



通訊事務管理局
COMMUNICATIONS
AUTHORITY

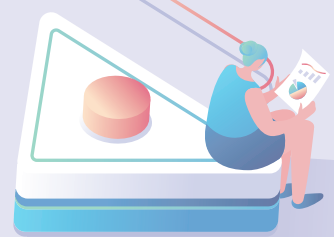
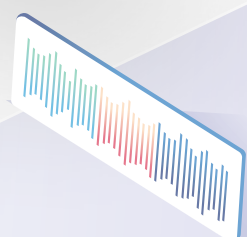
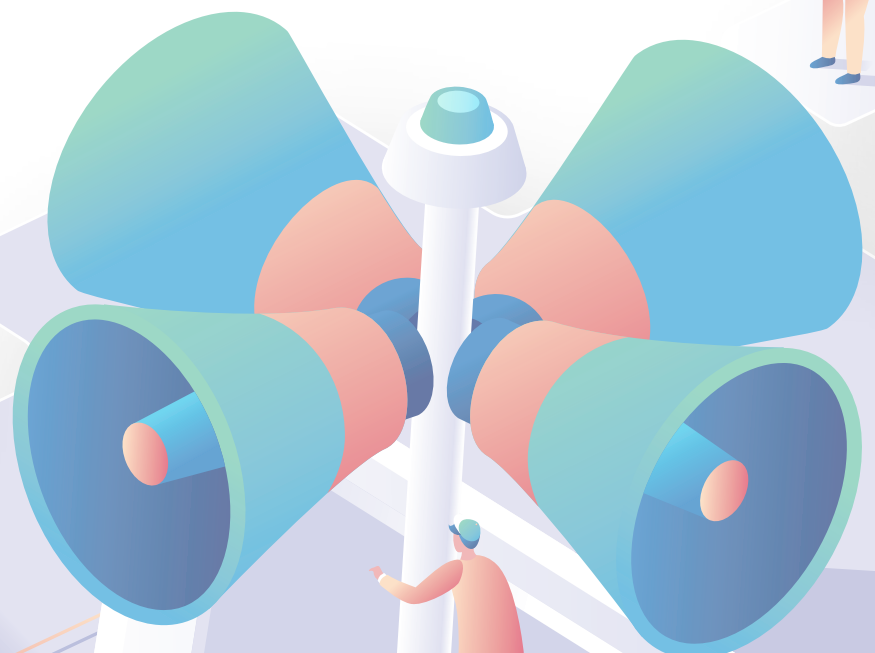
2019-20

ANNUAL REPORT 年報





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Vision

Our vision is that Hong Kong has the world-class communications services to meet the challenges of the information age.



Mission



- *fostering an environment that supports a vibrant communications sector to enhance Hong Kong's position as a communications hub in the region;*
- *encouraging innovation and investment in the communications market;*
- *promoting competition and adoption of best practices in the communications market for the benefit of the industry and consumers; and*
- *acting in a manner consistent with the provisions of the Hong Kong Bill of Rights Ordinance (Cap. 383).*

Chairman's Message





It is a great pleasure for me to present this report of the Communications Authority (the Authority), which provides a detailed account of the tasks undertaken by the Authority for the year ending 31 March 2020 and the challenges ahead.

A Vibrant Broadcasting Market

Hong Kong continues to possess a vibrant broadcasting sector, with 12 free-to-air digital television channels and 13 radio channels provided by various commercial broadcasters and the public service broadcaster, Radio Television Hong Kong (RTHK), as well as over 800 local and non-local television channels in various languages available through free-to-air terrestrial and satellite reception or pay television services. Hong Kong is also an ideal place for uplinking satellite television services to the Asia Pacific region, with 11 non-domestic television programme service (non-domestic TV) licensees¹ providing over 180 satellite television channels for audience in the Asia Pacific region.

¹ There were 12 non-domestic TV licensees in Hong Kong as at 31 March 2020. In October 2020, the Authority accepted the application by one of the non-domestic TV licensees for termination of its licence with effect from 26 August 2020.

With the coverage of digital terrestrial television (DTT) by domestic free television programme service (free TV) licensees reaching at least 99% of the population, analogue TV services were switched off on 30 November 2020. Hong Kong entered an era of full digital TV broadcasting from 1 December 2020.

Rapid Growth of the Telecommunications Market

Hong Kong faced social and economic challenges during the year under review. Yet, Hong Kong's telecommunications market continued to flourish. By March 2020, the number of mobile subscriptions reached 23.2 million, including around 23 million subscriptions of the third generation (3G) and fourth generation (4G) mobile services. Mobile network operators (MNOs) and mobile virtual network operators (MVNOs) were offering 4G services at affordable prices. Mobile data services were available at downlink speeds of up to 1 100 megabits per second (Mbps) using Long Term Evolution technology. In March 2020, the monthly mobile data usage further surged to 75 664 Terabytes, representing 1.4 times and 1.9 times of the monthly usage over the same period in 2019 and 2018 respectively. The mobile data usage per capita rose to 10 088 Megabytes in March 2020, compared with 7 335 Megabytes in March 2019 and 5 444 Megabytes in March 2018. We expect that the commercial launch of the fifth generation (5G) mobile services from April 2020 onwards will further boost mobile data usage with the new range of innovative services and applications empowered by 5G. The Authority will continue to introduce necessary measures to facilitate the robust development of the mobile services market.

Major Tasks and Challenges in the Coming Year

The broadcasting industry faces significant challenges from competition brought about by Internet-based media services. We will continue to refine and update our regulatory framework for broadcasting licensees from time to time, with a view to striking a balance between providing a conducive business environment and protecting the interests of the audience, as well as to keeping pace with the advancement of infotainment industry.

Over the next two years, the free TV licences and sound broadcasting licences will be due for mid-term reviews. The Authority will assist in the review process, and formulate recommendations to the Chief Executive in Council (CE in C) with regard to licence conditions and service requirements for the remaining period of validity of the licences.

On the telecommunications front, the commercial launch of 5G services from 1 April 2020 has taken the Hong Kong telecommunications market to a new era, opening up tremendous new business opportunities to the industry and bringing to the general public new possibilities of innovative telecommunications services and applications including Internet of Things (IoT) technologies. The Authority is continuing its work to identify spectrum in different frequency bands, including the 600 MHz, 700 MHz and 4.9 GHz bands, and to work on arrangements for assignment of the spectrum bands concerned to facilitate the provision of 5G and other innovative services. Furthermore, with the existing assignments of the spectrum in the 850 MHz and 2.5/2.6 GHz bands

expiring in November 2023 and March 2024 respectively, the Authority has kick started the spectrum re-assignment work by conducting public consultations jointly with the Secretary for Commerce and Economic Development (SCED). Looking ahead, we will continue to review our telecommunications regulatory framework from time to time to ensure that it dovetails with the advancement of telecommunications technologies and market development.

Following the outcome of a consultancy study commissioned by Office of the Communications Authority (OFCA), existing satellite master antenna television (SMATV) systems in buildings for receiving and distributing satellite TV signals to occupants would need to be upgraded in order to co-exist with 5G systems operating in the adjacent 3.5 GHz band starting from 1 April 2020. The Authority is mindful of the cost required

for upgrading the SMATV systems and has implemented a subsidy scheme for supporting the SMATV owners to upgrade their existing SMATV systems. With funding provided by the four 5G MNOs using the 3.5 GHz band, OFCA has launched the subsidy scheme that would run for 12 months starting from November 2019.

The work that lies ahead will be as diverse and challenging as that in 2019/20, especially in the continuous facilitation of 5G development in Hong Kong. The Authority will do its utmost to foster an appropriate environment to support the communications sector. I would like to take this opportunity to express my gratitude to members of the Authority for their commitment and invaluable contribution throughout the year. I would also like to thank colleagues of OFCA for their strenuous efforts in supporting the work of the Authority with their dedication and professionalism.



Members of the Communications Authority

(April 2019 – March 2020)



CHAIRMAN

Ms Winnie TAM Wan-chi, SBS, SC, JP

Communications Authority



VICE-CHAIRMAN

Mr Clement LEUNG Cheuk-man, JP

Permanent Secretary for Commerce and Economic Development
(Communications and Creative Industries)

MEMBERS



Mr Hubert NG Ching-wah



**Dr Anthony William
SEETO Yiu-wai, MH**



Mr Stephen HUNG Wan-shun



**Mrs Yvonne LAW
SHING Mo-han, BBS, JP**



**Mr Benjamin TANG
Kwok-bun, GBS**



Prof Karen CHAN Ka-yin, JP



Prof Ray YEP Kin-man



**Prof Vincent LAU
Kin-nang**



**Mr Simon WONG
Kwong-yeung, MH**



Miss Agnes WONG Tin-yu, JP
Director-General of Communications
(until 13 May 2019)



Mr Chaucer LEUNG Chung-yin, JP
Director-General of Communications
(from 8 July 2019 onwards)

Role and Functions of the Communications Authority



The Communications Authority

To meet the regulatory challenges brought about by rapid technological advancements and media convergence, the Authority was established on 1 April 2012 under the Communications Authority Ordinance (Cap. 616) (CAO) as an independent statutory body and took over fully the functions and powers of the former Telecommunications Authority and Broadcasting Authority. Its role is to regulate the broadcasting and telecommunications industries in Hong Kong in accordance with the CAO, the Broadcasting Ordinance (Cap. 562) (BO), the Telecommunications Ordinance (Cap. 106) (TO), and the Broadcasting (Miscellaneous Provisions) Ordinance (Cap. 391) (B(MP)O). It shares concurrent jurisdiction respectively with the Customs and Excise Department (C&ED) in enforcing the fair trading sections of the Trade Descriptions Ordinance (Cap. 362) (TDO), and with the Competition Commission (Commission) in enforcing the Competition Ordinance (Cap. 619) (CO) in the telecommunications and broadcasting sectors. It also has a role to regulate the sending of commercial electronic messages (CEMs) in accordance with the Unsolicited Electronic Messages Ordinance (Cap. 593) (UEMO).

The Authority performs the following functions:

- (a) Advisory function to SCED and the CE in C
 - tendering advice to SCED on any legislation, legislative proposals and regulatory policies relating to telecommunications, broadcasting, anti-spamming or activities connected with the telecommunications or broadcasting sectors;
- making recommendations to the CE in C on applications for and renewal of free TV licences, domestic pay television programme service (pay TV) licences and sound broadcasting licences;
- (b) Unified Regulator of the Communications Sector
 - granting and renewing non-domestic TV licences and other licensable television programme service (other licensable TV) licences;
 - preparing and revising codes of practice setting programme, advertising and technical standards for television and radio;
 - dealing with complaints about broadcasting issues and imposing sanctions on the broadcasting operators for contravening the various provisions and requirements;
 - handling the licensing, financial monitoring and regulation of broadcasting licensees in Hong Kong;
 - granting and renewing telecommunications licences;
 - managing and administering the radio frequency spectrum and the telecommunications numbers;
 - developing technical standards and conducting equipment testing in line with international best practices, and ensuring satisfactory performance of the certification bodies in carrying out certification and testing against the prescribed technical standards;

- facilitating fixed network operators to access buildings to install in-building telecommunications facilities for the conveyance of telecommunications and broadcasting services;
- dealing with complaints about telecommunications services and imposing sanctions on telecommunications operators for contravening the various provisions and requirements;
- handling the licensing, financial monitoring and regulation of telecommunications licensees in Hong Kong;

(c) Competition Authority of the Communications Sector

- enforcing the CO in respect of the conduct of undertakings operating in the telecommunications and broadcasting sectors;

(d) Unfair Trade Practices in the Communications Sector

- enforcing the fair trading sections of the TDO in relation to the commercial practices of licensees for the provision of telecommunications or broadcasting services under the TO or BO; and

(e) UEMO

- enforcing the UEMO on the sending of CEMs.

Organisation

Members of the Authority (except the Director-General of Communications (DG Com) who is an ex-officio member) are appointed by the Chief Executive of the Hong Kong Special Administrative Region. During the period from April 2019 to March 2020, there were a total of 12 members (comprising 10 non-official members, including the Chairman, and two public officers, viz. the Permanent Secretary for Commerce and Economic Development (Communications and Creative Industries) and DG Com).

The Authority has appointed three committees to assist it in discharging part of its major duties:

- the *Broadcast Complaints Committee*;
- the *Broadcast Codes of Practice Committee*; and
- the *Telecommunications Affairs Committee*.

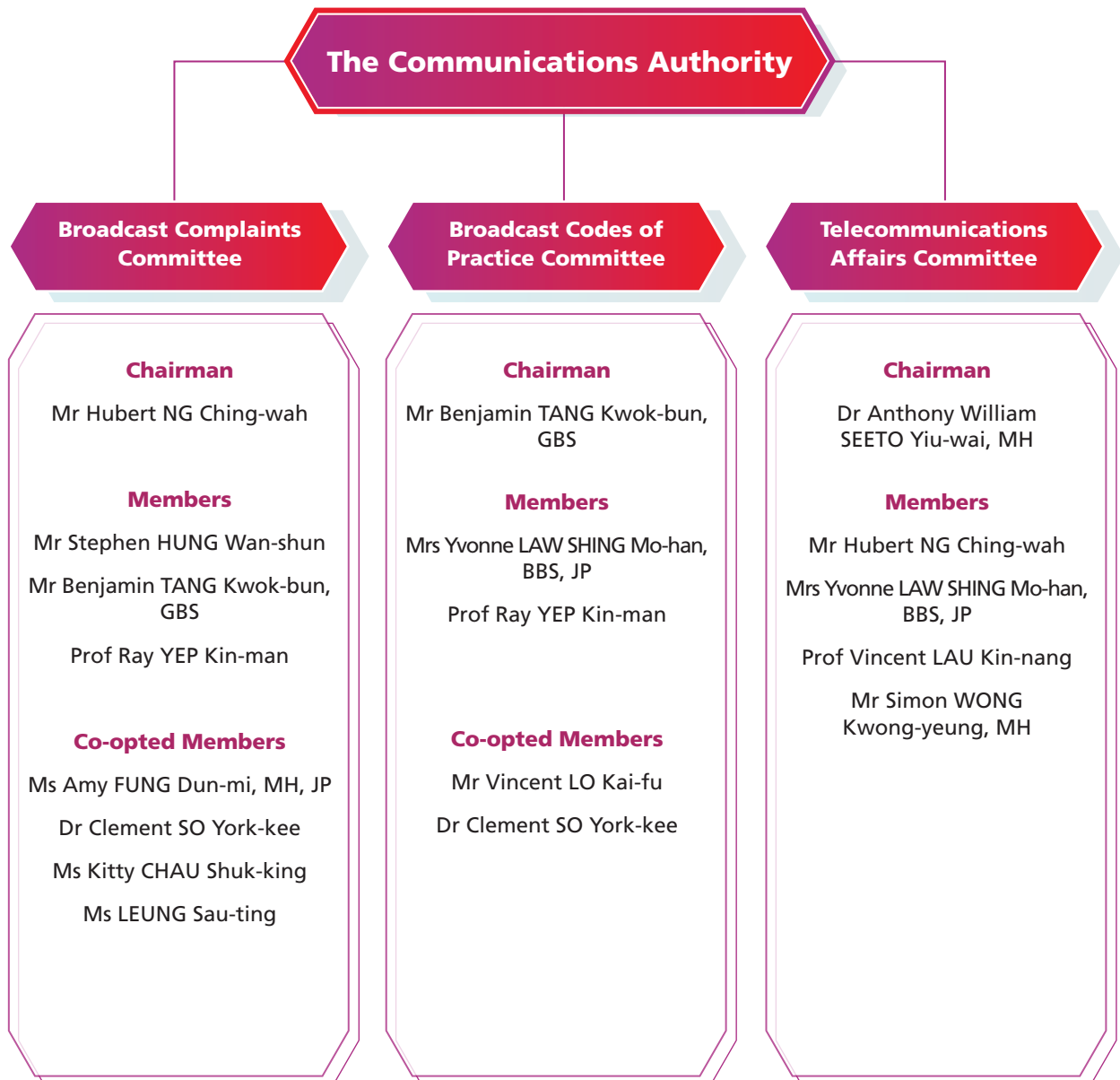
The ***Broadcast Complaints Committee*** is responsible for considering complaints about broadcasting issues and making recommendations to the Authority regarding such complaints. During the period from April 2019 to March 2020, it comprised four Authority members and four co-opted non-official members.

The ***Broadcast Codes of Practice Committee*** is responsible for keeping the television and radio broadcasting standards under regular review and amending the codes of practice when necessary. During the period from April 2019 to March 2020, it comprised three Authority members and two co-opted members.

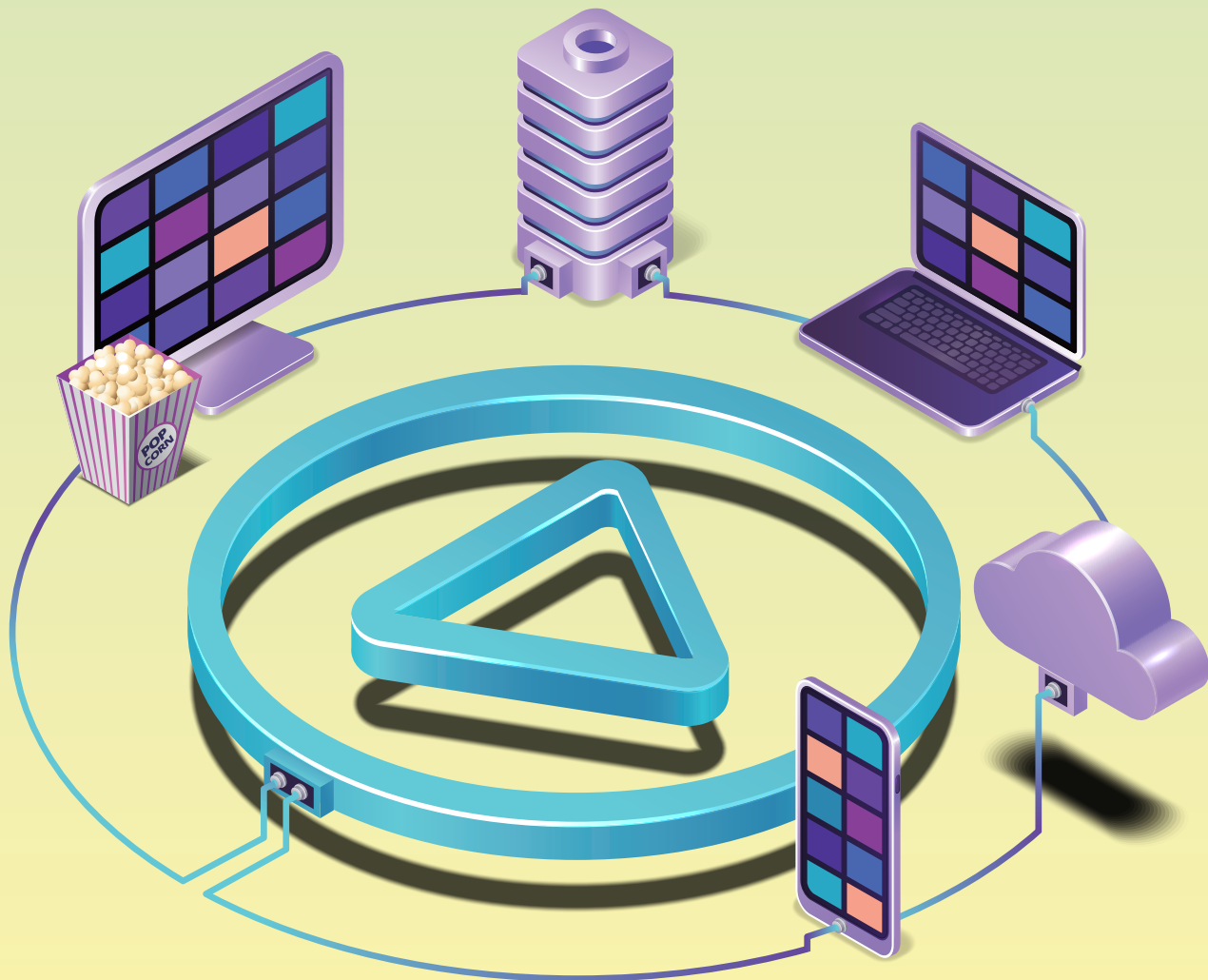
The **Telecommunications Affairs Committee** is responsible for offering advice and reporting to the Authority on telecommunications matters. During the period from April 2019 to March 2020, it comprised five Authority members.

The **Office of the Communications Authority** serves as the executive arm and secretariat of the Authority.

Organisation Chart



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 2020, the total number of free TV, pay TV and non-domestic TV licensees was 17. They provided 566 television channels² of which 421 were receivable in Hong Kong. An overview of the channels provided by the television programme service licensees is shown in **Figure 1**.

As at March 2020, there were three **free TV licensees**, viz. Fantastic Television Limited (Fantastic TV), HK Television Entertainment Company Limited (HKTVE) and Television Broadcasts Limited (TVB). They provided a total of 12 channels, comprising nine digital channels all broadcast in high definition television (HDTV) format and three analogue channels. The above channels included three channels which were broadcast in both digital and analogue formats, viz. “Jade” and “Pearl” (by TVB) as well as “Hong Kong Open TV”

(by Fantastic TV). The remaining six digital channels were “ViuTV” and “ViuTVsix” (by HKTVE); “J2”, “TVB News Channel” and “TVB Finance & Information Channel” (by TVB) and “Hong Kong International Business Channel” (by Fantastic TV). RTHK, as the public service broadcaster in Hong Kong, provided three digital channels with two of them also simulcast in analogue format.

As at March 2020, there were two **pay TV licensees**, viz. Hong Kong Cable Television Limited (HKCTV) and PCCW Media Limited (PCCW Media), providing a total of 366 pay television channels and offering a diverse range of local and non-local productions. Among those channels, over 120 were HDTV channels.

As at March 2020, there were 12 **non-domestic TV licensees** providing a total of 188 television channels³. Hong Kong viewers could receive 43 of those television channels.

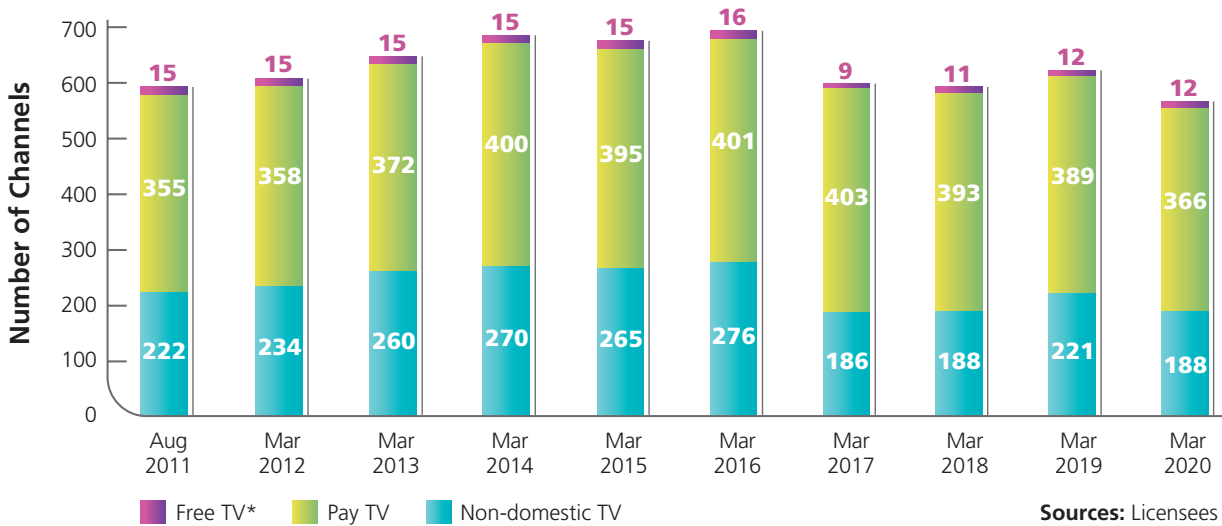
During the period under review, there were 21 **other licensable TV licensees** providing television programme services in hotels in Hong Kong. Together they provided services to about 70 hotels in Hong Kong.



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

³ In October 2020, the Authority accepted the application by one of the non-domestic TV licensees for termination of its licence with effect from 26 August 2020. The number of non-domestic TV licensees was reduced to 11.

Figure 1: Television Channels Provided by Television Programme Service Licensees in Hong Kong (as at 31 March 2020)



*The simulcast channels of Asia Television Limited (2011-2016), TVB (2011-2020) and Fantastic TV (2018-2020) are counted for both the analogue and digital platforms.

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 2020, there were more than 400 free-to-air satellite television channels available for reception via the 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 2020, 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 framework for television programme services in Hong Kong as enshrined in the BO is technology-neutral⁴. Licensees are free to choose their transmission arrangements for delivery of television services. Broadcasters may 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 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**.

⁴ An exception is that a service provided on the Internet is exempted from the regulatory framework under the BO.

Figure 2: Transmission Modes Employed by Television Programme Service Licensees

Licensee	Transmission Mode	Network Coverage (as at March 2020)
Free TV		
TVB	Terrestrial UHF ⁵ , 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	HFC ⁶ and MMDS ⁷	Around 93% of total households
Pay TV		
HKCTV	HFC, MMDS and satellite (Digital)	Around 95% of total households
PCCW Media	PON and DSL ⁸ Broadband network (Digital)	Around 97% of total households
Non-domestic TV		
11 licensees	Satellite (Digital)	32% of total households
1 licensee	IPLC ⁹ and Satellite (Digital)	(859 521 households) ¹⁰

Penetration of Different Broadcasting Services

The penetration rate of free TV services stood at about 96% of the total households as at end of March 2020¹¹. As regards DTT services, the take-up rate was about 93% of all the households in March 2020¹².

The penetration of licensed pay TV services was about 81%¹³ of the total households as at end of March 2020. The total number of subscribers to licensed pay TV services stood at about 2.1 million in March 2020¹⁴. The changes in total number of subscribers from 2011 to 2020 are shown in **Figure 3**.

⁵ Terrestrial Ultra High Frequency

⁶ Hybrid Fibre Coaxial Cable

⁷ Microwave Multipoint Distribution System

⁸ Passive Optical Network and Digital Subscriber Line

⁹ International Private Lease Circuit

¹⁰ 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.

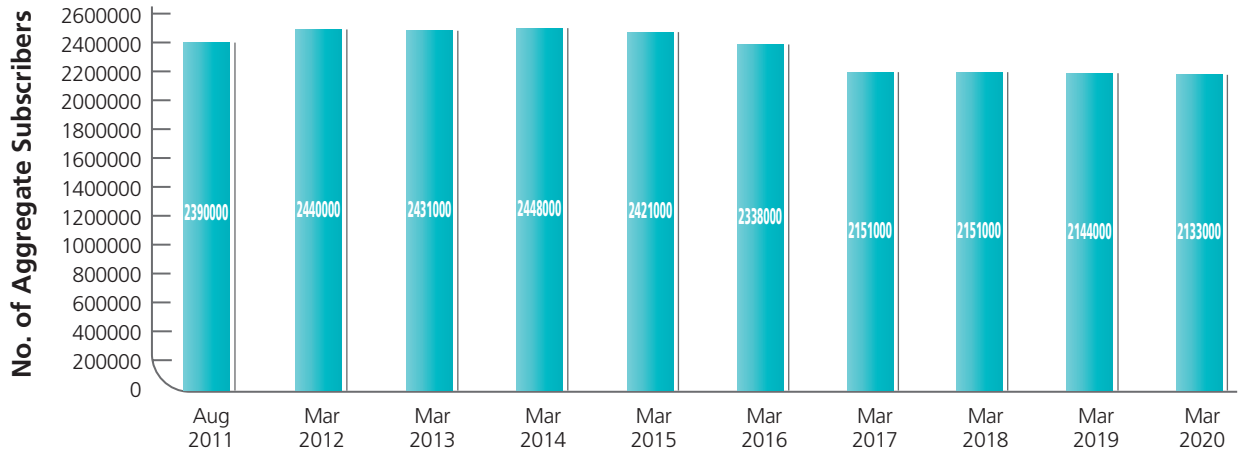
¹¹ Source: HKTAM Establishment Survey, CSM Media Research

¹² According to a public survey conducted from September to November 2019, about 92% of the households in Hong Kong were receiving DTT services. A follow-up survey was conducted between February and March 2020.

¹³ 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.

¹⁴ Some subscribers were counted more than once if they subscribed to more than one service.

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



Sources: Licensees

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, 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. The services practically covered the whole area of Hong Kong.



¹⁵ Source : Company reports of major broadcasting licensees providing television programme services in Hong Kong

5.1.3 Broadcasting Revenues and Investment

Licensed broadcasting services contributed an estimated \$7.35 billion¹⁵ to the Hong Kong economy, which represented about 0.3% of the gross domestic product in 2019. 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 sales¹⁶. Pay TV licensees, on the other hand, derive their incomes mainly from subscription fees with advertising sales a secondary income source.

¹⁶ These include sales of advertising spots within programme breaks, programme sponsorship and product placement.

Advertising Revenue

According to the report of admanGo, the advertising expenditures on television and radio accounted for 30% (about \$8 billion) and 4% (about \$1 billion) respectively of the accumulated \$26 billion advertising expenditures in the media in 2019¹⁷.

In 2019, the actual advertising revenues of HKTVE and TVB were around \$259 million and \$1.91 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 “nowTV” brand was \$2.69 billion in 2019.

The subscription revenue of HKCTV is not publicly available.

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.



¹⁷ Source: Adspend Report for 2019 of admanGo. All the advertising expenditures presented in the report have taken into consideration the discount factor based on an assumption of an off rate card rate. It is stated in the Adspend Report for 2019 that to accommodate the rate card for digital media, the off rate card rate has been revised from the previous 60% to the current 75%.

Fantastic TV, HKTVE and TVB have respectively 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 for the provision of free TV services. Investment commitments of Fantastic TV, HKTVE and TVB comprise capital expenditures and programming expenditures. As at March 2020, Fantastic TV, HKTVE and TVB provided 336, 282 and 817 hours of HDTV programmes per week respectively. Fantastic TV and TVB also provided 75 and 1 090 hours of independent local productions in their programming respectively in 2019.

As regards the pay TV market, i-CABLE Communications Limited, the parent company of HKCTV, reported in its 2019 Annual Report that the capital expenditure of the group decreased from \$179 million in 2018 to \$133 million in 2019. Its major items of investment included property, plant and equipment. According to the 2019 Annual Report of PCCW, the parent company of PCCW Media, the capital expenditure on its media business decreased from \$360 million in 2018 to \$213 million in 2019. The decrease was mainly due to completion of the relocation and upgrading of production studio facilities in 2018.

CRHK and Metro have committed to investing a total of \$909 million¹⁸ and \$685 million respectively for the six-year period from 2016 to 2022 for the provision of sound broadcasting services. The investment commitments of CRHK and Metro cover programming improvement and upgrading of infrastructure and facilities and other developments brought by technological advancement to further enhance their service quality.

¹⁸ In October 2020, the Authority approved CRHK's updated investment commitment of \$703 million, adjusted from the original \$909 million.



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 2020, the licensees broadcast about 62 326 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 nine digital channels of Fantastic TV, HKTVE and TVB provided a total of 1 465 broadcast hours per week, while the 366 channels of the two pay TV licensees provided a total of 53 134 broadcast hours per week. As a public service broadcaster, RTHK provided 336 hours on its two analogue channels and 504 hours on its three digital channels per week. As at March 2020, the 43 channels of non-domestic TV licensees receivable in Hong Kong provided a total of 7 224 broadcast hours per week.

The weekly number of broadcast hours for CRHK, Metro and RTHK as at March 2020 was 2 184.

For the period under review, there were a total of 45 149 hours of station productions broadcast on Fantastic TV, HKTVE and TVB, of which 11 568 hours were on three analogue channels and 33 581 hours on nine digital channels. Of the 366 channels provided by pay TV licensees, 76 channels (20.8%) were produced by the licensees themselves.

Free TV Services

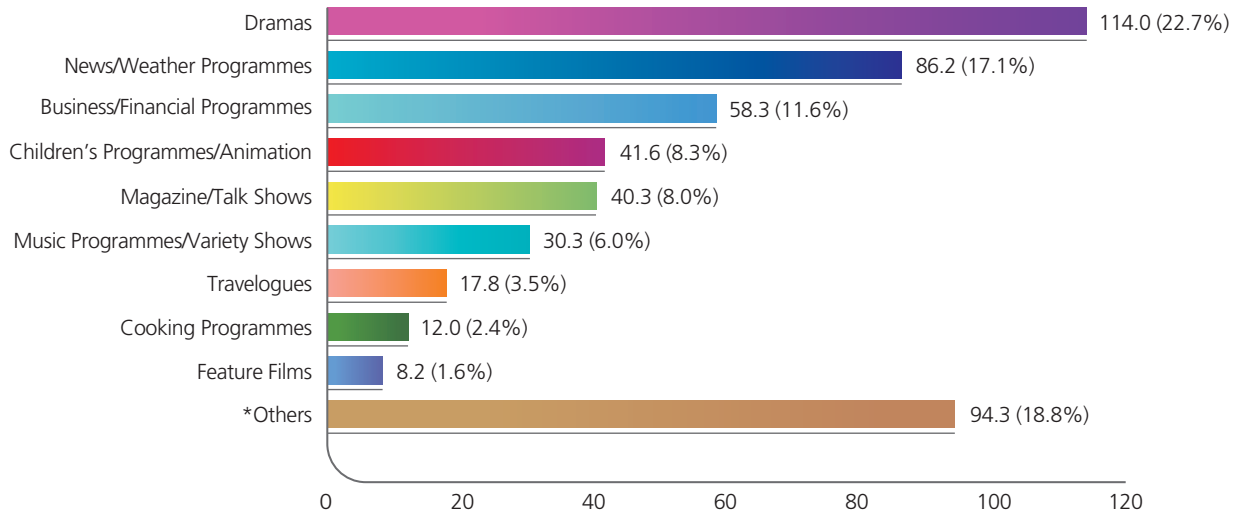
Chinese and English Channels

During the period under review, drama series, news/weather programmes and business/

financial programmes were the dominating programme genres during prime time on the Chinese channels (viz. "Hong Kong Open TV", "Jade" and "ViuTV"). Drama series on "Jade" were mostly in-house productions; while "Hong Kong Open TV", "Jade" and "ViuTV" broadcast Mainland, Korean and Japanese drama series. In addition, magazine/talk shows, music programmes/variety shows, travelogues 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 Programmes Broadcast on Hong Kong Open TV, Jade and ViuTV (as at March 2020)



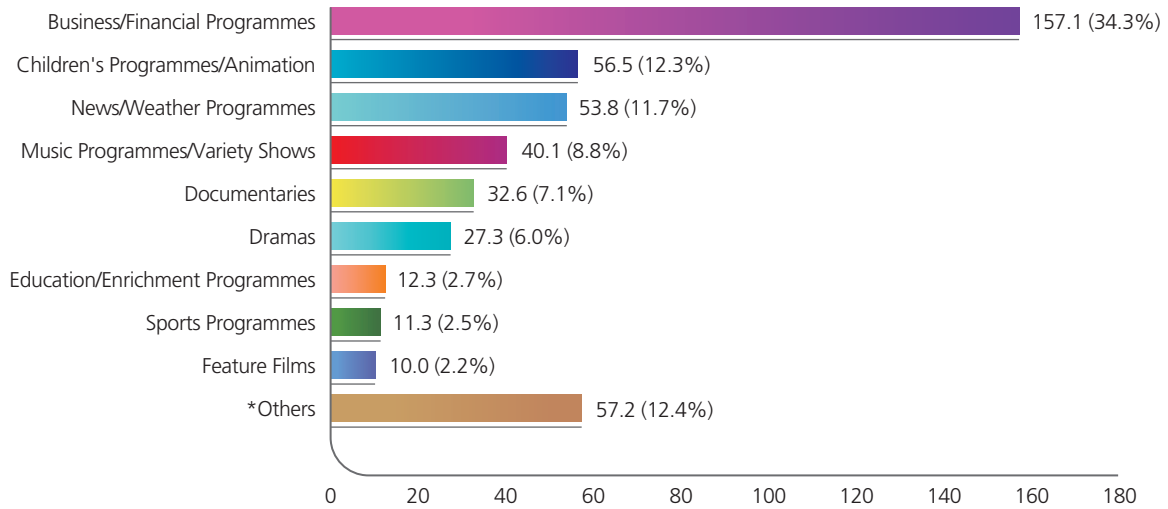
*Other programmes include current affairs programmes, sports programmes and health/medical programmes etc.

Weekly Total: 503 Hours
Sources: Licensees



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

Figure 5: Weekly Hours of Different Types of Programmes Broadcast on Hong Kong International Business Channel, Pearl and ViuTVsix (as at March 2020)



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

Weekly Total: 458.2 Hours
Sources: Licensees

Thematic Channels

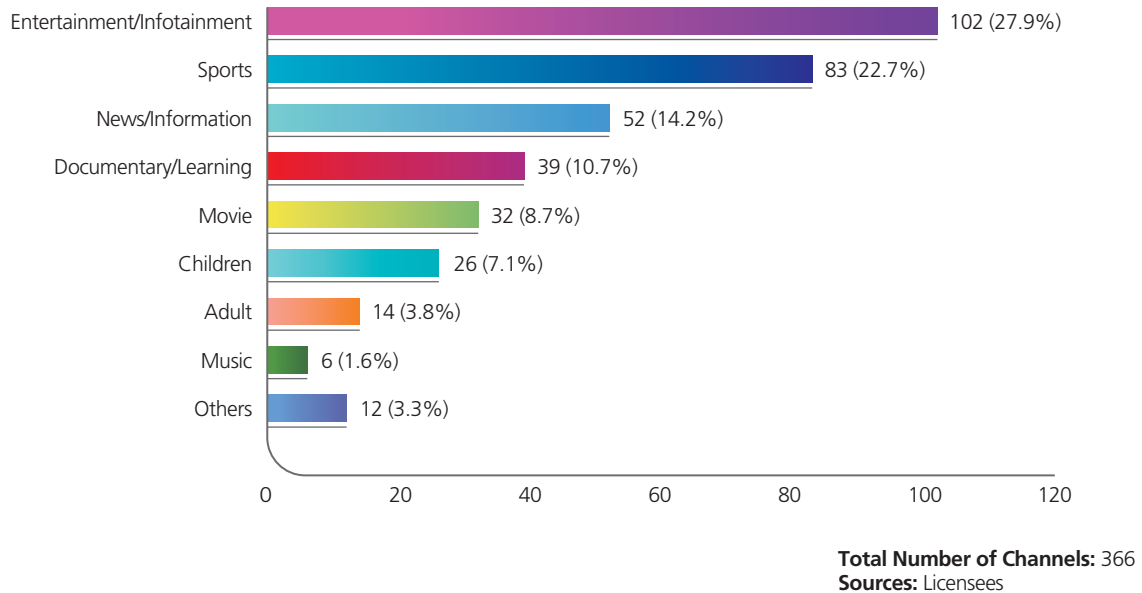
During the period under review, TVB provided acquired dramas, documentaries, variety shows, news, finance information programmes, etc. on “J2”, “TVB News Channel” and “TVB Finance & Information Channel”.



Pay TV Services

During the period under review, a wide variety of channels were offered on pay TV services, including entertainment/infotainment channels (27.9%), sports channels (22.7%), news/information channels (14.2%), documentary/learning channels (10.7%), and movie channels (8.7%).

As at March 2020, HKCTV offered 133 channels (including 45 HDTV channels). PCCW Media’s “nowTV” service offered 169 channels (including 83 HDTV channels) and 64 video-on-demand services.

Figure 6: Nature of Pay TV Channels (as at March 2020)

Sound Broadcasting

As at March 2020, 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***Free TV Services**

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.

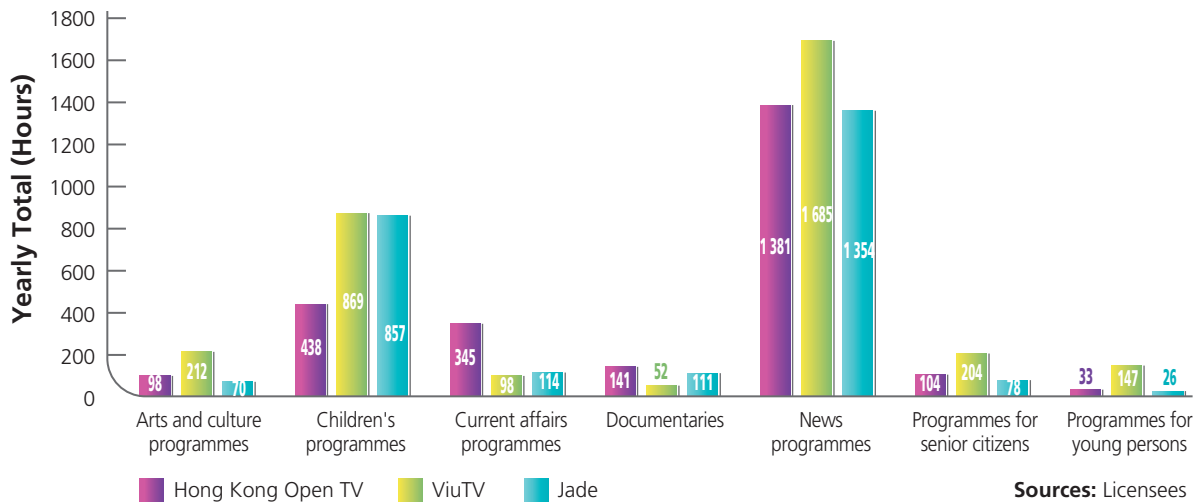


¹⁹ The positive programmes that Fantastic TV, HKTVE and TVB were required to broadcast comprised news, current affairs programmes, documentaries, arts and culture programmes, children's programmes and programmes for senior citizens and young persons

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"), while HKTVE was required to broadcast at least 41.5 hours of positive programmes per week.

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 2020)



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 channels²¹. 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. On the whole, Fantastic TV, HKTVE and TVB complied with the requirements on provision of subtitles.

To meet public demand for easier access to information by persons with hearing impairment, the Authority issued a direction requiring TVB²² to provide sign language interpretation, in addition to subtitles, for a Cantonese news programme broadcast on its "Pearl" channel each day with effect from July 2018. TVB met the requirement.

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

²² In the context of the licence renewal exercise of TVB in 2015, the Authority took note of the increasing demand from persons with hearing impairment for sign language interpretation for news programmes and agreed to facilitate the provision of sign language interpretation for news programmes as a new initiative. The CE in C accepted the Authority's recommendation and included an enabling provision in TVB's renewed licence to require it to provide sign language for its free TV service as directed by the Authority.

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 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 channels²³. During the period under review, Fantastic TV, HKTVE and TVB broadcast a total of 1 304 hours of the two types of materials²⁴.



Sound Broadcasting

As regards sound broadcasting services, licensees were required to broadcast at least 28.5 hours of positive programmes²⁵ per week. CRHK and Metro complied with the licence conditions on broadcast of positive programmes.

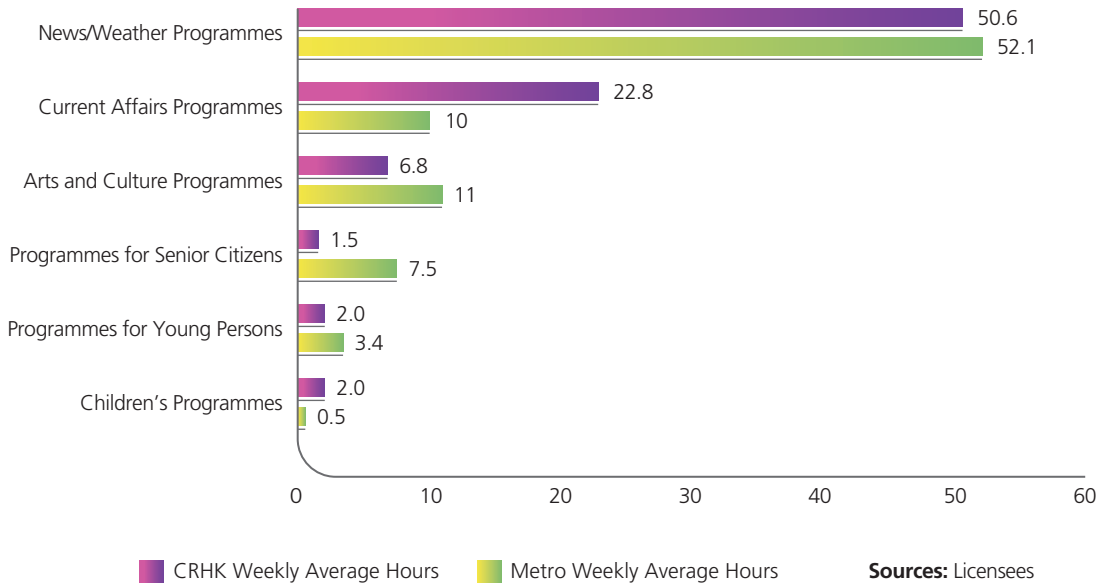
All sound broadcasting licensees were required to broadcast one minute of APIs in each hour and not more than five minutes of publicity material for the Authority each week on each service channel. All licensees complied with the requirements.

²³ TVB was required to broadcast two minutes of publicity material for the Authority per week on its thematic digital channels.

²⁴ If a free TV channel was simulcast in both analogue and digital formats, the total number of hours of APIs and publicity material for the Authority was calculated only by reference to the materials broadcast in digital format.

²⁵ The positive programmes that CRHK and Metro were required to broadcast comprised news and weather programmes, current affairs programmes, arts and culture programmes and advisory programmes, viz. programmes for young persons, senior citizens and children.

Figure 8: Broadcast of Positive Programmes on Sound Broadcasting Services (as at March 2020)



5.1.5 Hong Kong as a Regional Broadcasting Hub

Hong Kong is a broadcasting hub in the Asia-Pacific region. As at March 2020, there were 12 non-domestic TV licensees operating in and broadcasting from Hong Kong. Altogether, they offered a total of 188 satellite television channels with 43 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 2020 is at [Annex 1](#).



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 2019, the telecommunications sector employed around 20 000 persons whilst its gross output amounted to \$96 billion in 2018.

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 facilities and 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.

As at March 2020, there were a total of 62 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 61 UCL holders, while the remaining one was a holder of Mobile Carrier Licence (MCL), whose licence was issued before the introduction of the UCL.

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 2020, there were a total of eight 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, 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 2020, there were a total of 490 SBO licensees.

Class Licences

The class licensing framework does not require any licence applications. Parties meeting the specified eligibility criteria and conditions 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 has been keen. As at March 2020, four major MNOs, namely, China Mobile Hong Kong Company Limited, Hong Kong Telecommunications (HKT) Limited, Hutchison Telephone Company Limited and SmarTone Mobile Communications Limited, were providing a wide range of public mobile services.

The four major MNOs provide 2G, 3G and 4G services and more recently also 5G services in Hong Kong at very affordable prices. As at March 2020, there were about 23.2 million subscriptions to mobile communications services. The mobile subscriber penetration rate²⁶ reached 275.9%, one of the highest in the world. The number of 3G/4G subscriptions totalled 23 million in March 2020 and the subscriber penetration rate was 272.9%. Mobile data services were available at downlink speeds of up to 1.1 gigabit per second (Gbps). Following the launch of 5G services in April 2020, even higher speed of mobile communications will be supported with download speeds of around 10 to 20 times of 4G services.

With an ever growing demand for mobile data services, the monthly mobile data usage surged to 75 664 Terabytes in March 2020, representing 1.4 times and 1.9 times of the monthly usage over the same period in 2019 and 2018 respectively. The mobile data usage per capita reached 10 088 Megabytes in March 2020, compared with 7 335 Megabytes in March 2019 and 5 444 Megabytes in March 2018. The launch of 5G services is expected to further boost mobile data usage in the future.



²⁶ Calculation of the overall mobile subscriber penetration rate and that for subscribers of 3G/4G services does not include machine type connections.

Figure 9: Number of Mobile Subscriptions (2010 to 2019)

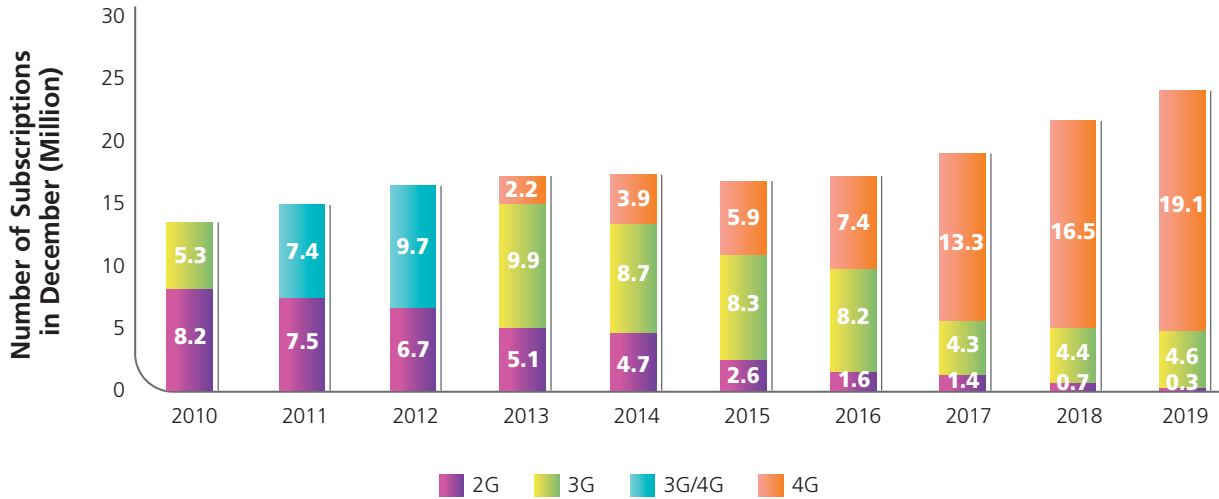


Figure 10: Mobile Subscriptions of Postpaid and Prepaid SIM (2010 to 2019)

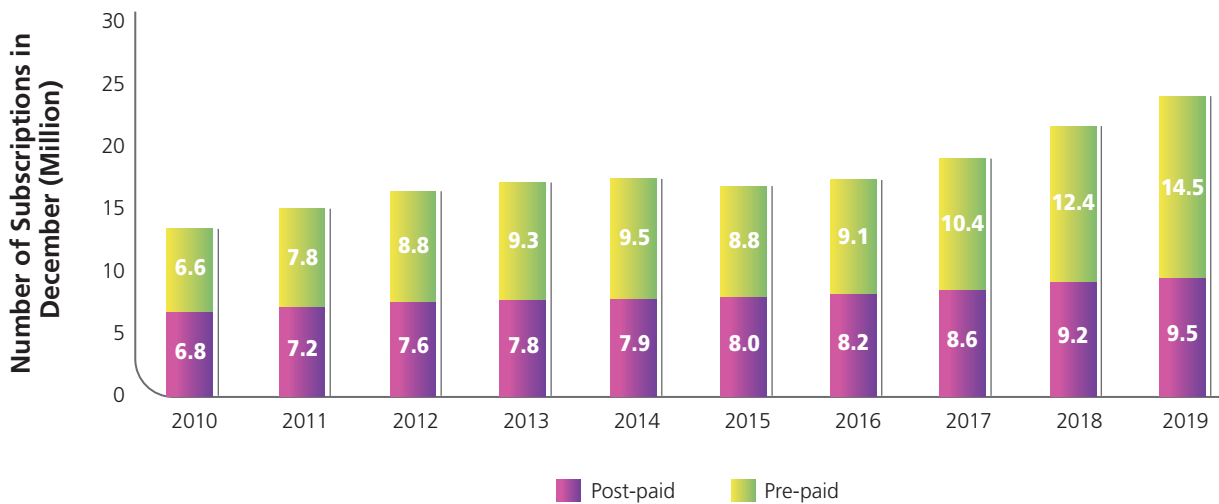
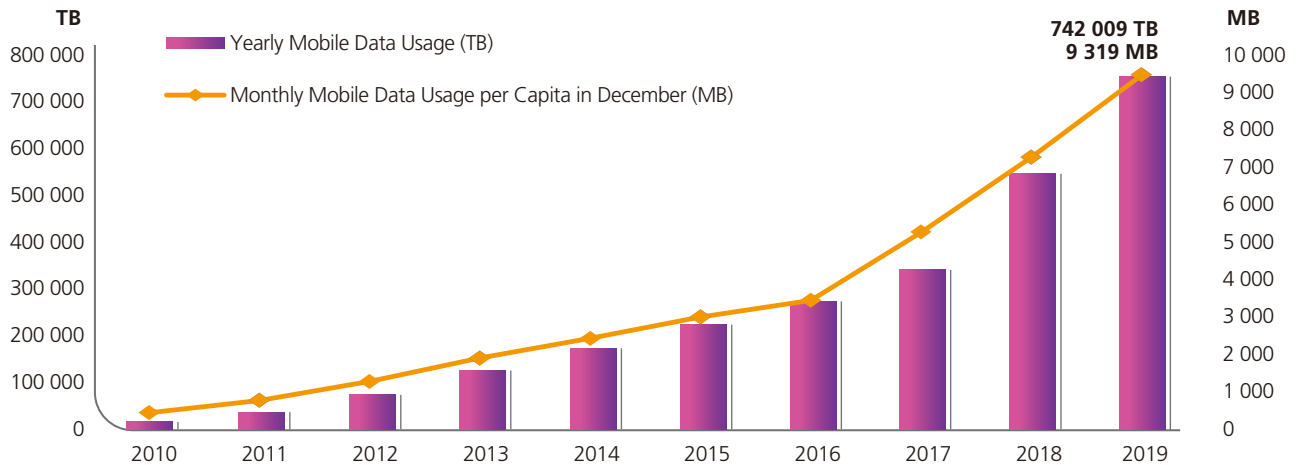


Figure 11: Mobile Data Usage (2010 to 2019)

Fixed Communications Services

The local fixed communications services market is 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 2020, there were 27 local fixed carriers, providing around 85 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 Mobile International 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 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
- 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 Hong Kong Limited

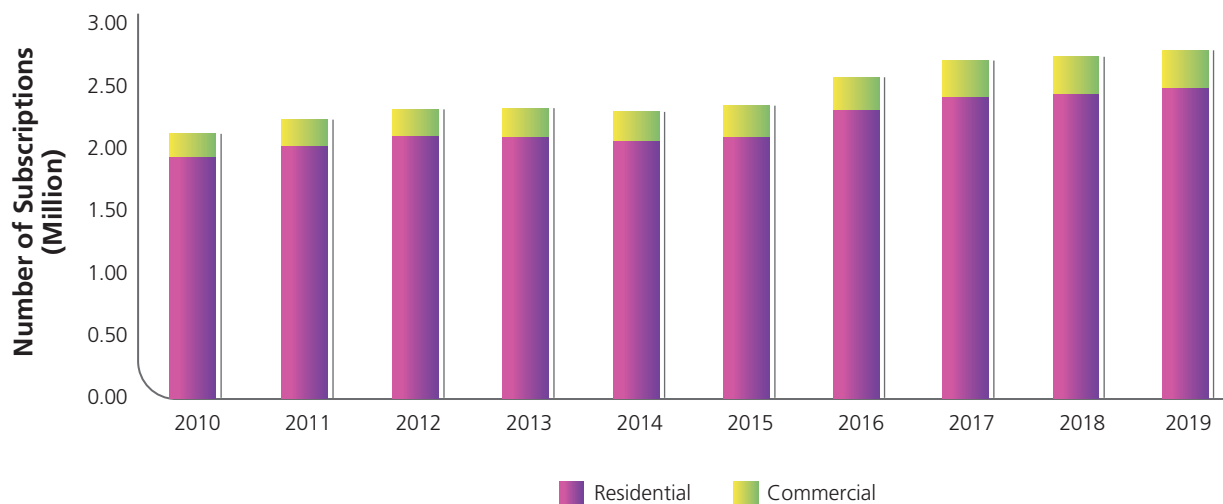
As at March 2020, 90.7% and 79.9% of households were able to enjoy a choice of at least two and three self-built customer access networks respectively. It is expected that the figures will keep growing as the carriers continue to roll out their networks.

Fixed Broadband Services

As at March 2020, 27 facility-based operators and 226 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 2020, there were around 2.8 million residential and commercial fixed broadband subscriptions, with a household penetration rate of 94%. Broadband services are available at speeds up to 10 Gbps. Around 82% of the fixed broadband subscriptions are supported by broadband services with speeds of 100 Mbps or above. The statistics of fixed broadband subscriptions as at March 2020 and the statistics for the past 10 years are shown in **Figure 12** and **Figure 13** respectively.

Figure 12: Statistics of Fixed Broadband Subscriptions (as at March 2020)

	No. of subscriptions	% share
Total No. of broadband subscriptions	2 804 790	100%
Broadband speed of 100 Mbps or above	2 301 870	82.1%
Broadband speed below 100 Mbps	502 920	17.9%
Residential	2 492 428	88.9%
Commercial	312 362	11.1%

Figure 13: Fixed Broadband Subscriptions (2010 to 2019)

Internet of Things Services

IoT 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, both Wireless Internet of Things (WIoT) licensees and MNOs are authorised to provide WIoT services. Since the creation of the WIoT licence in December 2017, three WIoT licences have been issued. With the development of new wireless technologies such as the 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 WiFi Services

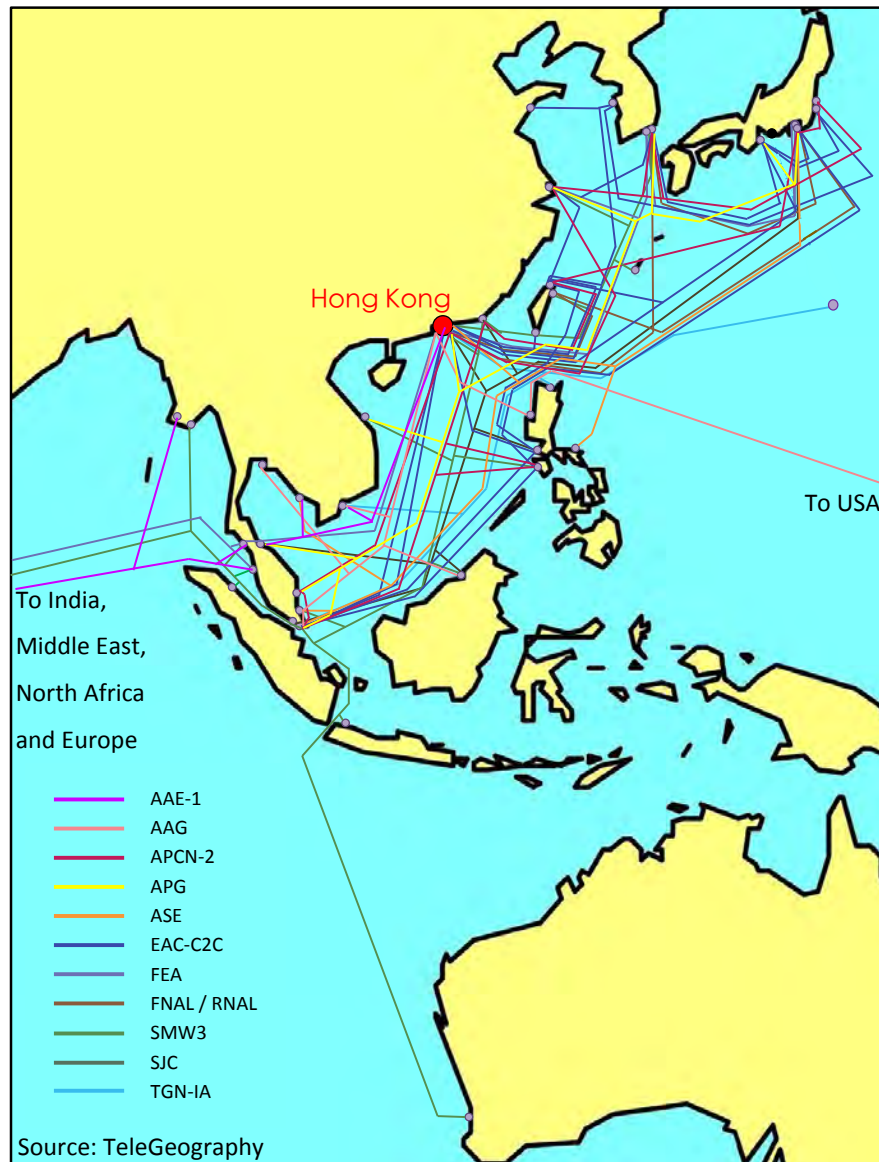
Operators have been actively rolling out WiFi networks. Eight network operators and 183 class licensees are providing public WiFi services in various locations of the territory. As at March 2020, there were 62 105 public WiFi hotspots in the city and the number continued to grow. Free WiFi services were available to the public in 736 government premises.

External Telecommunications Services

The external telecommunications facilities market is fully liberalised. As at March 2020, 42 fixed carriers were authorised to provide cable-based and/or non-cable-based external telecommunications facilities.

As at March 2020, 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 2020, 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 2020, the total equipped external capacity exceeded 110 226 Gbps. Total external telephone traffic was 2 billion minutes for the period from 1 April 2019 to 31 March 2020. Landing of nine additional submarine cable systems is in the pipeline and they are expected to be ready for service between 2020 and 2023.

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 180 transmitting/receiving satellite antennae in earth stations operated by a number of fixed carriers.

Licences are required for the operation of satellites and associated facilities. As at March 2020, two Hong Kong companies were licensed to operate satellites for providing communications services, namely Asia Satellite Telecommunications Company Limited and APT Satellite Company Limited, operating a total of 11 in-orbit satellites.

Review of the Communications Authority's Major Tasks



Broadcasting

6.1 Lifting of the Requirements for Free TV Licensees to Broadcast Educational Television (ETV) Programmes and RTHK Programmes

In 2019/20, the Authority implemented relaxation measures by lifting the requirements for free TV licensees to broadcast ETV programmes and RTHK programmes, thereby easing the compliance burdens on the licensees having regard to the changing circumstances.

In response to a request from TVB in August 2019 to cease the requirement on the broadcast of ETV programmes²⁷, the Authority consulted the relevant policy bureaux (i.e. the Commerce and Economic Development Bureau (CEDB) and the Education Bureau). In light of the growing trend in accessing ETV programmes through the Internet and mobile application, the expected further diminishing of the need/demand for viewing ETV programmes on free TV channels at designated hours on each school day in the future as well as the repositioning of ETV service, the Authority announced its decision in January 2020 to lift the requirement on the broadcast of ETV programmes by free TV licensees after the end of the school year on 6 June 2020. The public could continue to have access to ETV programmes through RTHK's free TV channels and other new media platforms.

In January 2020, the Authority received a request from TVB to lift the requirement on the broadcast of RTHK programmes²⁸. The Authority consulted the relevant policy bureau (i.e. CEDB) and noted that RTHK had no objection. After careful consideration of the relevant factors (including the coverage of RTHK's own DTT channels and the policy objective to provide diversified programme choices to the public, etc.), the Authority announced its decision in March 2020 to revoke the directions issued to free TV licensees on the broadcast of RTHK programmes.

6.2 Non-domestic and Other Licensable TV Licences

During the period under review, the Authority rejected an application for renewal of a non-domestic TV licence by Times International Media Group Limited, and approved two applications for renewal of the following other licensable TV licences for the provision of television programme services in hotel rooms in Hong Kong.

- Hong Kong International Theme Parks Limited
- Golden News Enterprises Limited

The Authority also accepted the termination of an other licensable TV licence by Luxury Hotels International of Hong Kong Limited.

²⁷ According to the BO and the free TV licences, the Authority may direct a licensee to broadcast without charge any ETV programmes supplied by the Government.

²⁸ Pursuant to the relevant licence condition in the free TV licences, the Authority may direct a licensee to broadcast television programmes and other materials in the public interest provided by the Government.

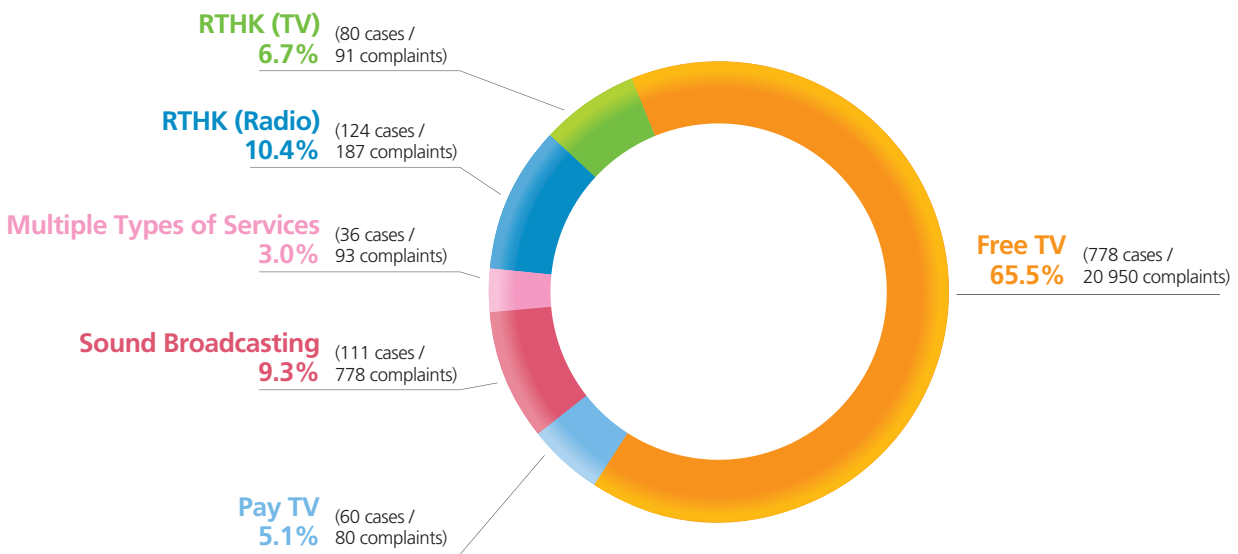
6.3 Processing Complaints Relating to Broadcasting Services

Overview of the Complaints Processed

During the period from April 2019 to March 2020, the Authority processed a total of 1 189 cases (22 179 complaints)²⁹ relating to the materials broadcast by broadcasters, representing a reduction of 21% in the number

of cases but a substantial increase of 480% in the number of complaints processed³⁰, as compared with the figures recorded during the same period in the previous year (1 504 cases, 3 827 complaints). Breakdown of all the complaint cases by broadcasting service and broadcaster processed during the period is shown in **Figure 15** and **Figure 16** respectively.

Figure 15: Distribution of All Complaint Cases by Broadcasting Service Processed in 2019/20



²⁹ To ensure operational efficiency, complaints with similar allegations relating to the same issue or broadcast material are handled together and counted as a single case.

³⁰ The increase in the number of complaints processed in 2019/20 was mainly attributed to three complaint cases concerning recent social events which gave rise to a total of over 17 000 complaints in 2019/20.

Figure 16: Distribution of All Complaint Cases by Broadcaster Processed in 2019/20

Broadcasters Involved	No. of Complaint Cases	No. of Complaints Involved
TVB	711	20 851
HKTVE	43	72
Fantastic TV	19	20
HKCTV	23	42
PCCW Media	37	38
CRHK	99	766
Metro	12	12
RTHK (TV)	80	91
RTHK (Radio)	124	187
Multiple Broadcasters	41	100
Total	1 189	22 179

Among all the complaint cases processed by the Authority, DG Com handled 1 178 cases (2 662 complaints) under the powers delegated by the Authority. These complaints involved breaches of a minor nature, or contained allegations which did not constitute any breach or were outside the remit of section 11(1) of the

B(MP)O (i.e. the allegations concerned matters not regulated under the relevant legislation, licence conditions or codes of practice). The Authority dealt with 11 cases (19 517 complaints). Outcomes of all the complaints processed by the Authority during this period are listed in **Figure 17**.

Figure 17: Outcomes of all the Complaints Dealt With by the Authority and DG Com

	Within Section 11(1) of B(MP)O				Outside Section	Total
	Substantiated		Unsubstantiated		11(1) of	
	The Authority	DG Com	The Authority	DG Com	B(MP)O	
No. of Cases	1	66	10	712	400	1 189
No. of Complaints	1	95	19 516	1 808	759	22 179

Complaints Dealt with by the Authority

Among the 11 complaint cases dealt with by the Authority, 8 concerned free TV services (involving 18 821 complaints, which accounted

for 96.4% of the total number of complaints dealt with by the Authority). A breakdown of these complaint cases by broadcasting service is shown in **Figure 18**.

Figure 18: Breakdown of Complaint Cases Dealt With by the Authority by Broadcasting Service

Types of Broadcasting Service	No. of Complaint Cases	No. of Complaints Involved
Free TV	8	18 821
Sound Broadcasting	1	659
RTHK (Radio)	2	37

Regarding the nature of the broadcast materials involved in the 11 complaint cases dealt with by the Authority, all of them were related to programmes. One of them was substantiated,

concerning the use of language in programme. The Authority issued a strong advice to the broadcaster concerned. A breakdown of the decisions of the Authority on the complaints dealt with in 2019/20 is shown in **Figure 19**.

Figure 19: Decision of the Authority on Complaint Cases in 2019/20

Decision of the Authority	TVB	CRHK	RTHK	Total
No Further Action	8	1	1	10
Advice	0	0	0	0
Strong Advice	0	0	1	1
Warning	0	0	0	0
Serious Warning	0	0	0	0
Financial Penalty	0	0	0	0
Total	8	1	2	11



Telecommunications

6.4 Assignment of Spectrum Available for 5G Services

Making 5G Spectrum Available in Multiple Frequency Bands

The Authority made available a total of about 4 500 MHz of spectrum in multiple frequency bands to the market in 2019 for the provision of public mobile services, which was more than eight times of the available mobile spectrum then. These included 4 100 MHz of spectrum in the 26 GHz and 28 GHz bands for assignment administratively and 380 MHz of spectrum in the 3.3 GHz, 3.5 GHz and 4.9 GHz bands for assignment by way of auction.

With the assignment of 5G spectrum and the gradual availability of 5G equipment and consumer products, commercial 5G services were launched in Hong Kong in April 2020. 5G services will revolutionise mobile user experience with empowerment by its excellent technical capabilities of high speed, high capacity, high reliability, massive connectivity, and low latency communications. It is widely expected that 5G will open up vast potential for various commercial and smart city applications.

Assignment of Spectrum in the 3.3 GHz, 3.5 GHz and 4.9 GHz bands

Three consecutive auctions were successfully conducted between October and November 2019, starting with the auction of 200 MHz of spectrum in the 3.5 GHz band, followed by the auction of 80 MHz of spectrum in the 4.9

GHz band and then the auction of 100 MHz of spectrum in the 3.3 GHz band. All the 380 MHz of spectrum was successfully auctioned off to the four incumbent MNOs at a total spectrum utilisation fee (SUF) of \$1.9 billion, i.e. \$1 billion for the 3.5 GHz band, \$240 million for the 4.9 GHz and \$665 million for the 3.3 GHz band.

Pursuant to the auction results, the spectrum concerned has been assigned to the successful bidders for a period of 15 years. In December 2019, 100 MHz of spectrum in the 3.3 GHz band was assigned to the four incumbent MNOs for use in indoor areas, and 80 MHz of spectrum in the 4.9 GHz band was assigned to two of the incumbent MNOs for use on a territory-wide basis. Upon re-allocation of the 3.5 GHz band to mobile services in April 2020, 200 MHz of spectrum in the band was assigned to the four incumbent MNOs for use on a territory-wide basis, subject to restriction zones in Tai Po and Stanley to protect the existing telemetry, tracking and control stations for satellites in orbit.

Re-allocation of the 3.5 GHz Band

The 3.5 GHz band was originally allocated to fixed satellite services. To support the implementation of 5G, the Authority has decided to re-allocate the band to mobile services from April 2020. As set out in the Authority's statement issued on 28 March 2018, to enable the co-existence of the existing satellite stations and future mobile stations operating in the same and adjacent bands, mitigating measures should be adopted before the re-allocation.

Among others, restriction zones will have to be set up around the existing satellite earth stations for telemetry, tracking and control of the licensed satellites in orbit (TT&C stations). To address the concerns raised by the mobile industry on the restriction zones, a working group comprising relevant stakeholders including representatives of MNOs, operators of the TT&C stations, Hong Kong Science and Technology Park, and Hong Kong Applied Science and Technology Research Institute was established in June 2018 to study technical arrangements for the deployment of radio base stations operating in the 3.5 GHz band within the restriction zones. The working group explored different mitigating measures and conducted field trials to verify the feasibility of such measures to allow controlled co-existence of the TT&C stations and radio base stations inside the restriction zones. The Authority endorsed the working group's report with recommended guidelines on the implementation of mitigating measures in June 2019. Relevant requirements have been incorporated in the respective licences issued to the successful bidders of the 3.5 GHz spectrum for their compliance to enable deployment of 3.5 GHz radio base stations within the restriction zones in a controlled manner.

Assignment of Spectrum in 26 GHz and 28 GHz Bands

Among the 4 100 MHz of spectrum in the 26 GHz and 28 GHz bands, 3 700 MHz of spectrum has been set aside as non-shared spectrum for the provision of large scale public mobile services including 5G services. In April 2019, three incumbent MNOs were

each assigned 400 MHz of the non-shared spectrum as per their applications. For the remaining 2 500 MHz of non-shared spectrum, the Authority plans to launch a second round of invitation for applications for spectrum assignment by end of 2020.

Separately, 400 MHz of shared spectrum in the 26 GHz and 28 GHz bands is set aside for assignment to entities other than assignees of the non-shared spectrum on a geographically shared basis for providing localised wireless broadband services (LWBS) in specified locations such as the airport, university campuses, industrial estates and technology parks, etc. The application for assignment is open starting from July 2019. Such a sharing arrangement will facilitate the development of innovative 5G and smart city applications.

Making Available Additional Spectrum in the 600 MHz, 700 MHz and 4.9 GHz Bands to Meet the Industry Demand

The Authority has been continuing its efforts to identify and make available more suitable spectrum for the development of 5G and other innovative services. Apart from the availability of an additional 80 MHz of spectrum in the 4.9 GHz band, the Authority will also make available a total of 140 MHz of spectrum in the 600 MHz and 700 MHz bands, which will be vacated after the switch-off of analogue television services on 30 November 2020 and migration of existing digital terrestrial television channels in the two bands to other frequency bands, for the provision of public mobile services (including 5G services). In this connection, the Authority and SCED launched

joint public consultations in July and August 2020 to seek views of the industry and other interested parties on the arrangements for frequency allocation and assignment of the spectrum in the 600 MHz, 700 MHz and 4.9 GHz bands and the related SUF. The decisions on spectrum assignment will be promulgated in 2021 after taking into account feedback received in the public consultation.

Re-assignment of Frequency Spectrum in the 850 MHz and 2.5/2.6 GHz Bands

The current assignments of 15 MHz of spectrum in the 850 MHz band and 90 MHz of spectrum in the 2.5/2.6 GHz bands will expire in November 2023 and March 2024 respectively. The Authority and SCED jointly launched public consultations in August and September 2020 respectively to seek views of the industry and other interested parties on the arrangements for re-assignment of the spectrum concerned upon expiry of the existing assignments and the related SUF. The decisions on spectrum re-assignment will be promulgated in 2021 after taking into account feedback received in the public consultations.

6.5 Facilitating the Rollout of 5G Services

Facilitating the Industry to Conduct Trials for 5G Technologies and Applications

To prepare for the launch of 5G services, as at 31 March 2020, the Authority issued a total of 57 trial permits to MNOs and equipment vendors with temporary spectrum assignments free-of-charge for test purposes.

Facilitating the Rollout of 5G Networks

For the deployment of 5G services in Hong Kong, MNOs will need to establish a larger number of radio base stations as compared with previous generations of mobile services. To facilitate the expedient and effective rollout of 5G networks, the Authority supported the Government in launching a pilot scheme in March 2019 to open up more than 1 000 suitable government premises for MNOs to install radio base stations with a streamlined approval process. OFCA has set up a dedicated team to coordinate with MNOs and relevant government departments on the matters concerned, and issued the "Guidance Notes for Submission of Applications under the Pilot Scheme for Installation of Radio Base Stations at Selected Government Venues" to set out the principles, requirements and streamlined procedures in respect of the applications under the scheme. The scheme has been well received by the industry. As a further policy initiative to facilitate 5G network rollout under the Policy Address 2019, MNOs will be further assisted under a "demand-led" model to identify and gain access to additional suitable government premises for installation of radio base stations.

OFCA has also been working closely with the industry to identify suitable street level furniture and public facilities for the installation of radio base stations, such as public payphone kiosks, sheltered bus stops, smart lampposts, etc. In respect of public payphone kiosks, the Authority issued in April 2020 the "Guidelines on the Use of Public Payphone Kiosks for the Installation of Radio Base Stations for Provision of Public Mobile Services". OFCA is coordinating with the relevant government

departments to facilitate the conduct of technical trials and formulation of relevant guidance on application procedures and requirements for use of sheltered bus stops to install radio base stations.

Following the outcome of a consultancy study commissioned by OFCA, existing SMATV systems installed in buildings for receiving and distributing satellite TV signals to occupants need to be upgraded for co-existence with 5G systems operating in the adjacent 3.5 GHz band starting from 1 April 2020. The Authority is mindful of the cost required for upgrading the existing SMATV systems and has implemented a subsidy scheme for supporting the SMATV owners to upgrade their existing SMATV systems. With funding provided by the four 5G MNOs using the 3.5 GHz band and as jointly elected by these MNOs to administer the scheme, OFCA has launched the subsidy scheme that would run for 12 months starting from November 2019 to support the upgrading of existing SMATV systems. Eligible owners of the SMATV system could apply for a one-off subsidy of \$20,000 per SMATV system for the necessary upgrading.

In order to ensure efficient operation of 5G networks in the 3.3 GHz and 3.5 GHz bands, having consulted all MNOs, the Authority issued the "Guidelines for Setting the Frame Structure of Mobile Networks Operating in Time-Division-Duplex Mode in the 3.3 – 3.6 GHz Band" in April 2020 which have been observed by all MNOs in their 5G network settings.

6.6 Facilitating Development of Wireless Internet of Things Services and Localised Wireless Broadband Services

Since the creation of a new licensing regime in December 2017 for the provision of WIoT platforms and services using the shared frequency band of 920 – 925 MHz by the Authority, three WIoT licences were issued as at March 2020. Meanwhile, the existing MNOs may also make use of the spectrum assigned to them under their UCLs to provide WIoT services by adopting mobile technology such as Narrowband Internet of Things and 5G technology that enables massive IoT connections. Furthermore, with the introduction of the WIoT device fee under the SBO licence from August 2020, any WIoT devices operated under the SBO licence are also subject to the same fee of \$2 per device, which is on a par with the fee level under the WIoT licence and UCL. The Authority will continue to facilitate the development and competitive supply of WIoT services in Hong Kong.

The 5G technology supports the development of new telecommunications infrastructure to cater for a wide variety of innovative services and applications. The Authority created a new LWBS licence in July 2019 which allows the assignment of 400 MHz of the shared spectrum in the 26 GHz and 28 GHz bands to different spectrum assignees on a geographically shared basis to facilitate the development of innovative 5G and smart city applications at specified locations, such as airport, university campuses, industrial estates and technology parks.

6.7 Implementation of the Re-assignment of Frequency Spectrum in the 900 MHz and 1800 MHz Bands

Following the decision of the Authority in December 2017 on the arrangements for re-assignments of 50 MHz of spectrum in the 900 MHz band and 150 MHz of spectrum in the 1800 MHz band upon expiry of the existing assignments in January and September 2021 respectively, 80 MHz of spectrum in the 1800 MHz band would be administratively re-assigned to the four incumbent spectrum assignees following their exercise of the rights of first refusal in September 2018, whilst the remaining 120 MHz of spectrum (comprising 50 MHz of spectrum in the 900 MHz band and 70 MHz of spectrum in the 1800 MHz band) were put to auction in December 2018. Pursuant to the auction results, assignment of some of the spectrum in the two frequency bands will change hands in the new 15-year term of assignment. OFCA will coordinate with all incumbent and new spectrum assignees to ensure a seamless transition at the time of re-assignment of the spectrum in 2021.

6.8 Implementation of the Registration System for Class Licence for Offer of Telecommunications Services

The Class Licence for Offer of Telecommunications Services (CLOTS) regulates persons who offer telecommunications services to the general public without the establishment of any means of telecommunications. With a view to enhancing regulatory oversight and consumer protection, the Authority decided

to revise the CLOTS licensing regime in April 2019. Under the revised regime, licensees with a customer base of 10 000 subscriptions or more are required to register their business information with the Authority. A set of guidelines was issued in August 2019 to facilitate CLOTS licensees to make registration. As at March 2020, 17 CLOTS licensees were registered.

6.9 Enhancement of Licensing Regime for Services-based Operators

In order to enhance the SBO licensing regime, the Authority decided to (a) extend the period of validity of the SBO licence from one year to two years with a view to enhancing regulatory certainty; (b) streamline the categories of services authorised under the SBO licence; and (c) adopt a new licence fee structure to ensure regulatory symmetry between the SBO licence and other licences providing similar services.

6.10 Review of the Number of Public Payphones under the Universal Service Obligation (USO)

Public payphone is a basic service which the universal service provider (USP) is required to provide under its USO. The cost of providing a public payphone service subject to the USO is shared by the fixed and mobile service providers. In view of the diminishing demand for public payphone service in recent years, the Authority announced in June 2017 to embark on a review to determine the reasonable number of public payphones that should be subject to the USO.

The review was completed in 2019 in accordance with the guiding principles laid down by the Authority. For in-building type public payphones, the Authority decided to exclude 515 in-building type public payphones (about 35% of the total number of in-building type public payphones) from the USO. All the excluded in-building type public payphones have been removed by the USP.

For kiosk type public payphones, the Authority decided to exclude 765 kiosk type public payphones (about 50% of the total number of kiosk type public payphones) from the USO. As at March 2020, the USP has removed 177 excluded payphones from various locations. Meanwhile, the USP decided to retain a small number of excluded payphones at its own cost.

6.11 Processing Complaints Relating to Telecommunications Services

As the telecommunications market is fully liberalised and highly competitive, the Authority has adopted a light-handed regulatory approach. The Authority investigates consumer complaints against telecommunications operators if there is sufficient evidence to establish a prima facie case on possible breaches of any provisions under the TO, licence conditions or other relevant legislation which the Authority has jurisdiction to enforce, namely, TDO and CO. For other consumer complaints not involving any breach of the TO, licence conditions or other relevant legislation, it is the responsibility of the telecommunications operators to resolve the

matters under complaint with their customers. The Authority would take note of their handling of the consumer complaints received and take necessary actions if any systemic issue is identified.

During the year under review, the Authority received a total of 1 234 consumer complaints relating to telecommunications services, representing a reduction of 20.2% compared to 1 546 complaints in the previous year. Among them, 760 cases (61.6%) were related to mobile services, 290 cases (23.5%) were related to Internet services, 159 cases (12.9%) were related to fixed-line services and 20 cases (1.6%) were related to external telecommunications. On the nature of complaints, the Authority received the largest number of complaints relating to customer service quality (357 cases or 28.9%), while complaints about billing disputes (231 cases or 18.7%) and service quality (175 cases or 14.2%) ranked second and third respectively.

Breakdown of complaint cases by types of telecommunications services and nature of complaints received by the Authority during the period are shown in **Figure 20** and **Figure 21** respectively.

Figure 20: Distribution of Complaint Cases by Types of Telecommunications Services Received by the Authority in 2019/20

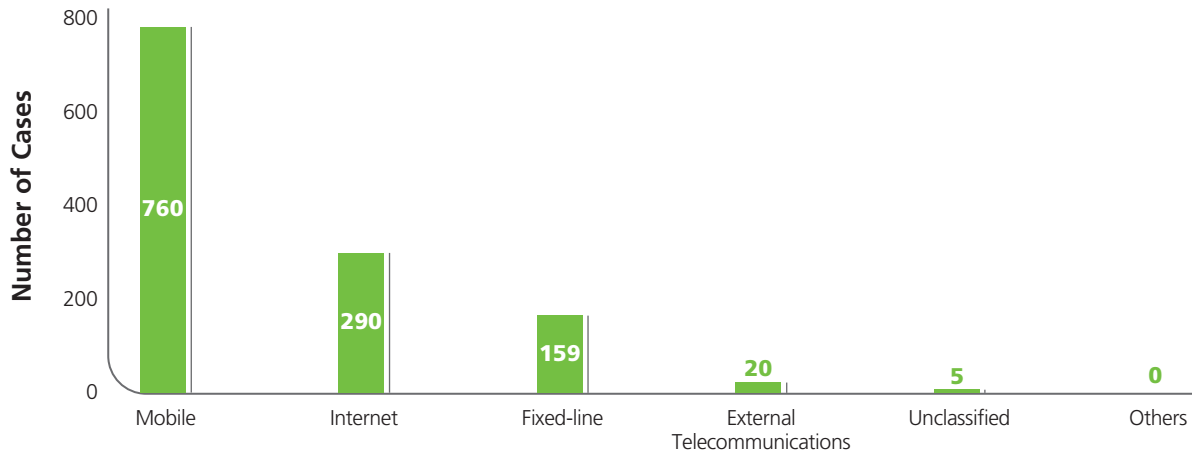
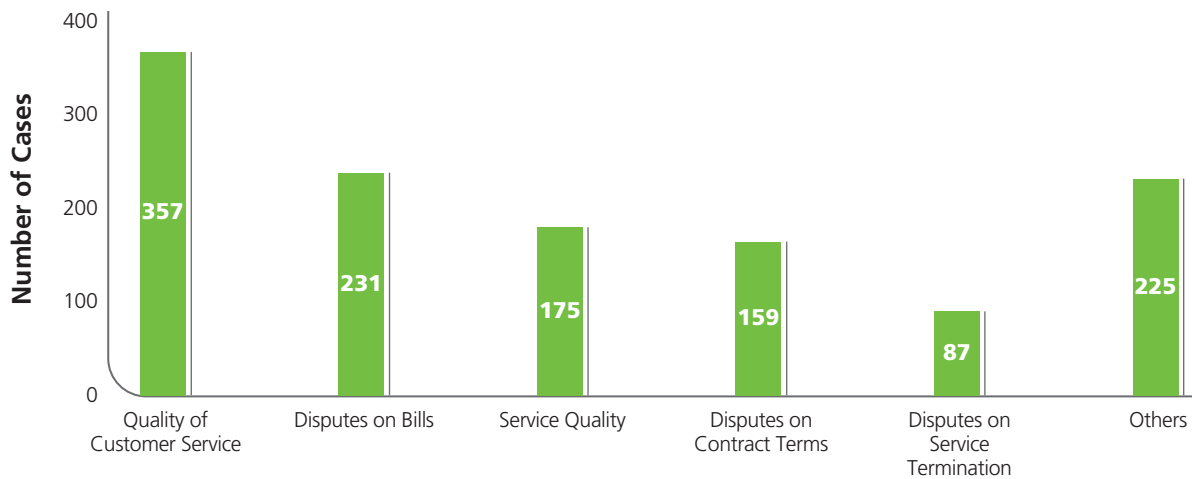


Figure 21: Distribution of Complaint Cases by Nature of Complaints Received by the Authority in 2019/20



Among the 1 234 complaint cases received, 1 230 (99.7%) were outside the Authority's jurisdiction. For the remaining four cases (0.3%), they involved allegations regarding violation of the guidelines related to fair usage policy, problem of access to public areas of buildings for fixed network installation, failure to publicise roaming service content and terms of condition, and error in the billing system. No

case was found to be in breach of TO or licence conditions after investigation.

Breakdown of complaint cases that involved alleged breach of the TO or licence conditions by types of telecommunications services and nature of complaints received by the Authority during the year under review are shown in **Figure 22** and **Figure 23** respectively.

Figure 22: Distribution of Complaint Cases that Involved Alleged Breach of the TO or Licence Conditions by Types of Telecommunications Services Received by the Authority in 2019/20

Types of Telecommunications Service	No. of Complaint Cases
Mobile	2
Internet	1
Fixed	1

Figure 23: Distribution of Complaint Cases that Involved Alleged Breach of the TO or Licence Conditions by Nature of Complaints Received by the Authority in 2019/20

Nature of Complaints	No. of Complaint Cases
Violation of the guidelines related to fair usage policy	1
Problem of accessing to public areas of buildings for fixed network installation	1
Failure to publicize roaming service content and terms of condition	1
Error in the billing system	1

6.12 Strengthening Consumer Protection in the Use of Telecommunications Services

Consumer Protection Measures Adopted in the Telecommunications Industry

In order to safeguard consumer interests in the use of telecommunications services, OFCA takes proactive actions to implement various consumer protection measures and works with the industry to draw up and implement self-regulatory measures to address new consumer issues that may arise from time to time.

These measures include the voluntary Customer Complaint Settlement Scheme (CCSS) administered by the Communications Association of Hong Kong, an industry association. The CCSS aims to help resolve billing disputes in deadlock between telecommunications service providers and their customers by means of mediation.

Other self-regulatory measures voluntarily implemented by the industry include promulgation of the Code of Practice for Telecommunications Service Contracts to improve the clarity of provisions in the telecommunications service contracts, as well as the Code for the Provision of Chargeable Mobile Content Services to govern the practices of third-party content service providers.

Other measures include implementation of mobile bill shock preventive measures, promulgation of a set of mandatory guidelines governing the implementation of fair usage policy by telecommunications service providers, as well as publication of details of the arrangements adopted by major residential broadband service providers to handle service termination requests from consumers on OFCA's website.

OFCA will continue to monitor the implementation and effectiveness of the various consumer protection measures adopted, and where necessary engage the industry to seek further improvement of the existing measures or to introduce new measures.

Enhancement of the Broadband Performance Test System

Since December 2010, OFCA has provided a broadband performance test system to enable fixed and mobile broadband service users to measure the performance of their broadband connections, including download and upload speeds, network latency, packet loss and jitter. Apart from users of desktop and notebook computers, users of smart phones and tablets running iOS and Android operating systems may also make use of the test system.

From time to time, OFCA reviews and upgrades the test system to further enhance its capability and performance. Currently, it offers desktop users and mobile device users speed tests of up to 5 000 Mbps and 1 000 Mbps respectively. As at March 2020, more than 95 million tests were performed.

Consumer Education Programmes

In addition, during the year, the Authority continued to organise the annual Consumer Education Campaign from August 2019 to March 2020 to enhance public awareness of smart use of communications services. A range of programmes and activities, including public seminars, community talks, roving exhibitions and drama performances at schools, were held during the campaign to promote proper and safe use of communications services.

To embrace the advent of the 5G era, the Authority also set up a thematic website and produced two short videos as well as two sets of TV and Radio APIs on 5G and radiation safety of radio base stations. The short videos and APIs served to promote awareness of the profound business opportunities and social benefits that would be brought by the 5G technology, and enhance the public's knowledge of the radiation safety of radio base stations.

6.13 Enforcement of the Fair Trading Sections of the Trade Descriptions Ordinance

The fair trading sections of the TDO prohibit certain specified unfair trade practices by traders in the provision of goods and services to consumers. The Authority is conferred concurrent jurisdiction with the C&ED to enforce the fair trading sections of the TDO in relation to the commercial practices of licensees under the TO and the BO directly connected with the provision of telecommunications and broadcasting services. The two enforcement agencies have entered into a memorandum of understanding (MoU) to coordinate the performance of their functions under the fair trading sections of the TDO and have issued a set of enforcement guidelines to provide guidance for traders and consumers as to the operation of the fair trading sections.

From 1 April 2019 to 31 March 2020, the Authority handled a total of 288 complaint cases under the TDO. Of these cases, 243 were closed for insufficient evidence to suspect/establish a contravention or falling outside the scope of the TDO, 18 cases were closed after the issue of advisory letters to the licensees concerned to draw their attention to the need to improve the relevant commercial practices in relation to the sale, supply or promotion of telecommunications or broadcasting services to consumers, and the remaining 27 cases were under processing at various stages.

6.14 Enforcement of the Competition Ordinance

The CO provides for a cross-sectoral competition law prohibiting anti-competitive conduct in all sectors. Under the CO, the Authority is conferred concurrent jurisdiction with the Commission to enforce the CO in respect of the conduct of undertakings operating in the telecommunications and broadcasting sectors, including merger and acquisition activities involving carrier licensees in the telecommunications sector.

Pursuant to the MoU signed by the Authority and the Commission, the Authority will ordinarily assume the role of the lead authority for matters falling within the concurrent jurisdiction. For matters involving issues that are partly within and partly outside the concurrent jurisdiction, the Authority and the Commission will discuss and agree on how best to process the matter on a case-by-case basis.

From 1 April 2019 to 31 March 2020, a total of 23 complaints and/or enquiries were received under the CO, with 22 cases closed without the need for further actions and one case under processing. During the year, the Authority also reviewed one transaction under the merger rule of the CO. No further action was considered necessary in respect of the transaction.

6.15 Enforcement of the Unsolicited Electronic Messages Ordinance

The UEMO sets out the rules about sending CEMs, including the requirements to provide accurate sender information and honour unsubscribe requests. Under the UEMO, the Authority has established three Do-Not-Call (DNC) registers to allow members of the public to register their numbers to indicate their choice of not receiving commercial facsimile messages, short messages and/or pre-recorded telephone messages. By the end of March 2020, more than 2.6 million numbers had been registered under these DNC registers.

The Authority will continue to monitor compliance with the UEMO by CEM senders and streamline the procedures for more effective enforcement.

Major Regulatory Actions

6.16 Sanctions against Broadcasting Licensees

There was no major sanction against broadcasting licensees during the reporting period.

6.17 Sanctions against Telecommunications Licensees

There was no major sanction against telecommunications licensees during the reporting period.

6.18 Sanctions against Senders of Commercial Electronic Messages

From April 2019 to March 2020, the Authority received 598 reports on suspected contraventions of the UEMO, representing a decrease of about 6% as compared to the 637 reports received in the previous year. The majority of these 598 reports was related to short messages and email messages. In dealing with these reports, the Authority would, depending on the circumstances, issue advisory letters to first time offenders explaining the requirements of the UEMO or issue warning letters to other CEM senders in more serious cases. During the period under review, 63 advisory letters and 30 warning letters were issued. In the event of repeated contraventions by a particular sender, the Authority may issue enforcement notices pursuant to the UEMO directing the sender to take steps to remedy the contraventions. Any persons who fail to comply with an enforcement notice may be liable to a fine of up to \$100,000 on the first conviction. In 2019/20, no enforcement notice was issued.



Acknowledgement



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Television Broadcasts Limited

HK Television Entertainment Company Limited

Fantastic Television Limited

Hong Kong Cable Television Limited

PCCW Media Limited

Fox Networks Group Asia Pacific Limited

APT Satellite TV Development Limited

Starbucks (HK) Limited

WarnerMedia Asia Pacific (HK) Limited

Sun Television Cybernetworks Enterprise Limited

Auspicious Colour Limited

Phoenix Satellite Television Company Limited

China Satellite TV Group Company Limited

Hong Kong TV International Media Group Limited

Health TV Company Limited

One TV Media Global Limited

Star China Media Limited

Hong Kong Commercial Broadcasting Company Limited

Metro Broadcast Corporation Limited

admanGo

CSM Media Research

TeleGeography

Commerce and Economic Development Bureau
(Communications and Creative Industries Branch)

Office of the Communications Authority

Information Services Department

Radio Television Hong Kong

Summary of Non-Domestic Television Programme Services

Licensee	Date of Launch of Service	No. of Channels (No. receivable in HK)	Nature of Channels	Target Markets	Satellite
1. Fox Networks Group Asia Pacific Limited	4.1991	22 (0)	General entertainment, movie, music, sports & news etc.	Asian region including the Mainland, India & Middle East	AsiaSat 5 AsiaSat 7
2. APT Satellite TV Development Limited	8.2000	86 (0)	General entertainment, news, movies & sports	Asia-Pacific region, Africa and Europe	Apstar 5C Apstar 6C Apstar 7 Apstar 9
3. Starbucks (HK) Limited	6.2000	1 (0)	Weather, sports, music and finance etc.	The Mainland	Apstar 6
4. WarnerMedia Asia Pacific (HK) Limited (formerly known as Turner International Asia Pacific Limited)	1989	11 (0)	News, finance, movie, children & family programmes	Asia-Pacific region & South Asia	AsiaSat 7 Intelsat 20
5. Sun Television Cybernetworks Enterprise Limited	8.2000	1 (1)	History & culture-related documentaries	Asia-Pacific region	AsiaSat 7
6. Auspicious Colour Limited	1.2006	56 (36)	General entertainment, infotainment & music	Asia-Pacific region	AsiaSat 5 AsiaSat 7 AsiaSat 9
7. Phoenix Satellite Television Company Limited	5.2006	4 (3)	General entertainment, news & movie	Asia-Pacific region	AsiaSat 7
8. China Satellite TV Group Company Limited	11.2009	1 (1)	Infotainment	Asia-Pacific region	Apstar 7

Annex 1: Summary of Non-Domestic Television Programme Services

Licensee	Date of Launch of Service	No. of Channels (No. receivable in HK)	Nature of Channels	Target Markets	Satellite
9. Hong Kong TV International Media Group Limited	3.2011	1 (1)	Infotainment	Asia-Pacific Region	Apstar 6C
10. Health TV Company Limited ^{Note}	2.2013	1 (0)	Health information programmes, documentaries & general entertainment	Asia-Pacific Region	Apstar 5C
11. One TV Media Global Limited	5.2013	1 (1)	News, finance & entertainment	Asia-Pacific Region	Apstar 5C
12. Star China Media Limited	1.2014	3 (0)	Music programmes, entertainment news & general entertainment	Asia-Pacific Region	AsiaSat 7

Note: In October 2020, the Authority accepted the application by Health TV Company Limited for termination of its licence with effect from 26 August 2020.

Types and Numbers of Telecommunications Licences (as at 31 March 2020)

Type of Licences	Number of Licences	Type of Licences	Number of Licences
Academic Institution Self-provided Telecommunications Installation	2	Radio Dealers (Unrestricted)	3 880
Aeronautical VHF Fixed Station	34	Radiocommunications School	6
Aircraft Station	351	Radiodetermination and Conveyance of Commands, Status and Data	205
Amateur Station	2 620	Satellite Master Antenna Television	66
Broadcast Radio Relay Station & Broadcast Relay Station	15	Self-Provided External Telecommunications System	6
Experimental Station	82	Services-Based Operator of Class 1 Service, Class 2 Service and Services Other Than Class 1, Class 2 or Class 3 Service ^{Note A}	19
Hotel Television (Transmission)	163	Services-Based Operator of Class 3 Service	471
Industrial, Scientific & Medical Electronic Machine	1 496	Ship Station	2 506
Localised Wireless Broadband Service	1	Space Station Carrier	12
Maritime Radio (Local Vessel)	1 556	Taxi Radiocommunications Service	23
Mobile Carrier	1	Unified Carrier-Mobile Services ^{Note B}	12
Mobile Radio System Fixed Station	16	Unified Carrier-Local/External Fixed Services ^{Note B and Note C}	55
Mobile Radio System Mobile Station	1 812	Wide Band Link & Relay Station	52
Private Mobile Radio System	2 065	Wireless Internet of Things	3
Private Radio Paging System	5	Total	17 543
Public Radiocommunications Service	8		

Note A: This figure includes 17 licences which are also authorised for the provision of SBO Class 3 services.

Note B: This figure includes six licences which are authorised to provide both fixed and mobile services.

Note C: This figure includes the two licences authorising the transmission of domestic television programme services.

Glossary

In alphabetical order	Abbreviation
Announcement in the Public Interest	API
Broadcasting (Miscellaneous Provisions) Ordinance (Cap. 391)	B(MP)O
Broadcasting Ordinance (Cap. 562)	BO
Chief Executive in Council	CE in C
China Unicom (Hong Kong) Operations Limited	China Unicom
Class Licence for Offer of Telecommunications Services	CLOTS
Commerce and Economic Development Bureau	CEDB
Commercial Electronic Message	CEM
Communications Association of Hong Kong	CAHK
Communications Authority	The Authority
Communications Authority Ordinance (Cap. 616)	CAO
Competition Commission	Commission
Competition Ordinance (Cap. 619)	CO
Customer Complaint Settlement Scheme	CCSS
Customs and Excise Department	C&ED
Digital Terrestrial Television	DTT
Director-General of Communications	DG Com
Domestic Free Television Programme Service	Free TV
Domestic Pay Television Programme Service	Pay TV
Do-Not-Call Registers	DNC Registers

In alphabetical order	Abbreviation
Educational Television	ETV
Fantastic Television Limited	Fantastic TV
Fifth Generation (Mobile Services/Subscriptions)	5G (Mobile Services/Subscriptions)
Fourth Generation (Mobile Services/Subscriptions)	4G (Mobile Services/Subscriptions)
Gigabits per second	Gbps
High Definition Television	HDTV
HK Television Entertainment Company Limited	HKTVE
Hong Kong Cable Television Limited	HKCTV
Hong Kong Commercial Broadcasting Company Limited	CRHK
Independent Mediation Service Centre under CAHK	CCSS Centre
Internet of Things	IoT
Localised Wireless Broadband Services	LWBS
Megabits per second	Mbps
Memorandum of Understanding	MoU
Metro Broadcast Corporation Limited	Metro
Mobile Carrier Licence	MCL
Mobile Network Operator	MNO
Mobile Virtual Network Operator	MVNO
Non-domestic Television Programme Service	Non-domestic TV
Office of the Communications Authority	OFCA

In alphabetical order	Abbreviation
Other Licensable Television Programme Service	Other Licensable TV
PCCW Limited	PCCW
PCCW Media Limited	PCCW Media
Public Radiocommunications Service	PRS
Radio Television Hong Kong	RTHK
Satellite Earth Stations for Telemetry, Tracking and Control of Licensed Satellites in Orbit	TT&C stations
Satellite Master Antenna Television Systems	SMATV systems
Second Generation (Mobile Services/Subscriptions)	2G (Mobile Services/Subscriptions)
Secretary for Commerce and Economic Development	SCED
Services-based Operator	SBO
Spectrum Utilisation Fee	SUF
Telecommunications Ordinance (Cap. 106)	TO
Television Broadcasts Limited	TVB
Third Generation (Mobile Services/Subscriptions)	3G (Mobile Services/Subscriptions)
Trade Descriptions Ordinance (Cap. 362)	TDO
Unified Carrier Licence	UCL
Universal Service Obligation	USO
Universal Service Provider	USP
Unsolicited Electronic Messages Ordinance (Cap. 593)	UEMO
Wireless Internet of Things	WiIoT



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