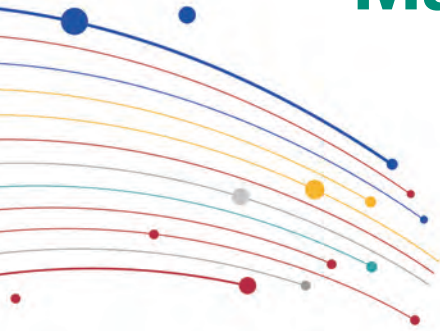


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Overview of Major Developments in the Communications Market





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 2023, there were a total of 14 TV licensees, including three free TV licensees², two pay TV licensees³ and nine non-domestic TV licensees. They provided 477 television channels⁴, of which about 60 non-domestic TV channels were receivable in Hong Kong. An overview of the television channels provided by the commercial licensees and RTHK, the public service broadcaster, is shown in **Figure 1**.

Hong Kong implemented full digital TV broadcast on 1 December 2020. As at March 2023, the three **free TV licensees**, viz. Fantastic TV, HKTVE and TVB, provided a total of ten digital channels in high definition television (HDTV) format, viz. “HOY TV”⁵, “Hong Kong International Business Channel” and “HOY Infotainment”⁶ (by Fantastic TV), “ViuTV” and “ViuTVsix” (by HKTVE), and “Jade”, “Pearl”, “J2”, “TVB News Channel” and “TVB Finance, Sports & Information Channel”⁷ (by TVB). RTHK, the public service broadcaster in Hong Kong, provided four digital channels.

2 As at March 2023, the three free TV licensees were Fantastic TV, HKTVE and TVB.

3 As at March 2023, the two pay TV licensees were HKCTV and PCCW Media Limited. On 14 February 2023, the CE in C approved the termination of the pay TV licence of HKCTV with effect from 1 June 2023. Following the cessation of the pay TV service by HKCTV, there will only be one pay TV licensee in Hong Kong (i.e. PCCW Media Limited).

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

5 The television programme channel “Hong Kong Open TV” was renamed as “HOY TV” with effect from 18 October 2022.

6 The television programme channel “HOY Infotainment” was launched on 21 November 2022.

7 The television programme channel “TVB Finance & Information Channel” was renamed as “TVB Finance, Sports & Information Channel” with effect from 5 September 2022.

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As at March 2023, the two **pay TV licensees**, viz. HKCTV and PCCW Media Limited (PCCW Media) provided a total of 333 pay television channels and were offering a diverse range of local and non-local productions. Among those channels, over 120 were HDTV channels.

As at March 2023, there were nine **non-domestic TV licensees** providing more than 130 television channels. Hong Kong viewers could receive about 60 of those channels.

During the period under review, there were 20 **other licensable TV licensees** providing television programme services in more than 50 hotels in Hong Kong.

Figure 1: Television Channels Provided by Commercial Licensees and RTHK in Hong Kong (as at 31 March 2023)



* While some free TV channels were simulcast in both analogue and digital formats during the period of 2014 to 2020, the total number of free TV channels is calculated by reference to the channels broadcast in digital format only.



In addition to satellite television channels provided by non-domestic TV licensees, Hong Kong viewers can also receive free unencrypted satellite television programme channels uplinked from outside Hong Kong. As at March 2023, there were around 500 free-to-air satellite television channels available for reception via the Satellite Master Antenna Television Systems in Hong Kong. A list of these channels is available 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**, viz. CRHK and Metro. RTHK, the public service broadcaster in Hong Kong, also provided sound broadcasting service.

As at March 2023, there were a total of 14 radio channels (three by CRHK, three by Metro and eight by RTHK⁸) providing round-the-clock sound broadcasting services to the public.

⁸ The radio programme channel "RTHK CMG/Radio The Greater Bay" was launched on 1 July 2022.



Overview of Major Developments in the Communications Market

5.1.2 Transmission Modes

Television

The regulatory framework for television programme services in Hong Kong as enshrined in the BO is technology-neutral⁹. Licensees are free to choose their transmission arrangements for delivery of television services. Broadcasters may apply for carrier licences from the Authority and build their own transmission networks to deliver their services. Alternatively, they may engage any of the existing carrier licensees to provide the transmission service. Licensees may also provide their television programme services via multiple transmission platforms so as to extend their coverage.

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

Figure 2: Transmission Modes Employed by Television Programme Service Licensees

Licensee	Transmission Mode	Network Coverage (as at March 2023)
Free TV		
Fantastic TV	Terrestrial UHF ¹⁰ , HFC ¹¹ and MMDS ¹²	99% of population ¹³
HKTVE	Terrestrial UHF and Fixed broadband network	99% of population
TVB	Terrestrial UHF	99% of population
Pay TV		
HKCTV	HFC, MMDS and Satellite (Digital)	Around 95% of total households
PCCW Media	PON and DSL ¹⁴ broadband network (Digital)	Around 98% of total households
Non-domestic TV		
8 licensees ¹⁵	Satellite (Digital)	Around 27% of total households ¹⁸
1 licensee ¹⁶	IPLC ¹⁷ and Satellite (Digital)	Around 27% of total households ¹⁸

⁹ An exception is that a service provided on the Internet is exempted from the regulatory framework under the BO.

¹⁰ Terrestrial Ultra High Frequency

¹¹ Hybrid Fibre Coaxial Cable

¹² The Authority approved Fantastic TV's application to cease using Microwave Multipoint Distribution System (MMDS), for transmission of its free TV service with effect from 1 June 2023.

¹³ The coverage of Fantastic TV's spectrum-based free TV service has reached at least 99% of the population by May 2023.

¹⁴ Passive Optical Network and Digital Subscriber Line

¹⁵ The licensees concerned are APT Satellite TV Development Limited, Auspicious Colour Limited, Hong Kong TV International Media Group Limited, One TV Media Global Limited, Phoenix Satellite Television Company Limited, Star China Media Limited, Sun Television Cybernetworks Enterprise Limited and WarnerMedia Asia Pacific (HK) Limited.

¹⁶ The licensee concerned is Starbucks (HK) Limited.

¹⁷ International Private Lease Circuit

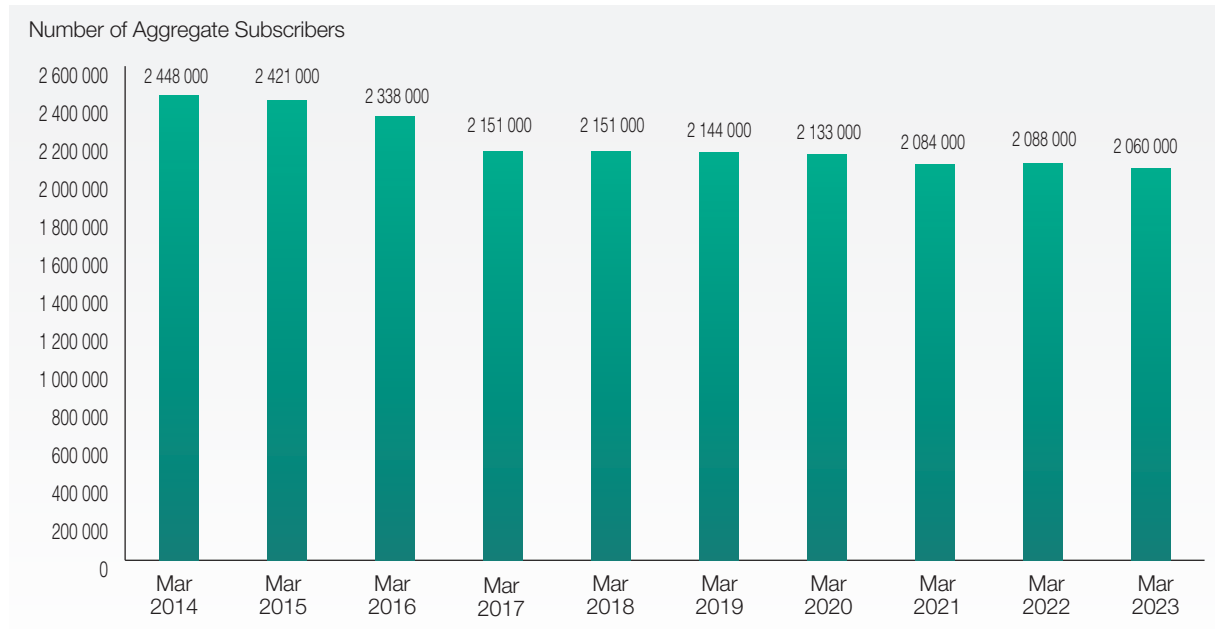
¹⁸ The non-domestic TV services mainly serve viewers in the Asia-Pacific region, Europe and Africa and do not target Hong Kong, but some Hong Kong households (over 700 000) can receive the unencrypted channels.

Penetration of Different Broadcasting Services

The penetration rate of free TV services stood at about 95% of the total households as at end of March 2023¹⁹.

The penetration of licensed pay TV services was about 77%²⁰ of the total households as at end of March 2023. The total number of subscribers to licensed pay TV services stood at about 2.1 million in March 2023²¹. The changes in total number of subscribers from 2014 to 2023 are set out in **Figure 3**.

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



Sources: Licensees

Sound Broadcasting

Radio broadcasters in Hong Kong use frequency modulation (FM) and amplitude modulation (AM) transmissions to provide their sound broadcasting services. As at 31 March 2023, eight FM programme channels were provided through seven²² principal transmitting stations, supplemented by two low-power FM fill-in stations, while six AM programme channels were broadcast from two principal transmitting stations, supplemented by five low-power AM/FM fill-in stations. The services practically covered the whole area of Hong Kong.

19 Source: HKTAM Establishment Survey, CSM Media Research

20 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.

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

22 The “RTHK CMG/Radio The Greater Bay” FM programme channel was launched in July 2022 through Mount Gough Transmitting Station and would be broadcast through other transmitting stations in phases by 2024.



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5.1.3 Broadcasting Revenues and Investment

Licensed broadcasting services contributed an estimated \$7.5 billion²³ to the Hong Kong economy, which represented about 0.3% of the gross domestic product in 2022. 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 advertising sales²⁴. Pay TV licensees, on the other hand, derive their incomes mainly from subscription fees with advertising sales as a secondary income source.

Advertising Revenue

According to research²⁵, television and radio accounted for 9% (about \$2.4 billion) and 4% (about \$1 billion) respectively of the accumulated \$27.1 billion advertising revenues in the entertainment and media industry of Hong Kong in 2022.

In 2022, the actual advertising revenues of HKTVE and TVB were around \$616 million and \$1,178 million respectively. The actual advertising revenues of other licensees were not publicly available.

Subscription Revenue

According to the annual report of HKT Trust and HKT Limited (HKT), the holding company of PCCW Media, the turnover of its pay TV services and related services provided in Hong Kong under the “Now TV” brand was \$2.5 billion in 2022.

The subscription revenue of HKCTV was not publicly available.



²³ Source: Company reports of major broadcasting licensees providing television programme services in Hong Kong

²⁴ These include sales of advertising spots within programme breaks, programme/event sponsorship, product placement as well as related production fees of advertisements and tailor-made content.

²⁵ Source: PricewaterhouseCoopers Global Entertainment and Media Outlook: 2023-2027, www.pwc.com/outlook. All advertising revenues are net spending excluding agency commissions, production costs and discounts.

Investment in Broadcasting Industry



Key investment projects in the television industry in recent years include the digital 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.

Fantastic TV, HKTVE and TVB have respectively committed to investing a total of \$1.3 billion for the six-year period from 2022 to 2028, \$2.2 billion for the six-year period from 2021 to 2027 and \$6.6 billion for the six-year period from 2022 to 2027 for the provision of free TV services. Investment commitments of Fantastic TV, HKTVE and TVB comprise capital expenditures and programming expenditures. As at March 2023, Fantastic TV, HKTVE and TVB provided 504, 290 and 832 hours of HDTV programmes per week respectively. Fantastic TV and TVB also provided 182 and 1 178 hours of independent local productions in their programming respectively in 2022 according to their commitments.



As regards the pay TV market, i-CABLE Communications Limited, the parent company of HKCTV, reported in its 2022 Annual Report that the capital expenditure of the group decreased from \$120 million in 2021 to \$114 million in 2022. Its major items of investment included property, plant and equipment. According to the 2022 Annual Report of HKT, the holding company of PCCW Media, the capital expenditure of

the group was around \$2,346 million in 2022. Its major items of investment included property, plant and equipment, and interests in leasehold land.

On the sound broadcasting side, CRHK and Metro have committed to investing \$549 million and \$561 million respectively for the six-year period from 2022 to 2028 covering production of radio programmes and upgrading of transmission facilities and equipment in order to provide better sound quality and to enhance station coverage and efficiency of the radio production.



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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 2023, the licensees broadcast about 64 652 hours of television programmes a week. The ten digital channels of Fantastic TV, HKTVE and TVB provided a total of 1 632 broadcast hours per week, while the 333 channels of the two pay TV licensees provided a total of 53 108 broadcast hours per week. As a public service broadcaster, RTHK provided 672 hours per week on its four digital channels. About 60 channels of non-domestic TV licensees receivable in Hong Kong provided about 9 900 broadcast hours per week.

The total broadcast hours per week provided by CRHK, Metro and RTHK as at March 2023 were 2 352.

During the period under review, there were a total of 35 641 hours of station productions broadcast on Fantastic TV, HKTVE and TVB. Of the 333 channels provided by pay TV licensees, 67 channels (20.1%) were produced by the licensees themselves.

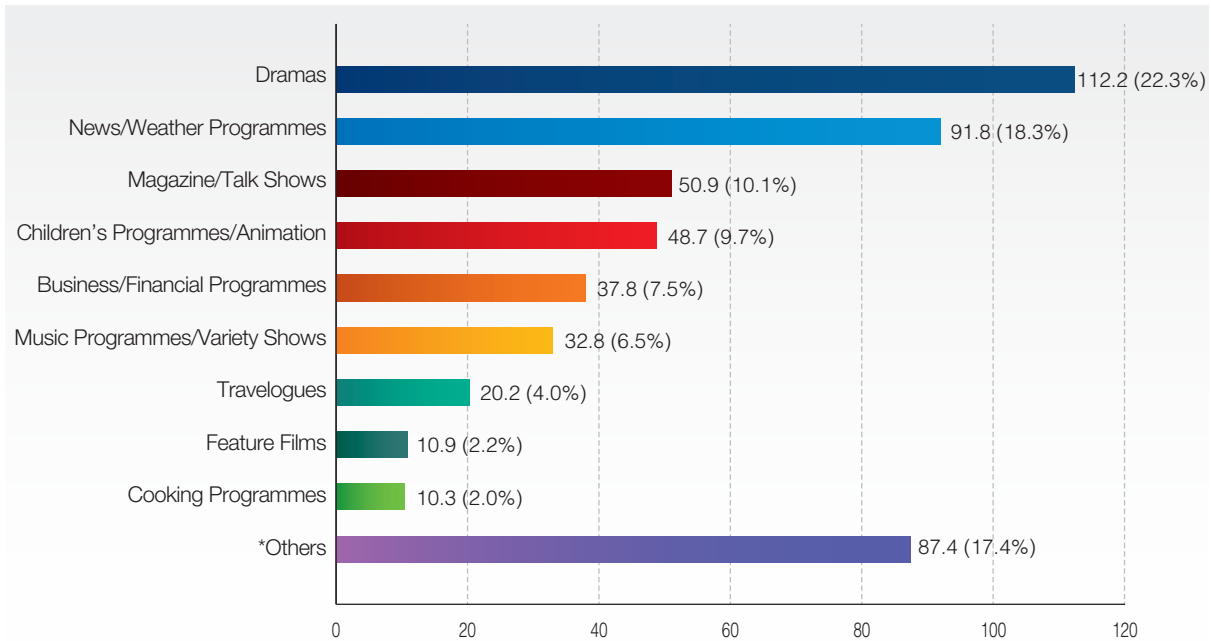


Free TV Services

Chinese and English Channels

During the period under review, drama series (22.3%) and news/weather programmes (18.3%) continued to be the dominant programme genres during prime time on the Chinese channels (viz. “HOY TV”, “Jade” and “ViuTV”). Drama series on “Jade” were mostly in-house productions; while “HOY TV”, “Jade” and “ViuTV” broadcast Mainland, Korean and Japanese drama series. In addition, magazine/talk shows (10.1%), children’s programmes/animation (9.7%), business/financial programmes (7.5%), music programmes/variety shows (6.5%), travelogues (4.0%), feature films (2.2%) and cooking programmes (2.0%), etc. were also broadcast during prime time on the Chinese channels. The four channels provided by RTHK presented a variety of programmes to not only serve a broad spectrum of audiences, but also cater for the needs of minority interest groups.

Figure 4: Weekly Hours of Different Types of Programmes Broadcast on HOY TV, Jade and ViuTV (as at March 2023)



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

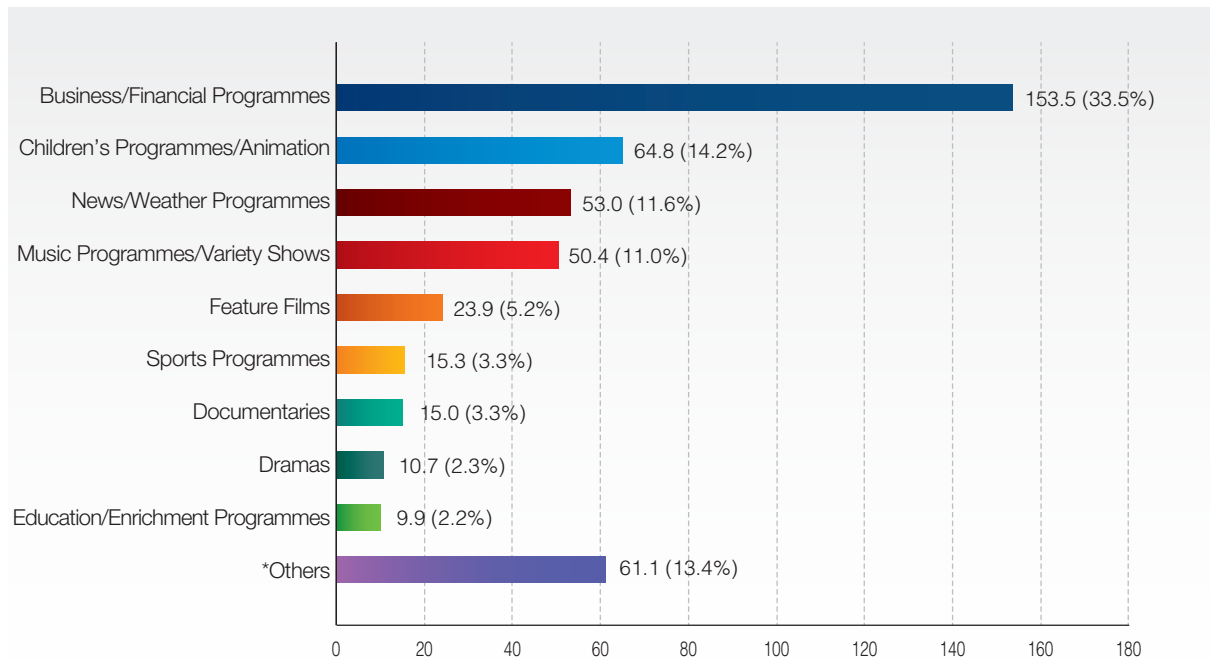
Weekly Total: 503 Hours
Sources: Licensees

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The English channels (viz. “Hong Kong International Business Channel”, “Pearl” and “ViuTVsix”) broadcast a wide range of programmes, including business/financial programmes (33.5%), children’s programmes/animation (14.2%), news/weather programmes (11.6%), music programmes/variety shows (11.0%), feature films (5.2%), sports programmes (3.3%), documentaries (3.3%), imported popular drama series (2.3%) and education/enrichment programmes (2.2%).

Figure 5: Weekly Hours of Different Types of Programmes Broadcast on Hong Kong International Business Channel, Pearl and ViuTVsix (as at March 2023)



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

Weekly Total: 457.6 Hours
Sources: Licensees

Thematic Channels

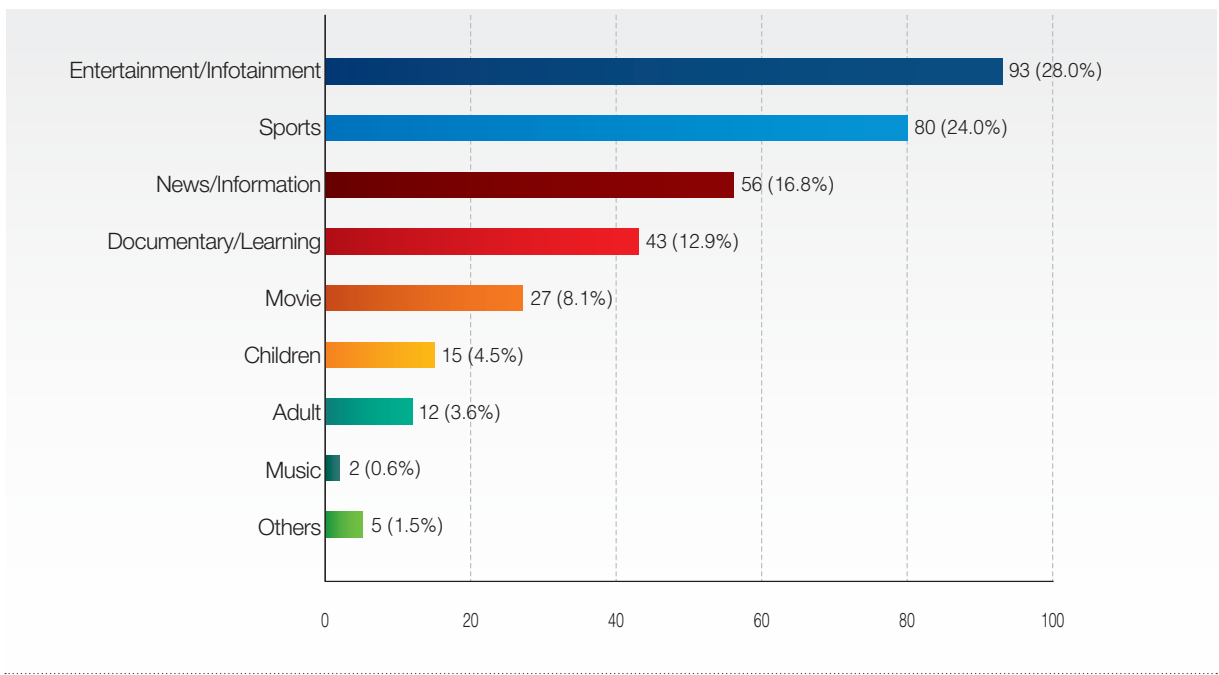
During the period under review, TVB provided acquired dramas, documentaries, variety shows, news, financial information programmes, etc. on “J2”, “TVB News Channel” and “TVB Finance, Sports & Information Channel”. Fantastic TV provided news, financial information, sports and infotainment programmes on “HOY Infotainment” since its launch in November 2022.



Pay TV Services

During the period under review, a great variety of channels were offered on pay TV services, including entertainment/infotainment channels (28.0%), sports channels (24.0%), news/information channels (16.8%), documentary/learning channels (12.9%), and movie channels (8.1%).

Figure 6: Nature of Pay TV Channels (as at March 2023)



Total Number of Channels: 333
Sources: Licensees

As at March 2023, HKCTV offered 124 channels (including 42 HDTV channels). PCCW Media’s “Now TV” service offered 141 channels (including 85 HDTV channels) and 68 video-on-demand services.

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Sound Broadcasting

As at March 2023, CRHK operated two FM Cantonese channels, viz. “CR1” and “CR2”, and one AM English channel, viz. “AM 864”. “CR1” mainly provided news, current affairs, financial and personal view programmes. “CR2”, targeting younger listeners, featured pop culture and music programmes. “AM864” was primarily a music channel.

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



RTHK operated eight 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

Free TV Services

During the period of 1 April 2022 to 13 February 2023, free TV licensees (viz. Fantastic TV, HKTVE and TVB) were respectively required to broadcast at least 38, 41.5 and 45.5 hours of positive programmes²⁶ per week. They all met the stipulated requirements²⁷.

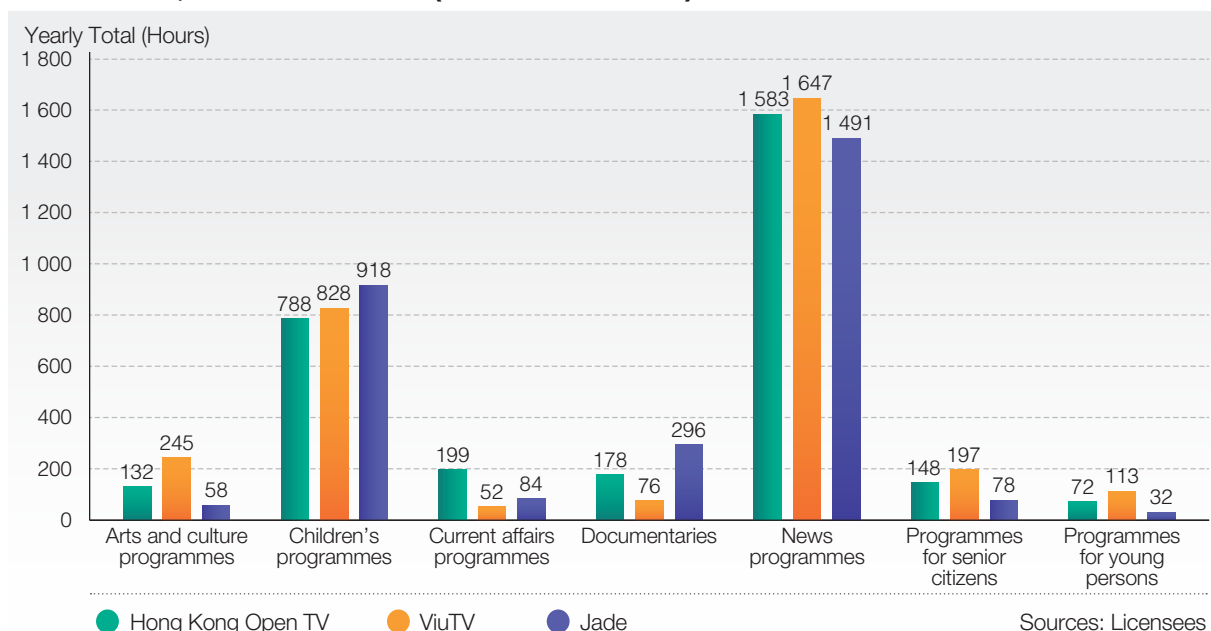
The reports submitted by the licensees to the Authority on six types of positive programmes, viz. current affairs programmes, documentaries, children’s programmes, programmes for young persons, programmes for senior citizens, and arts and culture programmes, are available at https://www.coms-auth.hk/en/licensing/broadcasting/compliance_reports/index.html.

²⁶ During the period of 1 April 2022 to 13 February 2023, the positive programmes that Fantastic TV, HKTVE and TVB were required to broadcast comprised news, current affairs programmes, documentaries, arts and culture programmes, children’s programmes and programmes for senior citizens and young persons.

²⁷ 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 channels (viz. “J2”, “TVB Finance, Sports & Information Channel” and “TVB News Channel”). HKTVE was required to broadcast at least 41.5 hours of positive programmes per week.

Upon the use of spectrum as an additional means of transmission from 1 April 2022, Fantastic TV was required to broadcast at least 38 hours of positive programmes per week. Fantastic TV was allowed to progressively increase the broadcast of positive programmes to at least 41.5 hours per week by May 2023.

Figure 7: Broadcast of Positive Programmes on the Chinese Channels of Fantastic TV, HKTVE and TVB (as at March 2023)



Free TV licensees were required to provide Chinese subtitles for all news, current affairs programmes, weather programmes and emergency announcements, as well as programmes broadcast during prime time (7:00 p.m. to 11:00 p.m.) on the Chinese channels²⁸. They were 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 channels. 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.²⁹. On the whole, Fantastic TV, HKTVE and TVB complied with the requirements on the provision of subtitles.

To meet public demand for easier access to information by persons with hearing impairment, the Authority issued a direction requiring TVB to provide sign language interpretation, in addition to subtitles, for a Cantonese news programme broadcast on its “Pearl” channel each day. TVB fulfilled this requirement.

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

29 Upon the use of spectrum as an additional means of transmission from 1 April 2022, Fantastic TV was allowed to step up incrementally the subtitling service with a view to covering all programmes broadcast on the integrated English channel on the relevant timeslot by May 2023, on par with the subtitling requirements applicable to HKTVE and TVB.

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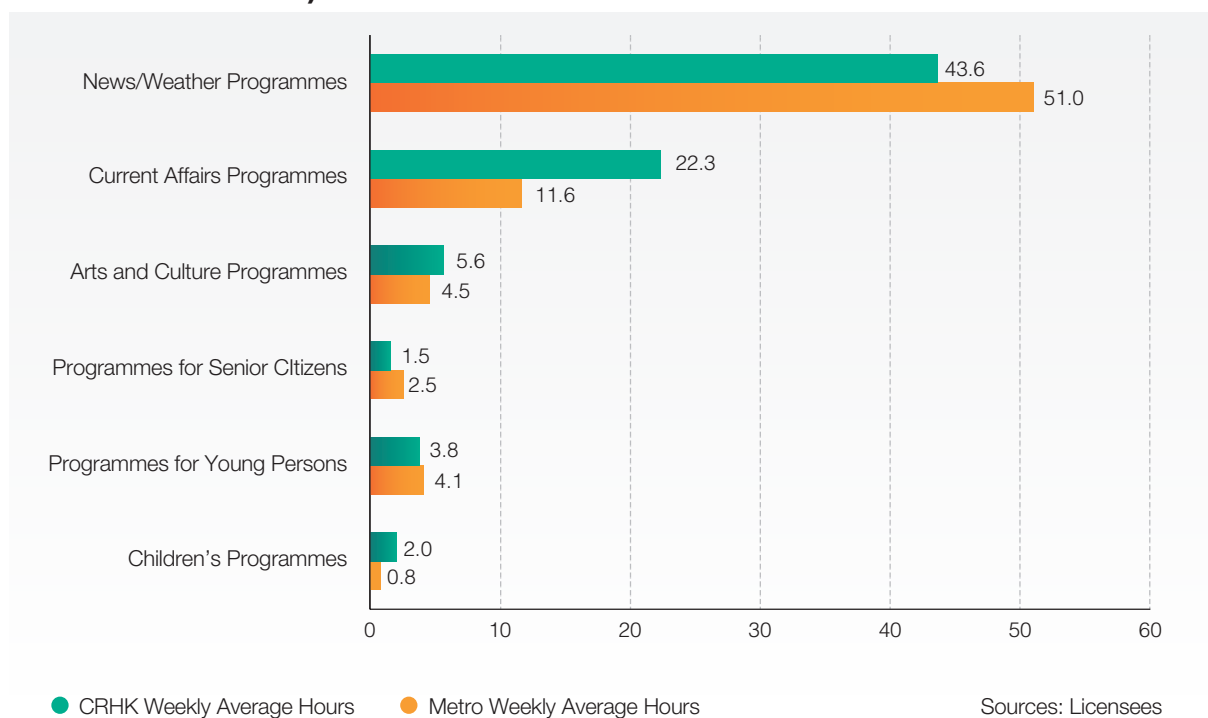
Pursuant to licence requirements, Fantastic TV, HKTVE and TVB were required to broadcast two minutes of Announcements in the Public Interest (APIs) in every two clock hours on each channel. Also, they were required to broadcast, on a weekly basis, not more than five minutes in aggregate of publicity material for the Authority on each of the Chinese and English integrated channels³⁰. During the period under review, Fantastic TV, HKTVE and TVB broadcast a total of 1 358 hours of the two types of materials.

Sound Broadcasting

During the period of 1 April 2022 to 13 February 2023, CRHK and Metro were each required to broadcast at least 28.5 hours of positive programmes³¹ per week under their respective licences. CRHK and Metro broadcast the required amount of positive programmes.

CRHK and Metro also fulfilled the requirements on the broadcast of one minute of APIs in each hour and not more than five minutes of publicity material for the Authority each week on each service channel. The reports submitted by the licensees to the Authority on positive programmes are available at https://www.coms-auth.hk/en/licensing/broadcasting/compliance_reports/index.html.

Figure 8: Broadcast of Positive Programmes on Sound Broadcasting Services (as at March 2023)



³⁰ For the three thematic channels of TVB, they were required to broadcast two minutes of publicity material for the Authority per week. For the thematic channel of Fantastic TV, the licensee was required to comply with its commitment of broadcasting five minutes of publicity material for the Authority per week.

³¹ CRHK and Metro were required to broadcast news and weather programmes, current affairs programmes, arts and culture programmes, programmes for young persons, senior citizens and children, in their respective sound broadcasting services.

Subsequent Developments

On 14 February 2023, the CE in C endorsed the Authority's recommendations on the mid-term review of three free TV and two sound broadcasting licences. First and foremost, the Authority considered it incumbent upon free TV and sound broadcasting licensees in Hong Kong to raise public awareness of the importance of national security and engender in them a sense of citizenship and national identity through their broadcast services and programmes, and to promote youth development. In this connection, the Authority recommended and the CE in C approved that free TV and sound broadcasting licensees shall broadcast no less than 30 minutes per week of programmes to positively promote national education, national identity and Hong Kong National Security Law under the category "current affairs" on top of the existing required broadcast hours. Free TV licensees shall also double the existing broadcast hours of programmes for "young persons" to promote youth development. In addition to the above, the CE in C also endorsed a number of recommendations to refine various programme requirements (such as provision of subtitling³² and sign language³³ by free TV licensees).

To give the licensees adequate preparation time, the Authority requested that the new programme requirements should be fully implemented by the third quarter of 2023.

5.1.5 Hong Kong as a Regional Broadcasting Hub

Hong Kong is a broadcasting hub in the Asia-Pacific region. As at March 2023, there were nine non-domestic TV licensees operating in and broadcasting from Hong Kong. Altogether, they offered more than 130 satellite television channels serving viewers in the Asia-Pacific region, Europe and Africa, with about 60 channels receivable in Hong Kong. A summary of the non-domestic TV services as at March 2023 is at **Annex 1**.

32 To align the two time periods requiring the provision of subtitles for all programmes on the integrated Chinese and English channels to 7:00 p.m. to 11:00 p.m.

33 To apply the sign language requirement to all free TV licensees through including an enabling provision in the licences. As directed by the Authority, all free TV licensees are required to provide sign language interpretation and Chinese subtitles in a comprehensive news bulletin in Cantonese of not less than 25 minutes duration each day between 6:00 p.m. and 12:00 midnight.

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TELECOMMUNICATIONS

5.2 An Overview of the Telecommunications Market

Hong Kong has one of the most sophisticated and advanced telecommunications markets in the world. This has been an important factor in Hong Kong's development as a leading global business and financial centre. The telecommunications sector employed around 19 000 persons in 2022, whilst its gross output amounted to \$108 billion in 2021.

All sectors of Hong Kong's telecommunications market have been liberalised with no foreign ownership restrictions on telecommunications operators. 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 Framework

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 framework 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 transmissions and services operated over external facilities such as submarine cable and satellite communications systems. 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.

As at March 2023, there were a total of 58 holders of UCL, providing local fixed services, cable-based external fixed services, non-cable-based external fixed services and/or mobile services.

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, one way data message services, public mobile radio data services and railway signaling 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 2023, there were a total of six PRS licensees.

Services-based Operator Licences

Services-based Operators (SBOs) 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 (ETS), Internet access service, international value-added network service, MVNO 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 2023, there were a total of 489 SBO licensees.

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Class Licences

The class licensing framework does not require any licence applications. Parties meeting the specified eligibility criteria and conditions (including any registration requirement) 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 ten types of Class Licences:

- Class Licence for 6 GHz Device
- Class Licence for 60 GHz Device
- Class Licence for 79 GHz Automotive Radar
- 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 has always been keen. As at March 2023, four major MNOs, namely, China Mobile Hong Kong Company Limited, Hong Kong Telecommunications (HKT) Limited, Hutchison Telephone Company Limited and SmarTone Mobile Communications Limited (SmarTone), were providing a wide range of public mobile services.

MNOs provide second generation (2G), 3G, 4G and 5G mobile services in Hong Kong at very affordable prices. As at March 2023, there were about 21.6 million subscriptions to mobile communications services. The mobile subscriber penetration rate reached 282.4%, one of the highest in the world, with over 99% of them being subscriptions of 3G, 4G and 5G mobile services. Further to the commercial launch of 5G services since April 2020, 5G mobile subscriptions reached 5.1 million in March 2023, representing a mobile subscriber penetration rate of 68.2%. With the continued development of 5G services, increasingly higher speed of mobile communications will be supported.

With an ever growing demand for mobile data services, the monthly mobile data usage surged to 167 401.4 Terabytes in March 2023, representing 1.3 times and 1.8 times of the monthly usage over the same period in 2022 and 2021 respectively. The monthly mobile data usage per capita reached 22 279.5 Megabytes in March 2023, compared with 16 811.4 Megabytes in March 2022 and 12 628.5 Megabytes in March 2021. The development of 5G services and innovative applications enabled by 5G will further boost mobile data usage in the future.

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Figure 9: Number of Mobile Subscriptions (2013 to 2022)

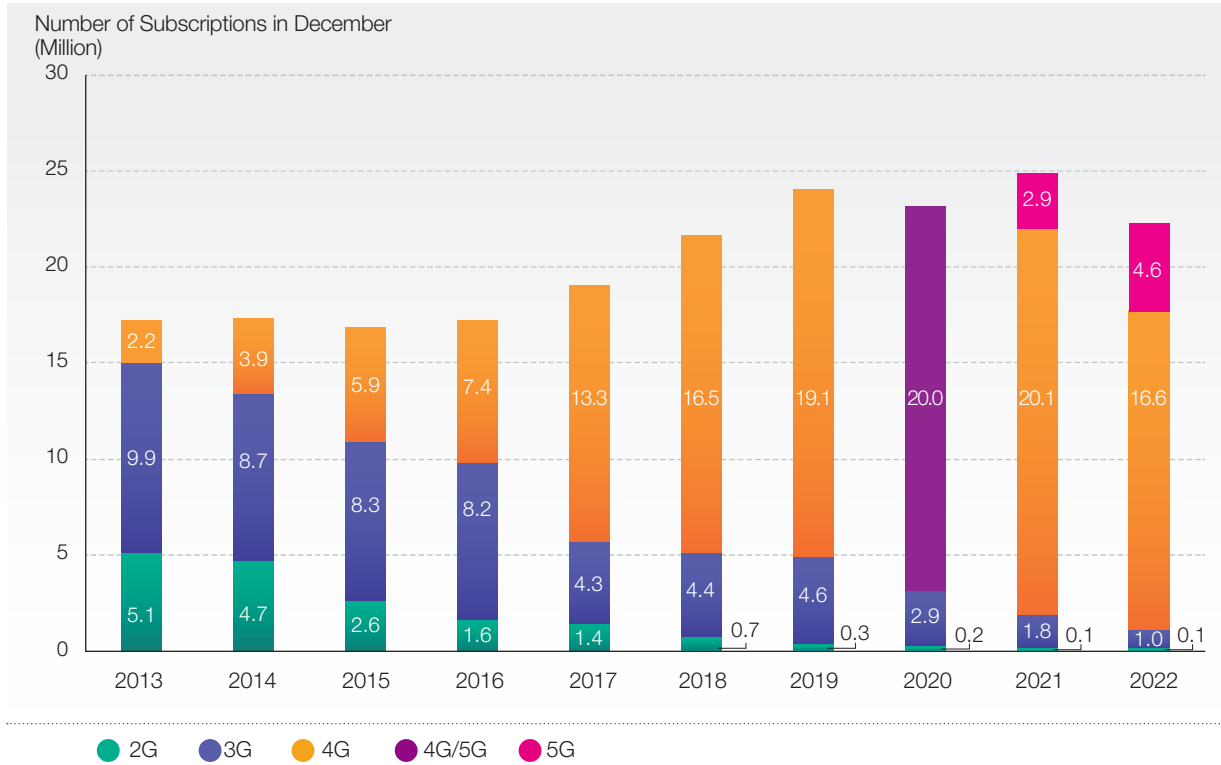


Figure 10: Mobile Subscriptions of Postpaid and Prepaid SIM (2013 to 2022)

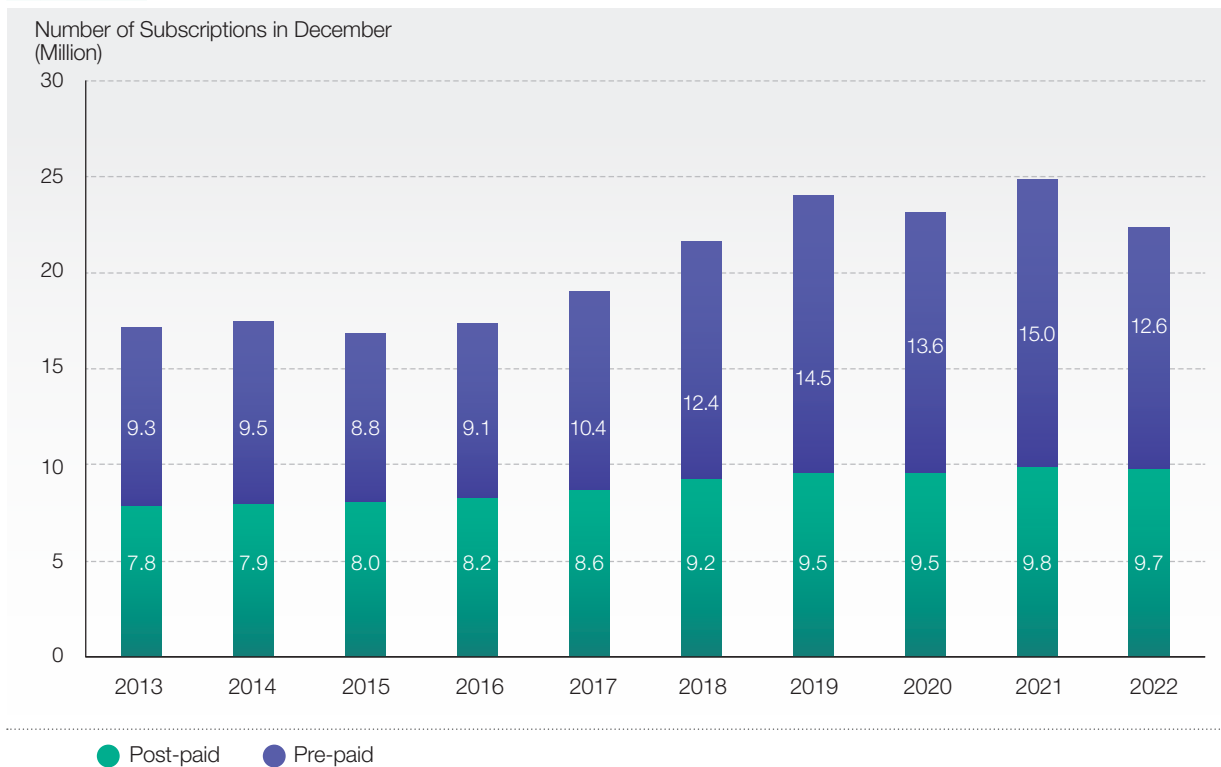
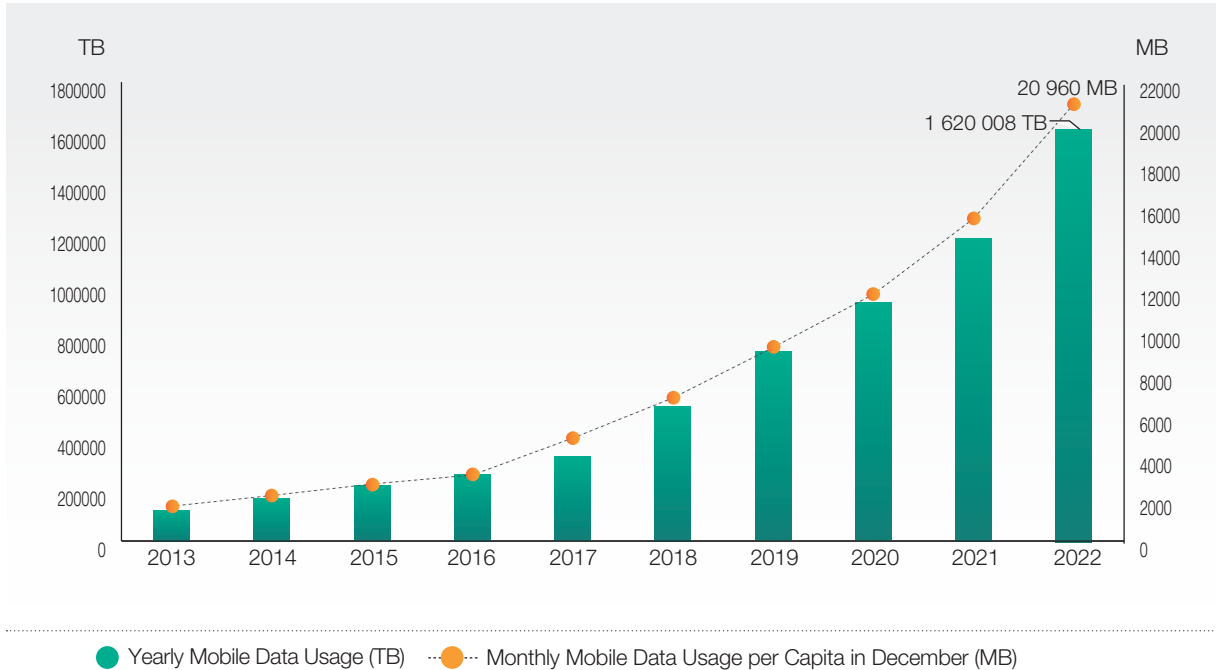


Figure 11: Mobile Data Usage (2013 to 2022)



Fixed Communications Services

The local fixed communications services market has been fully liberalised with 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 2023, there were 27 local FNOs holding UCLs for the provision of local fixed services, providing around 73 fixed lines per 100 households, one of the highest in the world. They were, in alphabetical order:

- China Mobile Hong Kong Company Limited
- China Mobile International Limited
- China Telecom Global Limited
- China Unicom (Hong Kong) Operations Limited
- ComNet Telecom (HK) Limited
- Easy Tone Network Limited

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- Equinix Hong Kong Limited
- HGC Global Communications Limited
- HKBN Enterprise Solutions HK 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
- Telstra International Limited
- Towngas Telecommunications Fixed Network Limited
- TraxComm Limited
- Verizon Hong Kong Limited
- Village Telephone Limited
- VNET Group Limited
- Vodafone Enterprise Hong Kong Limited
- Xenith IG Hong Kong Limited (formerly known as Superloop (Hong Kong) Limited)

As at March 2023, 91.9% and 80.6% of households were able to enjoy a choice of at least two and three self-built customer access networks respectively. It is expected that the figures will keep growing as the carriers continue to roll out their networks.

Fixed Broadband Services

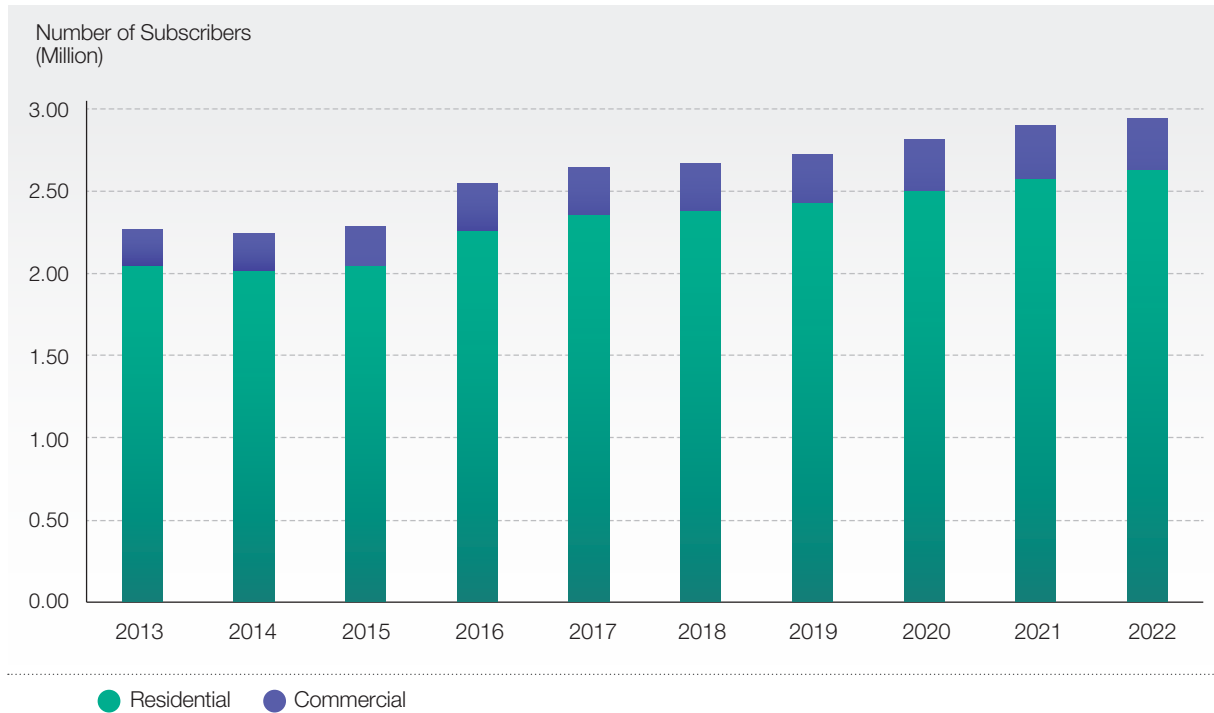
As at March 2023, 27 FNOs and 257 SBOs were authorised to provide broadband Internet access services in Hong Kong. With the continuous network rollout of FNOs, the Hong Kong community can enjoy nearly ubiquitous coverage of broadband networks through the deployment of various technologies including asymmetric 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 2023, there were around 3 million residential and commercial fixed broadband subscriptions, with a household penetration rate of 99.5%. Broadband services are available at speeds up to 10 gigabits per second (Gbps). Around 88.2% of the fixed broadband subscriptions are supported by broadband services with speeds of 100 megabits per second (Mbps) or above. The statistics of fixed broadband subscriptions as at March 2023 and the statistics for the past ten years are shown in **Figure 12** and **Figure 13** respectively.

Figure 12: Statistics of Fixed Broadband Subscriptions (as at March 2023)

		% share
Total no. of broadband subscriptions	2 992 638	100%
Broadband speed of 100 Mbps or above	2 638 253	88.2%
Broadband speed below 100 Mbps	354 385	11.8%
Residential	2 676 123	89.4%
Commercial	316 515	10.6%

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Figure 13: Fixed Broadband Subscriptions (2013 to 2022)



Internet of Things Services

Internet of Things is a technology which enables the provision of communications platforms and services for interconnected devices to generate, exchange and consume data with minimal human intervention. Currently, Wireless Internet of Things (WIoT) licensees, MNOs and MVNOs are authorised to provide WIoT services. Since the creation of the WIoT licence in December 2017, four WIoT licences have been issued. With the development of new wireless technologies such as 5G mobile technologies and smart city applications, it is expected that there will be an increasing number of WIoT devices connecting to the public telecommunications networks in future.

Public Wi-Fi Services

Operators have been actively rolling out Wi-Fi networks. Eight network operators and 241 class licensees are providing public Wi-Fi services in various locations of the territory. As at March 2023, there were 86 567 public Wi-Fi hotspots in the city and the number will continue to grow.

External Telecommunications Services

The external telecommunications facilities market has been fully liberalised. As at March 2023, 39 FNOs were authorised to provide cable-based and/or non-cable-based external telecommunications facilities.

As at March 2023, there were eight cable landing stations in Hong Kong: two in Tong Fuk, three in Tseung Kwan O and the other three in Deep Water Bay, Chung Hom Kok and Cape D'Aguiar respectively, making it a major telecommunications and Internet hub in the region.

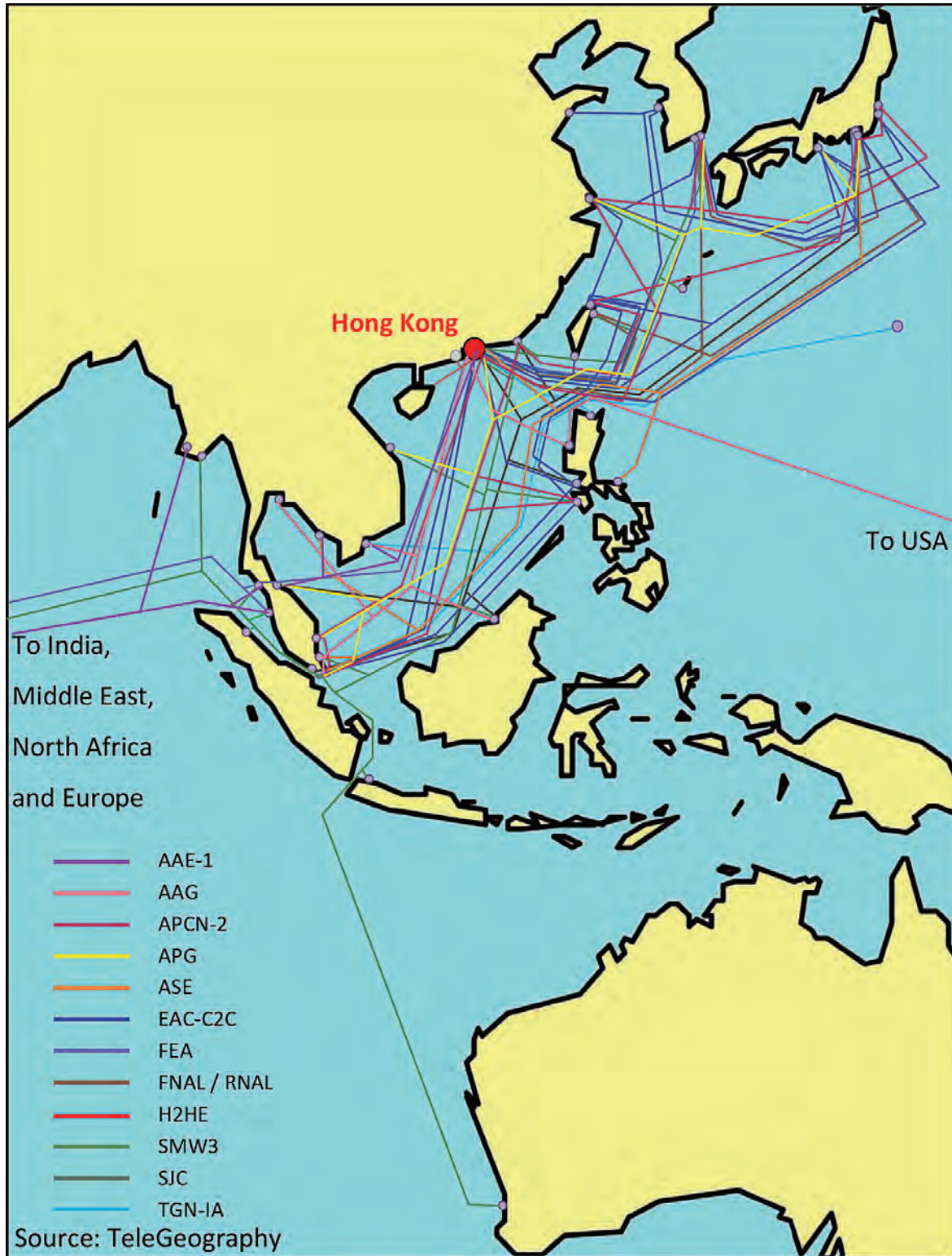
In March 2023, Hong Kong was connected to 12 regional and transcontinental submarine cable systems. They are Asia Africa Europe-1 (AAE-1), Asia-America Gateway Cable System (AAG), Asia Pacific Cable Network 2 (APCN-2), Asia Pacific Gateway (APG), Asia Submarine-Cable Express (ASE), EAC – C2C, FLAG Europe Asia (FEA), FLAG North Asia Loop (FNAL)/REACH North Asia Loop (RNAL), Hainan to Hong Kong Express (H2HE), Sea-Me-We 3 (SMW3), South-East Asia Japan Cable System (SJC) and TGN-Intra Asia Cable System (TGN-IA). As at March 2023, the total equipped external capacity exceeded 199 797 Gbps. Total external telephone traffic was 1.4 billion minutes for the period from January to December 2022. Landing of some new submarine cable systems is in the pipeline and they are expected to be ready for service between 2023 and 2026.



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5

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Figure 14: Submarine Cables between Hong Kong and Other Economies



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 190 transmitting/receiving satellite antennae in earth stations operated by a number of FNOs.

Licences are required for the operation of satellites and associated facilities. As at March 2023, there were a total of nine in-orbit satellites operated by two Hong Kong companies, namely Asia Satellite Telecommunications Company Limited and APT Satellite Company Limited, which are licensed to provide satellite communications services.