phones, particularly 4G mobile handsets which were readily available in the market, the monthly mobile data usage surged to 32 444 Terabytes²⁷ in March 2018, representing 1.3 times and 1.6 times the monthly usage over the same period in 2017 and 2016 respectively. The mobile data usage per capita reached 4 379 Megabytes in March 2018, compared with 3 436 Megabytes in March 2017 and 2 812 Megabytes in March 2016. The continued development of 4G mobile services is expected to further boost mobile data usage in the future.

²⁷ Estimated figures subject to adjustments to be made by operators.

Figure 9: Number of Mobile Subscribers (2008 to 2017)

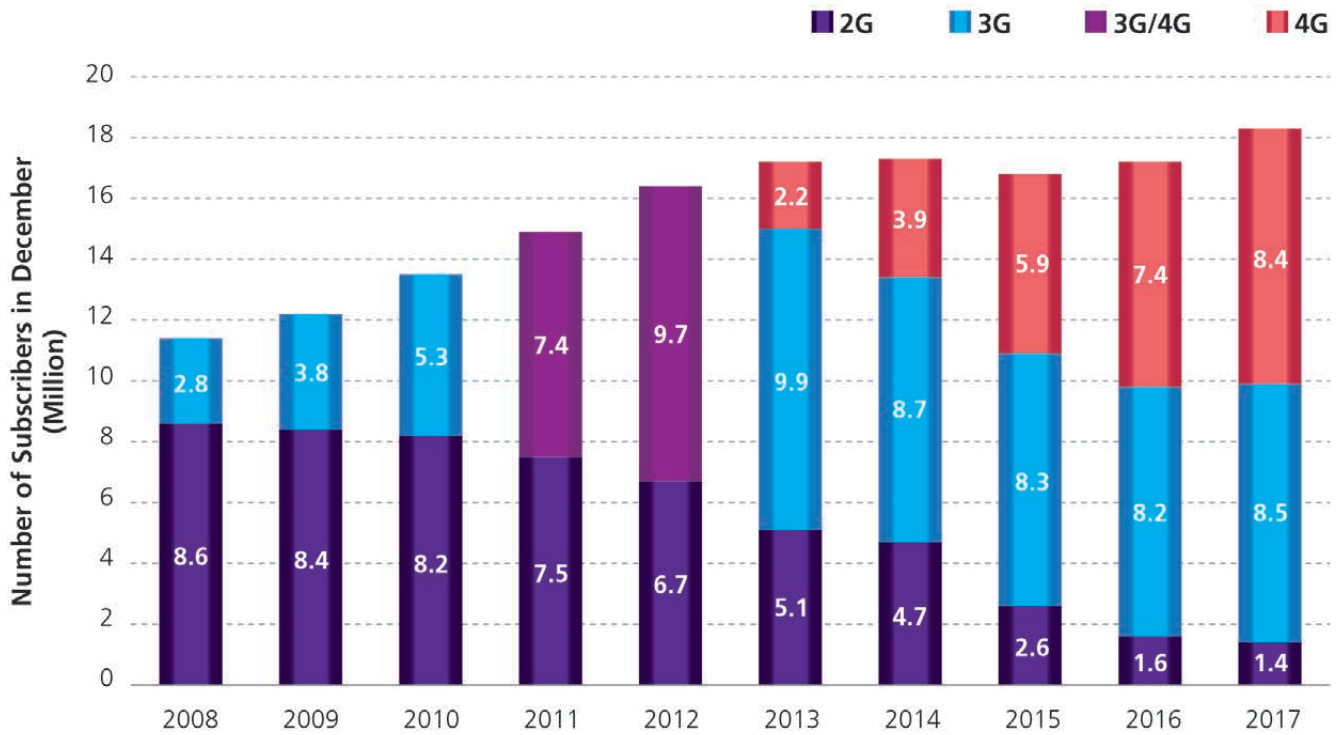


Figure 10: Mobile Customers using Postpaid and Prepaid SIM (2008 to 2017)

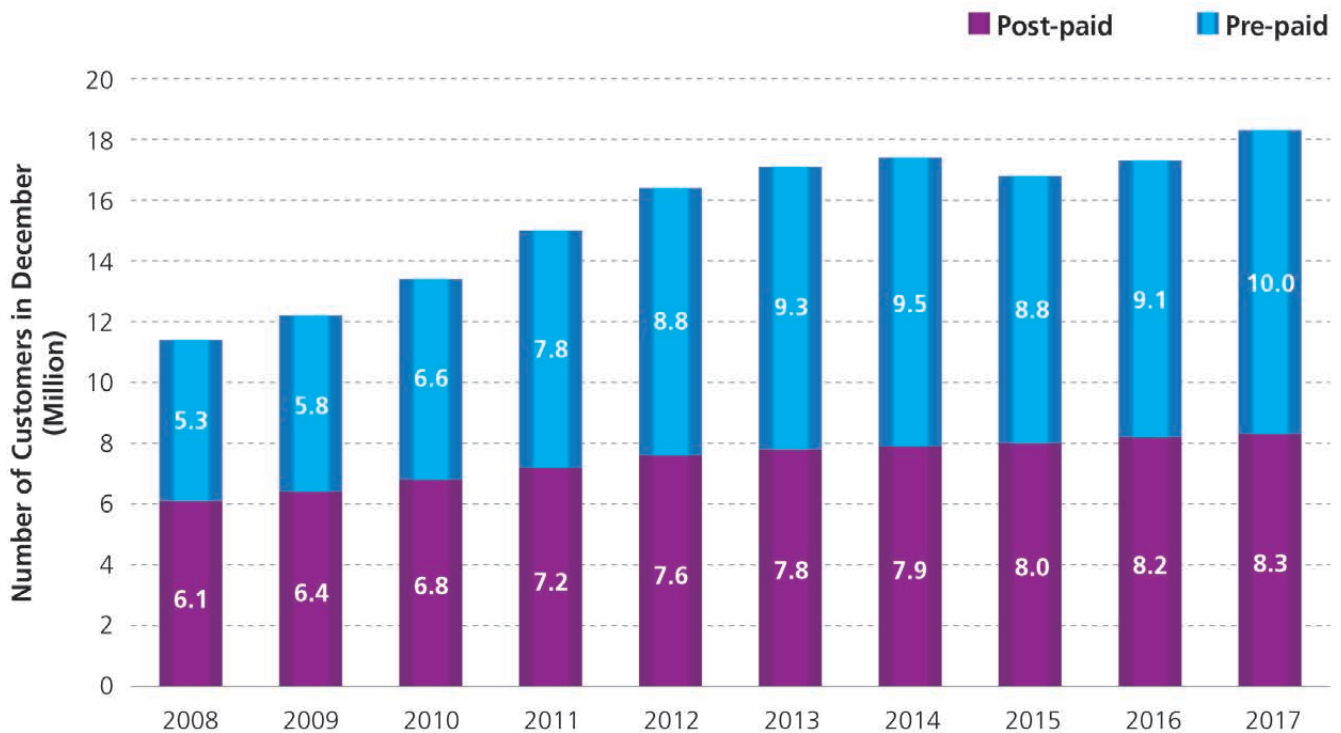
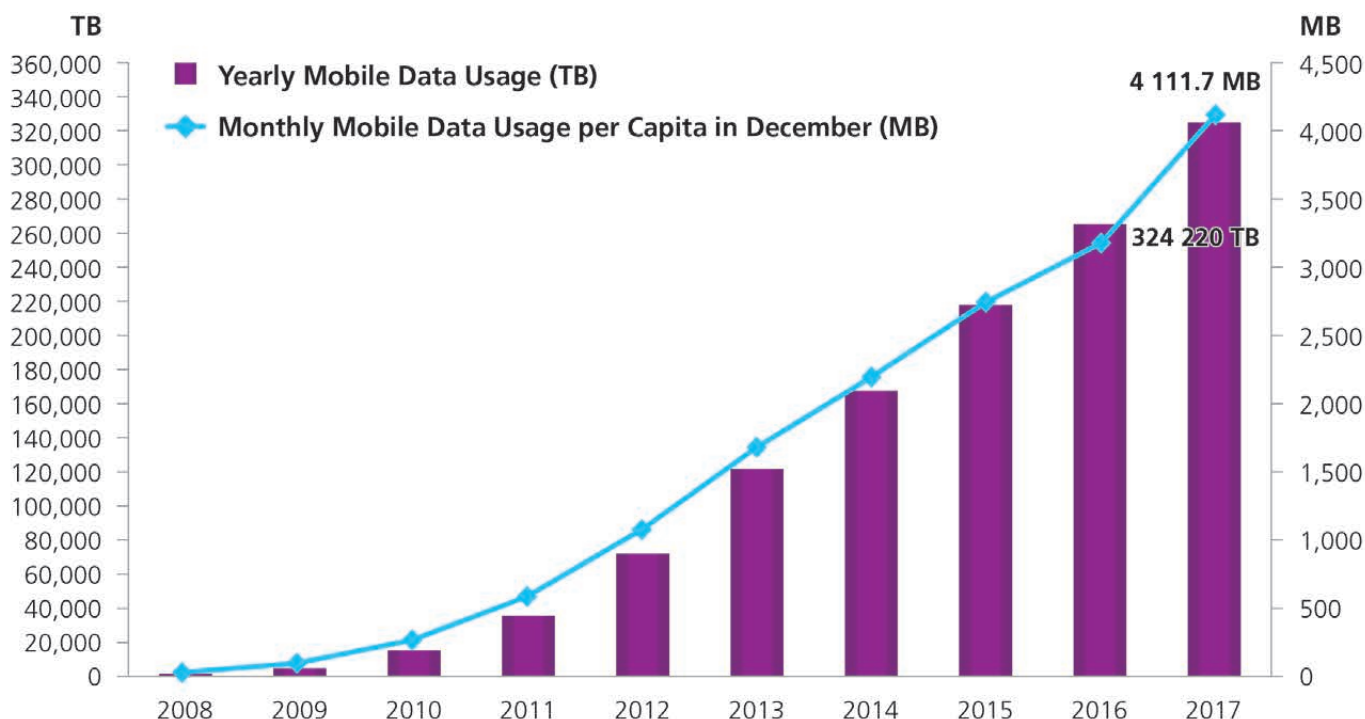


Figure 11: Mobile Data Usage (2008 to 2017)



Fixed Communications Services

The local fixed communications services market has been fully liberalised since 2003. There is no preset limit on the number of licences to be issued for fixed services, or deadline for submission of licence applications. Furthermore, there is no specific requirement on network roll-out and investment and licensees may provide their services according to their proposals.



As at March 2018, there were 26 local fixed carriers, providing around 94 fixed lines per 100 households, one of the highest in the world. They were, in alphabetical order:

- 21 ViaNet Group Limited
- China Mobile Hong Kong Company Limited
- China Telecom Global Limited
- China Unicom (Hong Kong) Operations Limited
- ComNet Telecom (HK) Limited
- Easy Tone Network Limited
- Equinix Hong Kong Limited
- HGC Global Communications Limited
- HKBN Enterprise Solutions Limited
- HKC Network Limited
- Hong Kong Broadband Network Limited
- Hong Kong Cable Television Limited
- Hong Kong Telecommunications (HKT) Limited

- NTT Com Asia Limited
- PCCW Global (HK) Limited
- PCCW-HKT Telephone Limited and Hong Kong Telecommunications (HKT) Limited
- Reach Networks Hong Kong Limited and Reach Cable Networks Limited
- SmarTone Communications Limited
- Superloop (Hong Kong) Limited
- Telstra International HK Limited and Telstra International Limited
- Towngas Telecommunications Fixed Network Limited
- TraxComm Limited
- Verizon Hong Kong Limited
- Village Telephone Limited
- Vodafone Enterprise Global Network HK Limited
- WTT HK Limited

As a result of the active network roll-out by fixed carriers and the former TA's initiative to encourage further network roll-out by the withdrawal of mandatory Type II interconnection policy in mid-2008, 88.9% and 79.1% of households were able to enjoy a choice of at least two and three self-built customer access networks respectively as at March 2018. It is expected that the figures will keep growing as the carriers continue to roll out their networks.

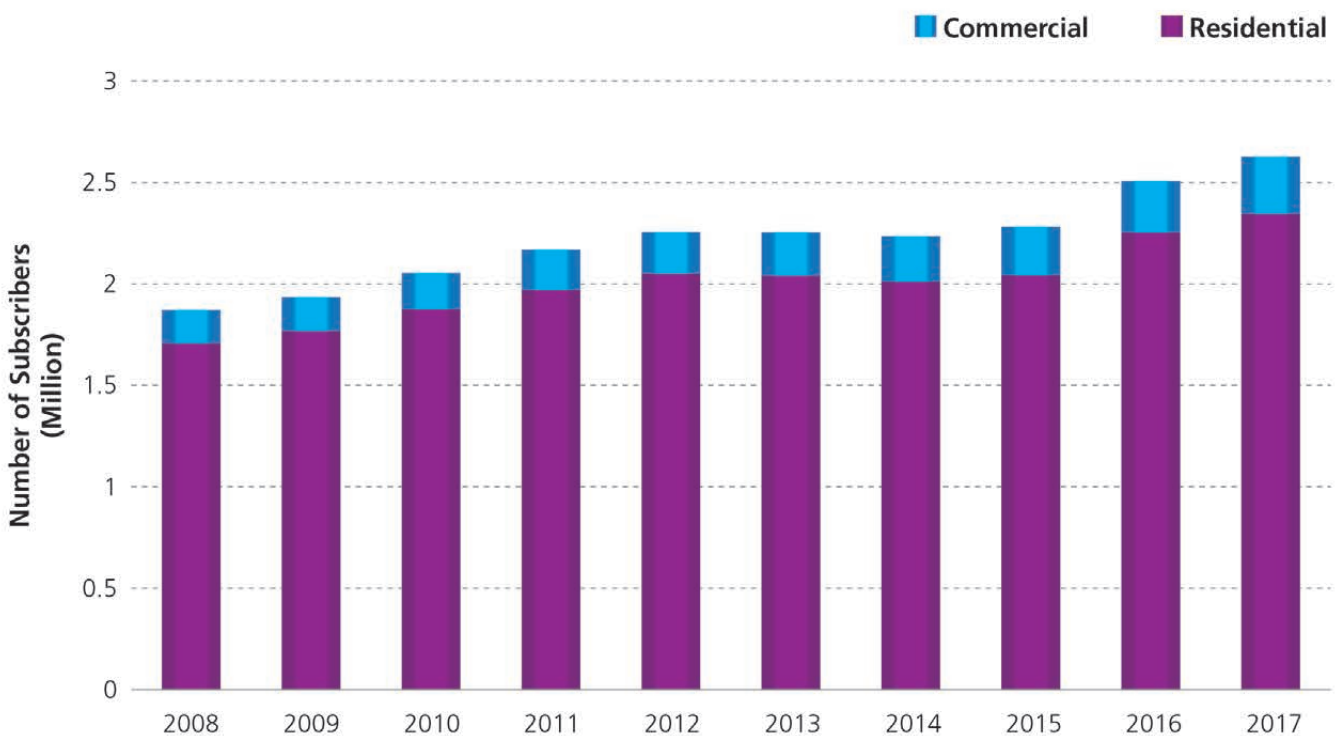
Local fixed carriers are required to facilitate fixed number portability which enables consumers to switch to another fixed carrier without having to change their telephone numbers.

Fixed Broadband Services

As at March 2018, 26 facility-based operators and 209 SBOs were authorised to provide broadband Internet access services in Hong Kong. With the continuous network roll-out of facility-based operators, the Hong Kong community is able to enjoy nearly ubiquitous coverage of broadband networks through the deployment of various technologies including asymmetric digital subscriber line, hybrid fibre coaxial cable, fibre-to-the-building, fibre-to-the-home, etc. Broadband access to various applications and content services has become an integral part of the life of people in Hong Kong. As at March 2018, there were around 2.66 million residential and commercial fixed broadband subscribers, with a household penetration rate of 93%. Broadband services are available at speeds up to 10 Gbps. Around 83% of the broadband subscribers are using service plans with speeds at 10 Mbps or above. The statistics of fixed broadband subscribers as at March 2018 and the statistics for the past 10 years are shown in [Figure 12](#) and [Figure 13](#) respectively.

Figure 12: Statistics of Fixed Broadband Subscribers as at March 2018

	No. of subscribers	% share
Total No. of broadband subscribers	2 658 068	
Broadband speed of 10Mbps or above	2 213 354	83.3%
Broadband speed below 10Mbps	444 714	16.7%
Residential	2 369 050	89.1%
Commercial	289 018	10.9%

Figure 13: Fixed Broadband Subscribers (2008 to 2017)

Next Generation Networks

Traditional telecommunications networks are built based on circuit-switched technologies and are primarily designed for the conveyance and provision of dedicated telecommunications services. With the advent of new technologies, it is now possible to build a single network for the conveyance and provision of a variety of services, including fixed voice telephony service, data service, mobile service and television service. Such new networks, commonly referred to as next generation networks (NGNs), serve as an open platform through which service providers are able to develop innovative services and applications, and establish direct relationship with their customers.

In Hong Kong, the development of NGNs has always been driven by technical and commercial considerations of carriers. The major network

operators have already launched their NGNs. With the advent of NGN, the Authority will remain vigilant about the challenges to be brought about by NGN and ensure that the regulatory framework remains updated and appropriate in the NGN era. After the completion of a consultancy study commissioned to examine the implication of NGN development on the regulatory framework in Hong Kong, OFCA reconvened the NGN working group between 2012 and 2016 to follow up on the relevant recommendations made by the consultant and other issues pertaining to the development of NGN in Hong Kong. With the support of the Telecommunications Regulatory Affairs Advisory Committee, a technical regulatory working group has been established since 2016 to take up the work under the NGN working group and to study the various technical regulatory issues related to telecommunications networks, systems and services in Hong Kong. OFCA will continue

to work closely with the industry to address various technical regulatory issues, including NGN issues, to facilitate the efficient development and deployment of new telecommunications services and technologies in Hong Kong.

Public Wi-Fi Services

Operators have been actively rolling out Wi-Fi networks. Eight network operators and 138 class licensees are providing public Wi-Fi services. As at March 2018, there were 50 939 public Wi-Fi hotspots in the city and the number continued to grow. Free Wi-Fi services were available to the public in 636 government premises.

External Telecommunications Services

The external telecommunications facilities market has been fully liberalised since 2000. As at March 2018, 42 fixed carriers were authorised to provide cable-based and/or non-cable-based external telecommunications facilities.

As at March 2018, there were eight cable landing stations in Hong Kong: two in Tong Fuk, three in Tseung Kwan O and one each in Deep Water Bay, Chung Hom Kok and Cape D'Aguilar, making it a major telecommunications and Internet hub in the region.

In March 2018, Hong Kong was connected to 11 regional and transcontinental submarine cable systems. They are Asia Africa Europe-1 (AAE-1), Asia-America Gateway Cable System (AAG), Asia Pacific Cable Network 2 (APCN-2), Asia Pacific Gateway (APG), Asia Submarine-Cable Express (ASE), EAC - C2C, FLAG Europe Asia (FEA), FLAG North Asia Loop (FNAL)/REACH North Asia Loop (RNAL), Sea-Me-We 3 (SMW3), South-East Asia Japan Cable System (SJC) and TGN-Intra Asia Cable System (TGN-IA). As at March 2018, the total equipped external capacity exceeded 59 856 Gbps. Total external telephone traffic was 4.2 billion minutes for the period from 1 April 2017 to 31 March 2018. Landing of four additional submarine cable systems is in the pipeline and they are expected to be ready for service between 2018 and 2020.

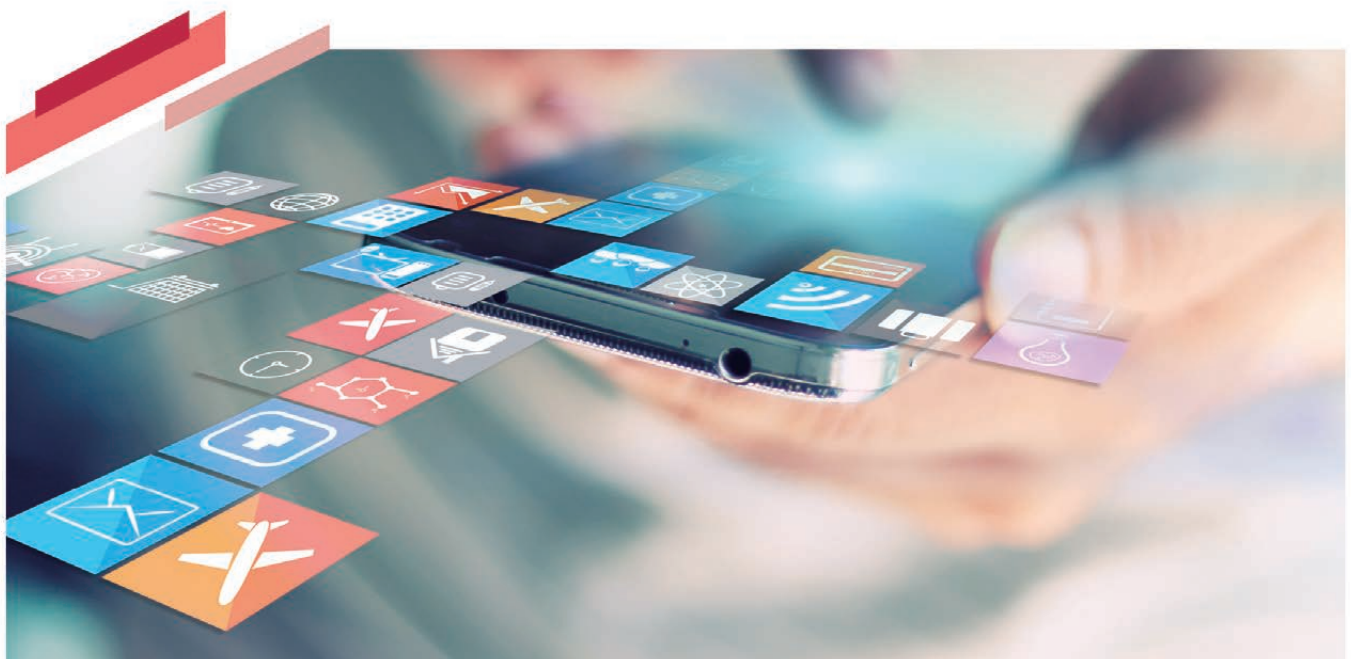
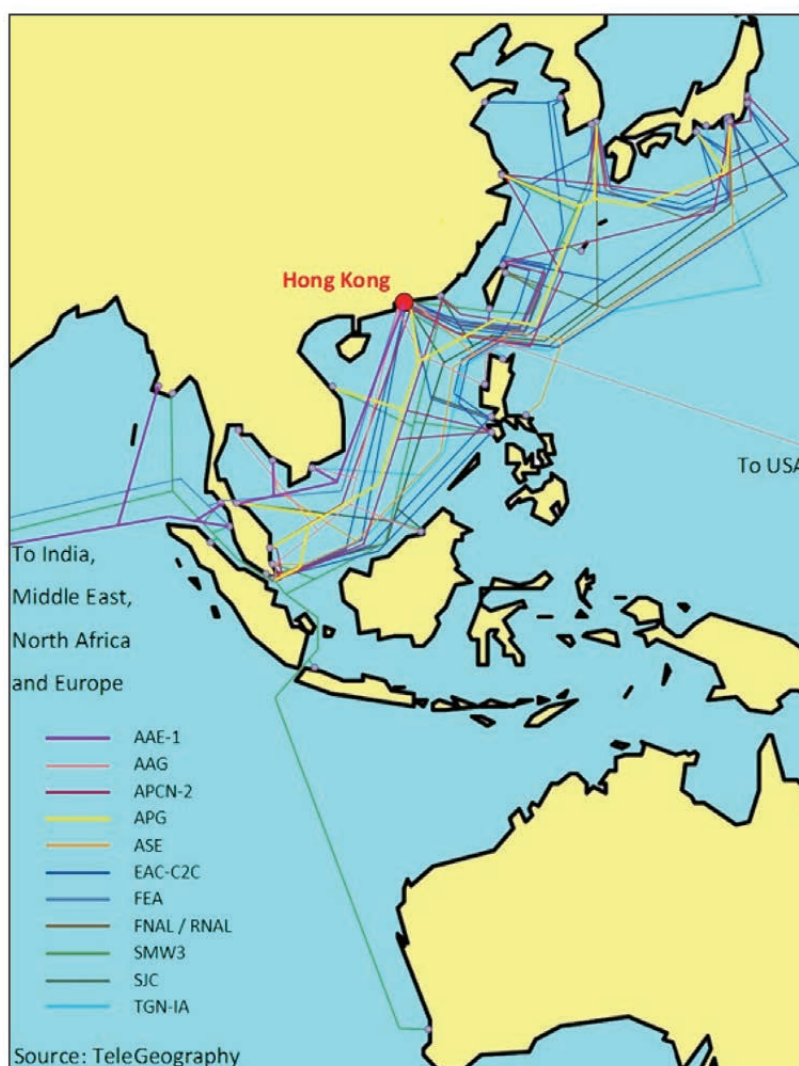


Figure 14: Submarine Cables between Hong Kong and Other Countries

Satellite Services

Hong Kong adopts an open sky policy in regulating the provision of satellite services. Satellite-based telecommunications and television broadcasting services are provided via a multitude of satellites in the region with more than 200 transmitting/receiving satellite antennas in earth stations operated by a number of fixed carriers and broadcasters.

Licences are required for the operation of satellites and associated facilities. As at March 2018, two Hong Kong companies were licensed to operate

and provide satellite communication services, namely, Asia Satellite Telecommunications Company Limited (AsiaSat) and APT Satellite Company Limited (APT). AsiaSat and APT were established in 1988 and 1992 respectively.

Currently, a total of 11 in-orbit satellites are operated by AsiaSat and APT. The two companies have entered a new investment cycle of launching new satellites for replacement and provision of new business. APT submitted an application in June 2017 to launch a new satellite in the second quarter of 2018.