Chapter 5: Overview of Major Developments in the Communications Market

Broadcasting

5.1 An Overview of Developments in the Broadcasting Market

5.1.1 Number of Licensees and Channels

Television Programme Services

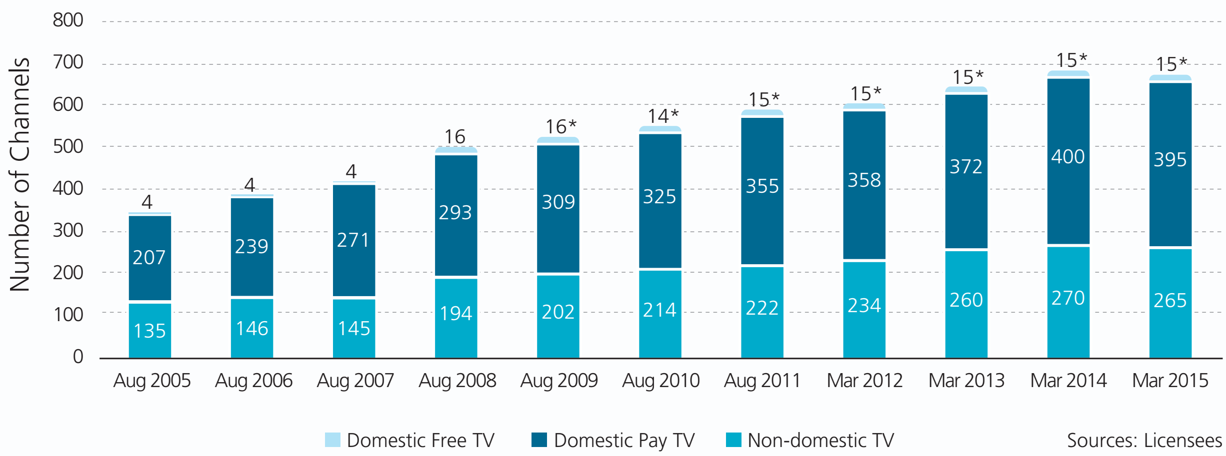
As at March 2015, the total number of domestic free, domestic pay and non-domestic television programme service licensees was 23. They provided 675 television channels[3], of which 454 were receivable in Hong Kong, representing a slight decrease of 1.5% since March 2014. An overview of the channels provided by the television programme service licensees is shown in Figure 1.

As at March 2015, there were two **domestic free television programme service licensees**, viz. ATV and TVB. They provided a total of 15 channels. Four channels (ATV Home, ATV World, TVB Jade[4] and TVB Pearl[4]) were simulcast in both analogue and digital formats and seven were digital channels. ATV's digital channels comprised one HDTV channel "Asia" and three standard definition television (SDTV) channels, namely "ATV Classic", "CCTV 1" and "Shenzhen Satellite". TVB's digital channels comprised three HDTV channels, namely "HD Jade", "iNews" and "J2".

As at March 2015, there were three **domestic pay television programme service licensees**, viz. HKCTV, PCCW Media and TVB Network Vision Limited (TVBNV), providing a total of 395 pay television channels, offering a diversity of local and overseas productions. There has been an increase (28%) in the total number of HDTV channels (from 65 to 83) offered by the licensees within the same period.

From April 2014 to March 2015, the number of **non-domestic television programme service licensees** decreased by one to 18, providing a total of 265 television channels, representing a slight decrease of 1.9% since March 2014. Of them, 44 channels were available to Hong Kong viewers.

Figure 1: Television Channels Provided by Television Programme Service Licensees in Hong Kong



Sources: Licensees

* The four simulcast channels of ATV and TVB are counted for both the analogue and digital platforms.

[3] Some channels were provided by more than one licensee at the same time.

[4] The digital simulcast of TVB Jade and Pearl channels are broadcast in HDTV format.

During the period under review, the number of **other licensable television programme service licensees** providing television programme services in hotels in Hong Kong decreased by one to 26. Together they provided services to 88 hotels.

In addition to the television channels provided by television programme service licensees, Hong Kong viewers can receive free unencrypted satellite television programme channels uplinked from Hong Kong and elsewhere. As at March 2015, there were more than 400 such free-to-air satellite television channels available for reception via the Satellite Master Antenna Television (SMATV) systems in Hong Kong. The list of channels currently available can be downloaded at – http://www.ofca.gov.hk/filemanager/ofca/en/content_295/st_smatv.pdf.

Sound Broadcasting Services

The number of **sound broadcasting licensees** remained at four during the period under review, namely CRHK, DBC, Metro[5] and Phoenix U Radio[6]. RTHK is the public service broadcaster in Hong Kong.

As at March 2015, the number of analogue radio channels remained at 13 (three by CRHK, three by Metro and seven by RTHK). On DAB services, DBC, Metro and Phoenix U Radio formally launched their DAB services in 2012 in accordance with the licence requirements. As at March 2015, the three DAB licensees and RTHK provided a total of 17 DAB channels (seven by DBC, three by Metro, two by Phoenix U Radio and five by RTHK). All analogue and DAB channels provided by the four licensees and RTHK were broadcast round-the-clock.

5.1.2 Transmission Modes

Television

The regulatory regime for television programme services in Hong Kong as enshrined in the BO is technology-neutral.[7] Licensees are free to choose their transmission arrangements for delivery of television services. Broadcasters can build their own transmission networks to deliver their services and, in such cases, they need to apply for a carrier licence from the Authority to cover the transmission network. Alternatively, they can engage any of the existing carrier licensees to provide the transmission service. Licensees can also provide their television programme services via multiple transmission platforms so as to maximise the coverage.

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

5 Metro held two sound broadcasting licences, one for providing AM and FM services and one for providing DAB service.

6 The CE in C approved the termination of the sound broadcasting licence of Phoenix U Radio with effect from 7 November 2015.

7 An exception is that a service consists only of a service provided on the Internet is exempted from the regulatory regime under the BO.

Figure 2: Transmission Modes Employed by the Television Licensees

Licensee	Transmission Mode	Network Coverage as at March 2015
Domestic Free Television		
ATV and TVB	Terrestrial UHF[8], including (a) Analogue PAL-I format; and (b) Digital National Standard format	99% of population
Domestic Pay Television		
HKCTV	HFC[9], MMDS[10] and satellite (Digital)	Around 97% of total households
PCCW Media	PON and DSL[11] Broadband network (Digital)	Around 99% of total households
TVBNV	Satellite and broadband network (Digital)	Around 99% of total households
Non-domestic Television		
All the 18 licensees	Satellite (Digital)	34% of total households (828 241 households)

8 Terrestrial Ultra High Frequency.

9 Hybrid Fibre Coaxial Cable.

10 Microwave Multipoint Distribution System.

11 Passive Optical Network and Digital Subscriber Line.

Penetration of Different Broadcasting Services

In March 2015, out of a total of 2.45 million households in Hong Kong,[12] 2.41 million television households[13] or 6.47 million viewers (aged 4 or above)[14] were receiving analogue broadcasting of free-to-air television, representing a penetration rate of about 99%. As regards DTT services, the take-up rate was over 80% of all households in December 2014.[15]

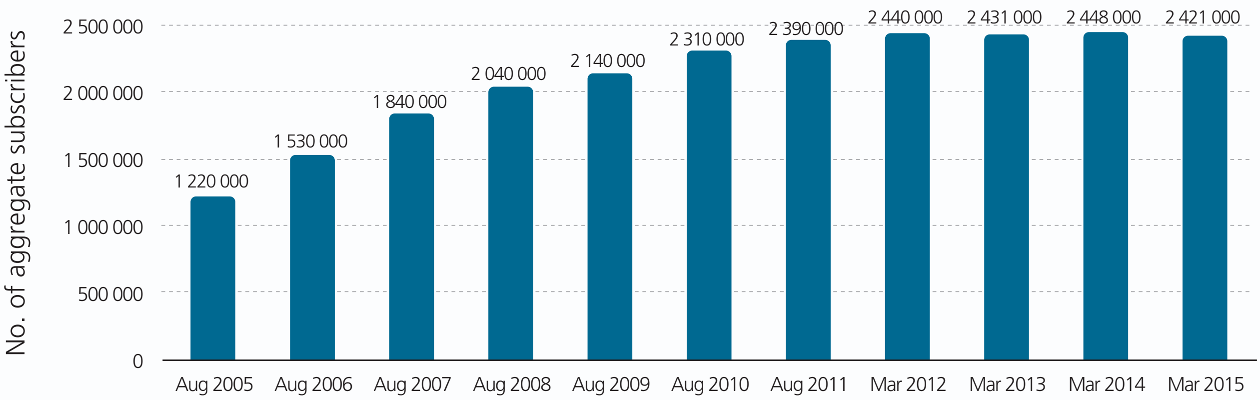
The penetration of licensed domestic pay television services was nearly 100%[16] of the total households as at end of March 2015. The total number of subscribers to licensed pay television services stood at over 2 400 000 in March 2015.[17] The changes in total number of subscribers from 2005 to 2015 are shown in Figure 3.

Sound Broadcasting

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

The DAB broadcasters adopted DAB+ standard for transmission of DAB services. The DAB transmission network comprising seven principal transmitting[18] stations was officially launched in June 2012. A new DAB gap-filler was established in early 2015. As at March 2015, the coverage of the DAB service exceeded 80%.

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



Sources: Licensees

12 Source: Census and Statistics Department.

13 "Television households" means households with at least one television set currently in working order; or with one not in working order but will repair or renew in near future. Data Source: Nielsen Hong Kong.

14 Data Source: Nielsen Hong Kong.

15 According to a public survey conducted in December 2014, over 80% of households in Hong Kong were receiving DTT services.

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

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

18 Beacon Hill, Castle Peak, Cloudy Hill, Golden Hill, Kowloon Peak, Lamma Island and Mount Gough.

5.1.3 Broadcasting Revenues and Investment

Licensed broadcasting services contributed an estimated $7.9 billion[19] to the Hong Kong economy, which represented about 0.35% of the gross domestic product (GDP) in 2014. There are two main sources of revenues for the provision of broadcasting services, viz. advertising and subscription. The income of domestic free television programme service licensees and sound broadcasting licensees mainly come from sales of advertising spots within programme breaks. Domestic pay television programme service licensees, on the other hand, derive their incomes mainly from subscription fees while sales of advertising spots remains a secondary income source.

Advertising Revenue

According to the report of AdmanGo Limited, the advertising expenditures on television and radio accounted for 32% (about $14.37 billion) and 4% (about $1.8 billion) respectively of the accumulated $44.9 billion advertising expenditures in the media in 2014[20].

In 2014, the actual advertising revenue of TVB was around $3.4 billion.[21] The actual advertising revenues of the other licensees were not publicly available.

Subscription Revenue

According to the annual report of i-Cable Communications Limited (i-Cable), the parent company of HKCTV, HKCTV's turnover (including mainly subscription revenue and also some advertising revenue) was $1.27 billion in 2014, representing a decrease of 18% over the figure in 2013. The decrease was mainly due to lower subscription and advertising revenue.

According to the annual report of PCCW Limited (PCCW), the holding company of PCCW Media, the turnover of its media business segment was $3.23 billion in 2014, representing an increase of 7% over the figure in 2013. The increase was mainly attributable to growth of subscribers and advertising revenue.

The subscription revenue of TVBNV is not publicly available.

19 Source: Company reports of major broadcasting licensees.

20 Source: Adspend Report for 2014 of AdmanGo Limited. All the advertising expenditures presented in the report have taken into consideration the discount factor based on an assumption of 60% off rate card rate.

21 According to TVB's annual report 2014, the turnover from the Hong Kong television broadcasting business segment was $3,421 million, which comprised advertising revenue from the Group's free and pay television channels.

Investment in Broadcasting Industry

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

During the mid-term review of their licences in 2010, the two domestic free television programme service licensees, ATV and TVB, have committed to investing a total of $2.4 billion and $6.3 billion respectively for the six-year period from 2010 to 2015. Specifically, TVB has upgraded its digital production and broadcasting equipment to cater for HDTV productions. ATV would focus on installation of HDTV production equipment. As at March 2015, ATV and TVB provided a total of 71 hours and 783 hours respectively of HDTV programmes per week.

As regards the pay television market, i-Cable, the parent company of HKCTV, reported in its 2014 Final Results Announcement that the capital expenditure of the group for the year had increased from $149 million in 2013 to $188 million in 2014. Its major items of investment included HDTV set-top-boxes, cable modems and television production and broadcast facilities for HDTV channels. i-Cable also invested in in-house production of news, entertainment and variety programmes. According to the 2014 Annual Results of PCCW, the parent company of PCCW Media, the capital expenditure for the year on its media business was $160 million, representing a decrease of 20% over the figure in previous year. Its major items of investment included acquisition of premium programming and content production.

TVBNV has committed to investing a total of $2.003 billion for the six-year period from 2013 to 2019. The investment commitment of TVBNV covers HDTV programming, set-top-boxes and broadcast facilities upgrading for employing the fixed hybrid optical fibre network provided by Hutchison Global Communications Limited to deliver its domestic pay television programme service.

CRHK and Metro have committed to investing a total of $827 million and $677 million respectively for the period from 2010 to 2016 for the provision of analogue sound broadcasting services. The investment commitment of CRHK and Metro covers staff development, facilities upgrading, programming improvement and other development brought by technological advancement to further enhance their service quality. The three DAB licensees, namely DBC, Metro and Phoenix U Radio, have committed to investing a total of $391 million, $96.1 million and $107.3 million respectively for the period from 2011 to 2017. Their investment commitment mainly covers construction of DAB network and studio facilities and production of DAB programmes.

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 2015, the licensees broadcast about 68 960 hours of television programmes a week.[22] Among them, ATV and TVB provided a total of 671 broadcast hours per week on the four analogue channels and 1 845 broadcast hours per week on the 11 digital channels, while the 395 channels of domestic pay television programme service licensees provided a total of 59 052 broadcast hours per week. As at 31 March 2015, the 44 channels of non-domestic television programme service licensees receivable in Hong Kong provided a total of 7 392 hours per week.

With the launch of 17 DAB channels, the weekly number of broadcast hours for sound broadcasting services (including RTHK) as at March 2015 was 5 040. The 13 analogue channels of sound broadcasting operators provided a total of 2 184 broadcast hours per week while the 17 digital channels provided a total of 2 856 broadcast hours per week.

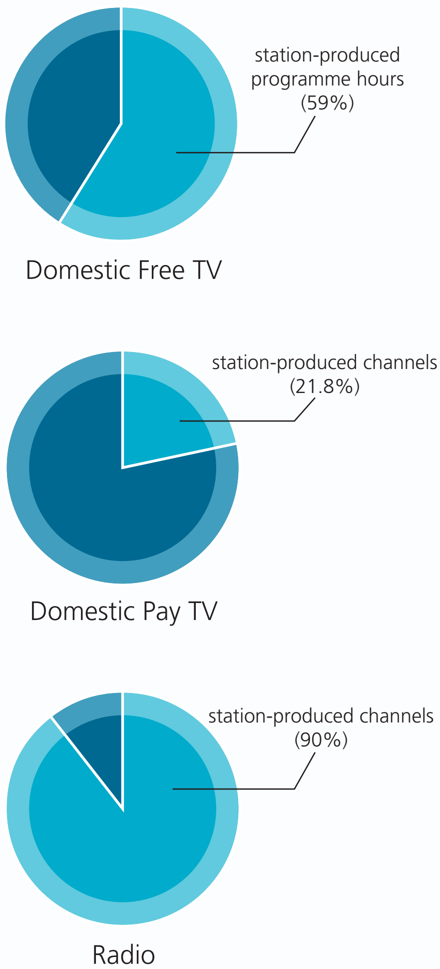
For the period under review, there were a total of 69 319 hours of station productions broadcast on ATV and TVB, of which 19 417 hours were on analogue channels and 49 902 on digital channels.[23] Of the 395 channels provided by the domestic pay television programme service licensees, 86 channels (21.8%) were produced by the licensees themselves.

As for sound broadcasting services, with the exception of RTHK's relay of BBC World Service on Radio 6 and its digital radio services, and programmes of "China National Radio" on its digital radio services, the other 12 analogue radio channels and 15 digital radio channels (90% of all relevant channels) were mainly produced by the broadcasters themselves.

22 The weekly number is based on a sample week in March 2015.

23 This excludes ATV's CCTV 1 and Shenzhen Satellite SDTV channels which were direct re-transmission channels.

Figure 4: Proportion of Station Production in March 2015



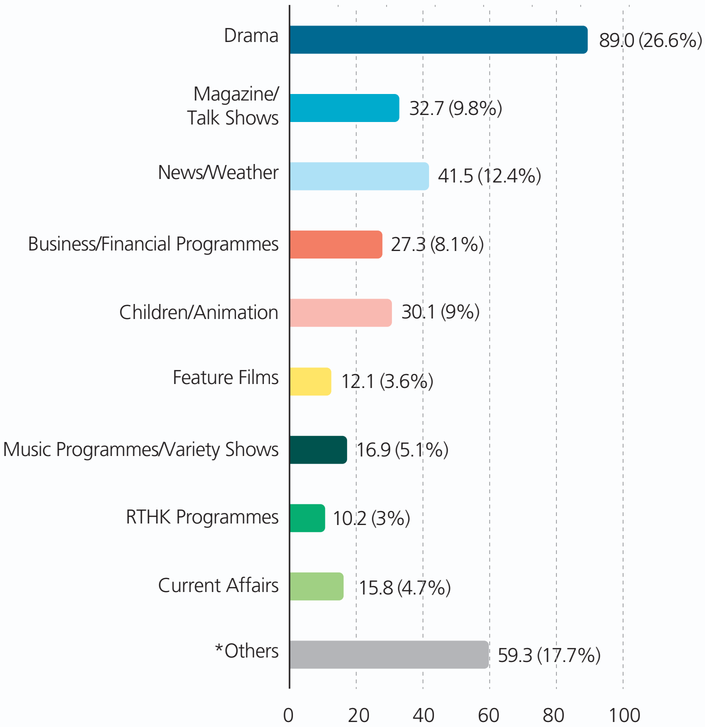
Sources: Licensees

Domestic Free Television Programme Services

Analogue Channels and Digital Simulcast Channels

During the period under review, drama series and magazine/talk shows were the dominating programme genre during prime time on the Cantonese channels. Generally speaking, drama series on ATV were mainly imported from the Mainland and Korea, while those on TVB were mostly in-house productions. Both licensees broadcast Mainland, Korean and Japanese drama series. Apart from drama series and magazine/talk shows, news/weather programmes, business/financial programmes, feature films and variety shows, etc. were also broadcast during prime time on the Cantonese channels.

Figure 5: Weekly Hours of Different Programme Types Broadcast on ATV Home and TVB Jade as at March 2015

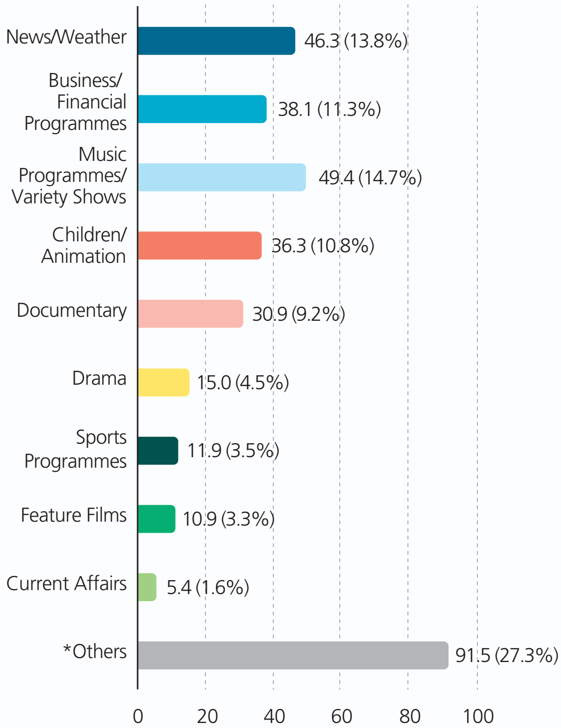


Weekly Total: **335 Hours**
Sources : ATV & TVB

* Other programmes include horse-racing, documentary and cooking programmes

The two English channels broadcast a wide range of programmes, including business/financial programmes, news/weather programmes, music programmes/variety shows, children's animations, imported popular drama series, documentaries, sports programmes, feature films and current affairs programmes.

Figure 6: Weekly Hours of Different Programme Types Broadcast on ATV World and TVB Pearl as at March 2015



Weekly Total: **335.6 Hours**
Sources : ATV & TVB

* Other programmes include arts & culture programmes, travelogues and talk shows, etc.

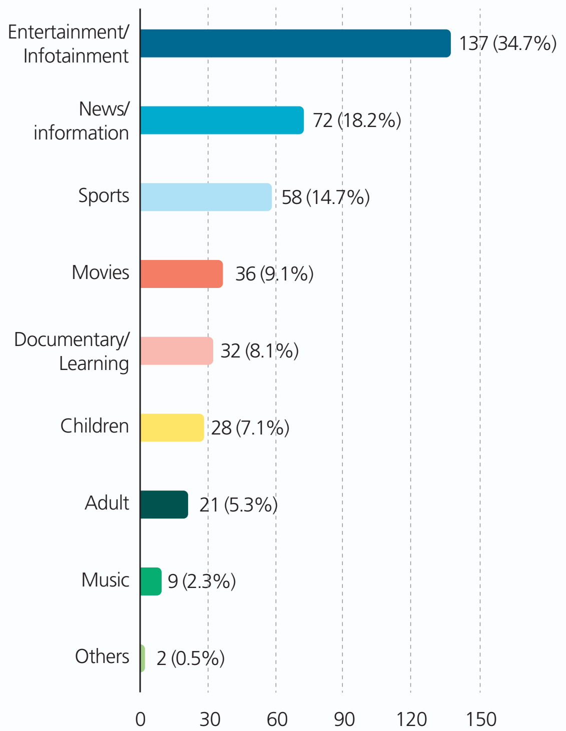
Digital Channels

Since the launch of DTT services, ATV and TVB have been providing more service channels to Hong Kong viewers. As at March 2015, ATV provided HDTV Asia channel, ATV Classic, CCTV 1 and Shenzhen Satellite, all of which were general entertainment channels providing different programme genres such as news, documentaries, current affairs, dramas and infotainment programmes, etc. On the other hand, TVB provided dramas, variety shows, news, talk shows and game shows, etc. via HD Jade, i-News and J2.

Domestic Pay Television Programme Services

During the period under review, a wide variety of channels were offered on domestic pay television programme services, including entertainment and infotainment channels (34.7%), news and information channels (18.2%), sports channels (14.7%), movie channels (9.1%), and documentaries/learning channels (8.1%).

Figure 7: Nature of Domestic Pay Television Channels as at March 2015



Total channels: **395**
Sources: Licensees

As at March 2015, HKCTV offered a basic package consisting of 76 basic channels and 36 other premium channels (including 13 HDTV channels). PCCW Media's "now TV" service offered 174 channels (including 49 HDTV channels) and 45 video-on-demand services, while TVBNV's service comprised 64 channels (including 21 HDTV channels), of which 18 were also carried on PCCW Media's platform.

Sound Broadcasting

Analogue Channels

As at March 2015, CRHK operated two FM Cantonese language services, viz. CR1 and CR2, and one AM English language service, AM 864. CR1 provided mainly 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, Indonesian, Pakistani 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. A list of channels of RTHK is in Figure 8.

Figure 8: RTHK's Radio Services

Radio 1	Chinese news, information and general programming
Radio 2	Chinese youth, entertainment and popular music programmes
Radio 3	English news, information and general programming
Radio 4	Bilingual programmes on classical music and fine arts
Radio 5	Chinese elderly, cultural and education programmes
Radio 6	BBC World Service relay
Radio 7	Putonghua general programming, news and finance

Digital Channels

DBC formally launched DAB service in September 2012. As at end March 2015, it operated seven channels comprising "Radio Prime", "Radio News", "Radio Business", "Radio Campus", "Radio Smiles", "Radio Music" and "Radio Opera". The seven channels offered programmes of different varieties, including current affairs and commentary, news, talk shows, financial information, entertainment, education, art and culture, music and programmes for ethnic minorities in different languages including Filipino, Hindi, Indonesian, Nepali, Thai and Urdu.

Metro commenced DAB service in September 2012. As at end March 2015, Metro operated three DAB channels, namely "Metro Finance Digital", "Metro Music Digital" and "Metro Life Digital". The channels primarily offered finance programmes, talk shows, music shows and lifestyle programmes mainly in Cantonese.

Phoenix U Radio[24] formally commenced DAB service in January 2012. As at end March 2015, it operated two channels called "U Radio 22" and "U Radio 26", offering a variety of programmes, including news, current affairs programmes, financial programmes, music programmes, health programmes and cultural programmes, mainly in Putonghua.

RTHK formally launched DAB service in September 2012. As at end March 2015, it operated five channels, four of which principally simulcast existing AM channels and the remaining one was a dedicated channel produced by "China National Radio" for RTHK.

(b) Positive Programme Requirements

During the period under review, domestic free television programme service licensees were required to broadcast at least 41.5 hours of positive programmes[25] per week. Both ATV and TVB met the requirements. In aggregate, ATV and TVB each broadcast a weekly average of 123 hours of positive programmes.

The reports of the licensees submitted to the Authority on the four types of positive programmes, i.e. 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.

ATV and TVB were required to provide Chinese subtitles for all news, current affairs, weather reports and emergency announcements as well as programmes during prime time (7:00 p.m. – 11:00 p.m.) on Cantonese channels, and English subtitles for all news, current affairs, weather programmes, emergency announcements and educational programmes for teenagers (two hours per week) on English channels. ATV and TVB were also required to provide Chinese subtitling for all drama programmes on Cantonese channels and English subtitling for all programmes broadcast on English channels between 8:00 p.m. and 11:30 p.m. starting 31 December 2010 and 31 December 2012 respectively. Overall, both ATV and TVB complied with the requirements on provision of subtitles.

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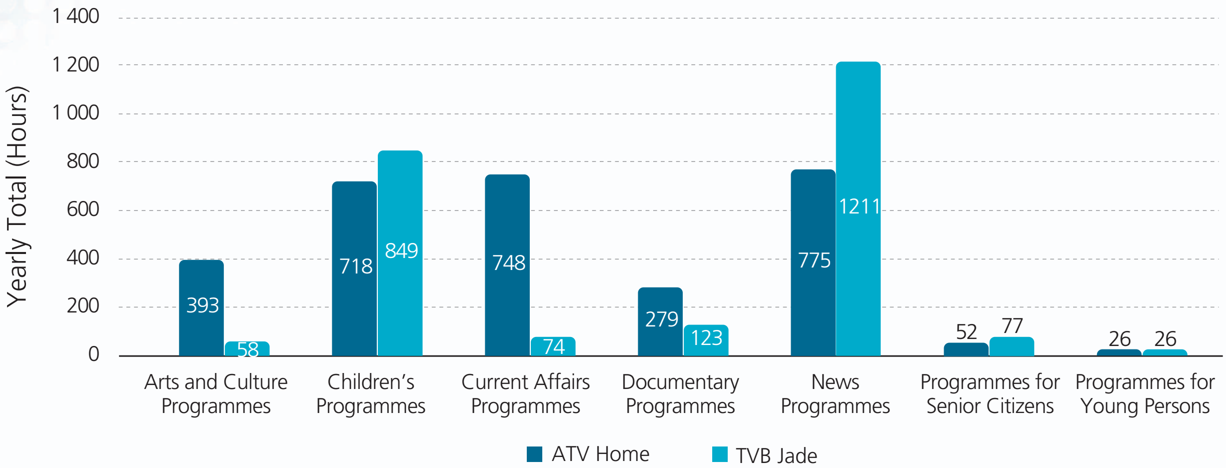
24 The CE in C approved the termination of the sound broadcasting licence of Phoneix U Radio with effect from 7 November 2015.

25 The "positive programmes" that ATV and TVB are required to broadcast are news, current affairs programmes, documentary, art and culture programmes, children's programmes and programmes for senior citizens and young persons.

Figure 9: Broadcast of Positive Programmes on Cantonese Television Channels as at March 2015



Sources: ATV & TVB

Pursuant to licence requirements, both licensees were required to broadcast one minute of Announcements in Public Interest (APIs) in each hour for each channel. Also, they are required to broadcast on a weekly basis, not more than five minutes in aggregate of publicity material for the Authority for each analogue/simulcast digital channel[26]. During the period under review, the licensees broadcast a total of 2 693 hours of the two types of materials.

Following the mid-term review of their licences in 2010, ATV and TVB were required to provide an additional 120 minutes per week of programmes for senior citizens and programmes on arts and culture, or an additional 90 minutes of government (RTHK) programmes per week. In addition, ATV and TVB were required to broadcast at least an additional 60 minutes of RTHK programmes during weekends.

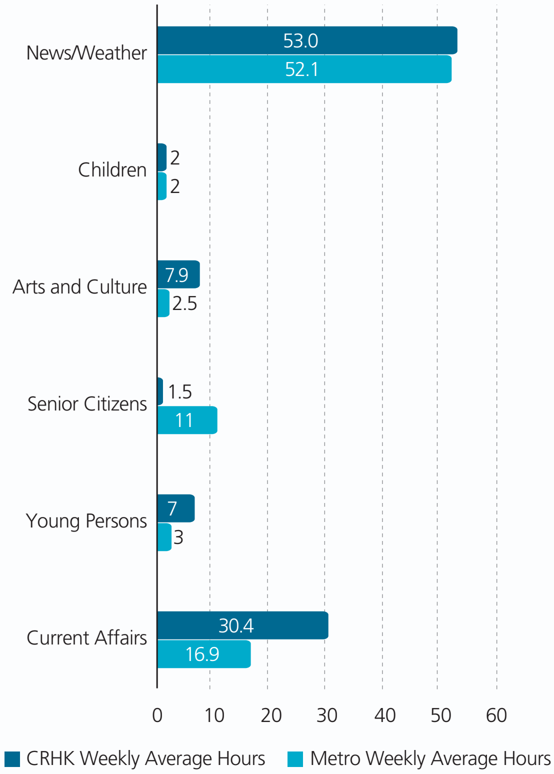
As regards sound broadcasting services, analogue sound broadcasting licensees were required to broadcast at least 28.5 hours of positive programmes[27] per week. CRHK and Metro reported that they had complied with the licence conditions on broadcast of positive programmes.

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

[26] Both licensees are also required to broadcast two minutes of such material on other digital channels per week.

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

Figure 10: Provision of Positive Programmes on Sound Broadcasting Services as at March 2015



5.1.5 Hong Kong as a Regional Broadcasting Hub

Hong Kong is a broadcasting hub in the Asia-Pacific region with 18 non-domestic television programme service licensees operating in and broadcasting from Hong Kong. Altogether they offered a total of 265 satellite television channels serving over 300 million viewers in the Asia-Pacific region, Europe and Africa, of which 44 channels were receivable in Hong Kong. A summary of non-domestic television programme services as at March 2015 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 2013, the gross output of the telecommunications sector amounted to $78 billion and it employed around 19 100 persons.

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

5.2.1 The Telecommunications Regulatory Regime

Carrier Licences

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

The unified carrier licensing regime has been implemented since 1 August 2008 as the single licensing vehicle for the provision of facility-based fixed, mobile and/or converged telecommunications services in Hong Kong.

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

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

As at March 2015, there were a total of 59 carrier licensees, providing local fixed services, cable-based external fixed services, non cable-based external fixed services and/or mobile services. The Authority issued 11 UCLs in the first quarter of 2015 in replacement of a number of licences upon their expiry, as they were granted 15 years ago in 2000 upon liberalisation of the market for external telecommunications facilities and wireless fixed telecommunications network services.

Public Radiocommunications Service Licences

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

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

As at March 2015, there were a total of 9 PRS licensees.

Services-based Operator Licences

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

SBO licence covers three types of services, namely, Class 1 and Class 2 local voice telephony service, and Class 3 service which may include external telecommunications service, Internet access service, international value-added network service, mobile virtual network operator service, private payphone service, public radio communications relay service, security and fire alarm signals transmission service, teleconferencing service and mobile communications service on board an aircraft.

As at March 2015, there were a total of 530 SBO licensees.

Class Licences

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

- 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 type and number of all telecommunications licences are at **Annex 2**.

5.2.2 Developments in the Telecommunications Market and Technology Trends

Mobile Communications Services

Competition in public mobile services is keen. As at March 2015, there were four mobile network operators, namely, China Mobile Hong Kong Company Limited (CMHK), Hong Kong Telecommunications (HKT) Limited, Hutchison Telephone Company Limited (HTCL) and SmarTone Mobile Communications Limited (SmarTone), providing a wide range of public mobile services. The availability of mobile number portability since March 1999 has contributed to promoting effective competition among the mobile network operators as it allows customers to retain their telephone numbers when they switch to another mobile network operator.

The four mobile network operators provide 2G, 3G and 4G services in Hong Kong with affordable prices. As at March 2015, there were about 17 million subscribers to mobile communications services. This represents a population penetration of 233.3%, one of the highest in the world. The number of 3G/4G users reached 12.25 million in March 2015, representing a population penetration of 168.6%. Through spectrum refarming, more spectrum is now used for provision of 4G services with the downlink speed up to 300 Mbps.

With the increasing popularity of smart phones, particularly 4G mobile handsets, which were readily available in the market, the monthly mobile data usage surged to 17 472 Terabytes in March 2015, representing 1.3 times and 1.9 times the monthly usage over the same period in 2014 and 2013 respectively. On average, each mobile user used 1 418 Megabytes per month, compared with 1 046 Megabytes in March 2014 and 818 Megabytes in March 2013. The continued development of 4G mobile services is expected to further boost the mobile data usage in the future.

Figure 11: Number of Mobile Subscribers (2005 to 2014)

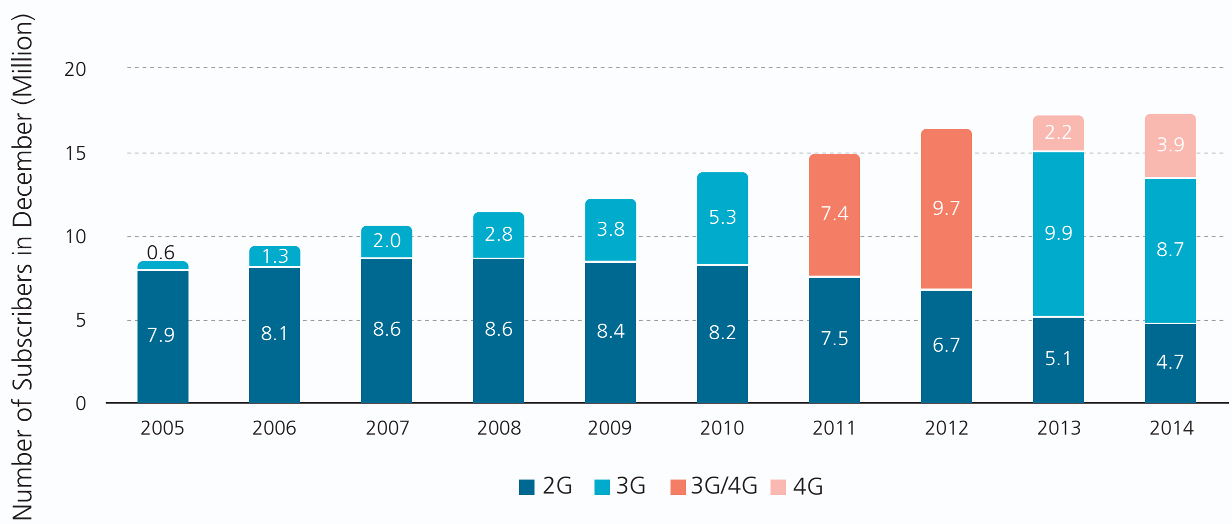


Figure 12: Mobile Customers using Postpaid and Prepaid SIM (2005 to 2014)

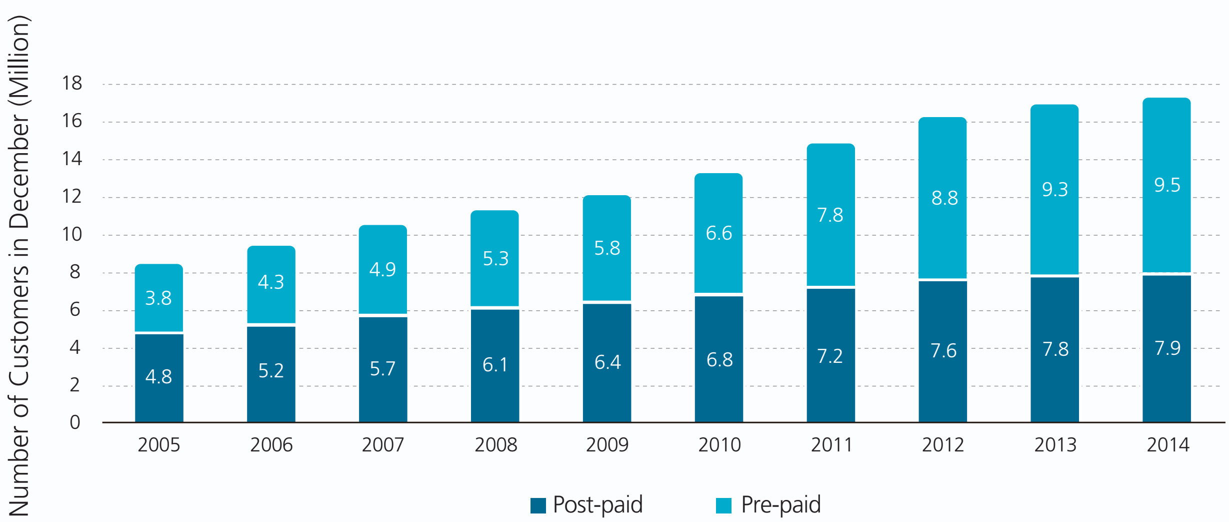
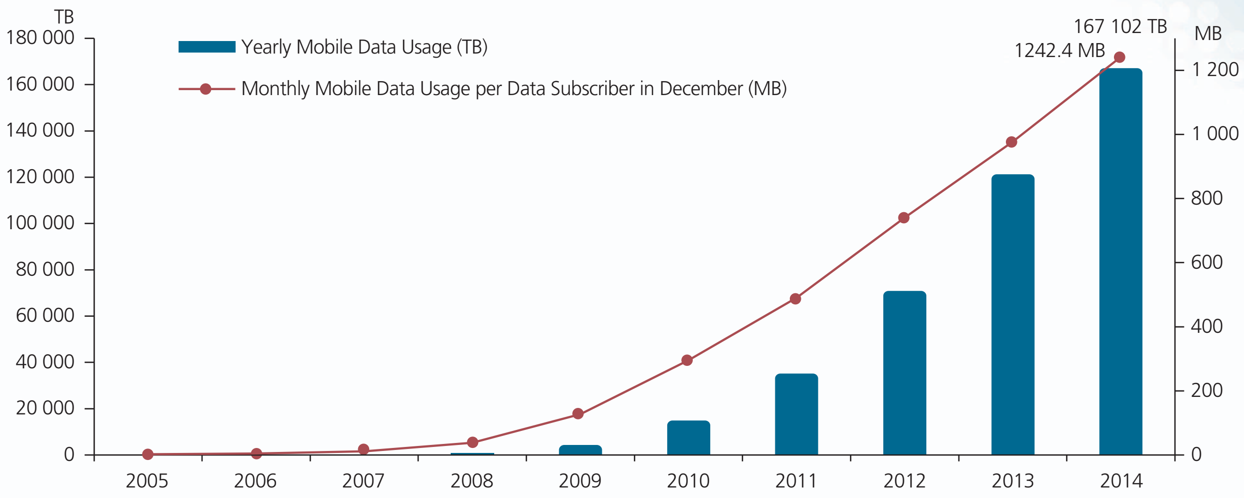


Figure 13: Mobile Data Usage (2005 to 2014)



Fixed Communications Services

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

As of March 2015, there were 23 local fixed carriers, providing around 101 fixed lines per 100 households, one of the highest in the world. They are:

- PCCW-HKT Telephone Limited and Hong Kong Telecommunications (HKT) Limited
- New World Telecommunications Limited
- Wharf T&T Limited
- Hutchison Global Communications Limited
- Hong Kong Broadband Network Limited
- Towngas Telecommunications Fixed Network Limited
- ComNet Telecom (HK) Limited
- TraxComm Limited
- HKC Network Limited
- Hong Kong Cable Television Limited
- Reach Networks Hong Kong Limited and Reach Cable Networks Limited
- Telstra International HK Limited and Telstra International Limited
- Verizon Hong Kong Limited
- SmarTone Communications Limited
- Vodafone Enterprise Global Network HK Limited
- Hong Kong Telecommunications (HKT) Limited
- China Mobile Hong Kong Company Limited
- 21 ViaNet Group Limited
- China Telecom Global Limited
- NTT Com Asia Limited
- Equinix Hong Kong Limited
- TVB Network Vision Limited
- PCCW Global (HK) Limited

As a result of the active network rollout by fixed carriers and the former Telecommunications Authority's initiative to encourage further network rollout by the withdrawal of mandatory Type II interconnection policy in mid-2008, 86.7% and 78.9% of households were able to enjoy a choice of at least two and three self-built customer access networks respectively as at March 2015. It is expected that the figure will keep growing as the operators continue to roll out their networks.

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

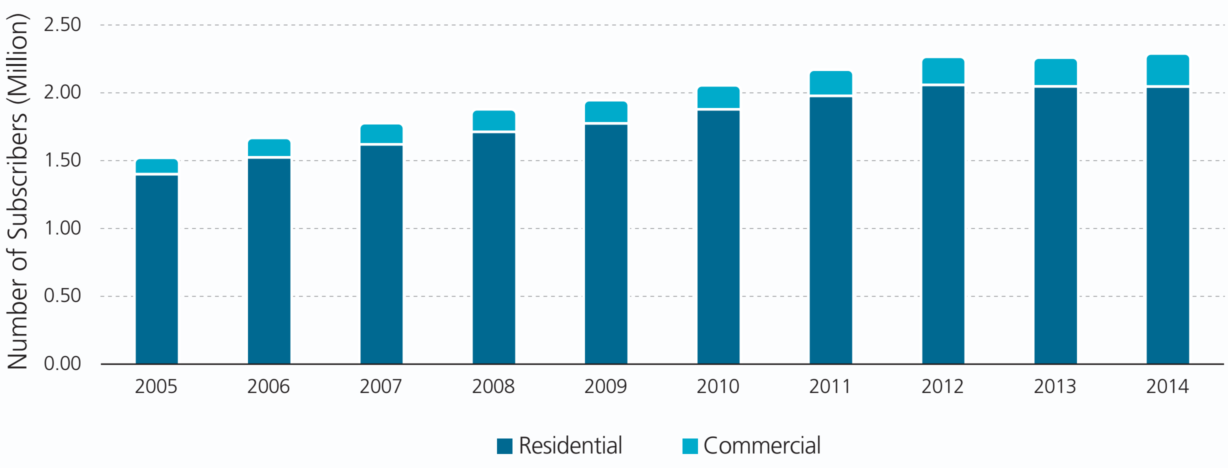
Fixed Broadband Services

As at March 2015, 23 facility-based operators and 184 services-based operators were authorised to provide broadband Internet access services in Hong Kong. With the continuous network rollout of facility-based operators, the Hong Kong community is able to enjoy the 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 2015, there were around 2.3 million residential and commercial fixed broadband subscribers, with a household penetration rate of 83%. Broadband services are available at speeds up to 1 gigabit per second (Gbps). Over 84% of the broadband subscribers are using service plans with speeds at 10Mbps or above. The statistics of fixed broadband subscribers as at March 2015 and the statistics for the past 10 years are shown in Figure 14 and Figure 15 respectively.

Figure 14: Statistics of fixed broadband subscribers as at March 2015

	No. of subscribers	% share
Total No. of broadband subscribers	2 281 275	
Broadband speed of 10Mbps or above	1 925 479	84.4%
Broadband speed below 10Mbps	355 796	15.6%
Residential	2 041 742	89.5%
Commercial	239 533	10.5%

Figure 15: Fixed Broadband Subscribers (2005 to 2014)



Development of Next Generation Networks (NGN)

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

In Hong Kong, the development of NGNs has always been driven by technical and commercial considerations of carriers. Some network operators have already launched their NGNs, while others are in the process of migrating their existing networks to NGNs. With the advent of NGN, it is necessary for the Authority to remain vigilant about the challenges to be brought about by NGN and ensure that the regulatory framework remains updated and appropriate in the NGN era. After the completion of a consultancy study commissioned to examine the implication of NGN development on the regulatory framework in Hong Kong, the NGN working group set up under OFCA, with members coming from the industry as well as various professional associations, has been deliberating on various issues pertinent to NGN, including arrangement of NGN interconnection trial among operators, collection of NGN related statistics, etc.

Public Wi-Fi Services

Operators have been actively rolling out Wi-Fi networks. There are five fixed network operators and 40 class licensees providing public Wi-Fi services. As at March 2015, there were 31 879 public Wi-Fi hotspots in the city and the number continued to grow. Free Wi-Fi services were available to the public in 486 government premises.

External Telecommunications Services

The external telecommunications facilities market was fully liberalised in 2000. As of March 2015, 42 fixed carriers were authorised to provide cable-based and/or non-cable-based external telecommunications facilities.

As at March 2015, Hong Kong had a total of seven cable landing stations: two in Tong Fuk, two 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 2015, Hong Kong was connected to nine regional and trans-Pacific submarine cable systems. They are Asia-America Gateway Cable System (AAG), Asia Pacific Cable Network 2 (APCN-2), 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 2015, the total equipped external capacity exceeded 24 402 Gbps. Total external telephone traffic was 10 479 259 000 minutes for the period from 1 April 2014 to 31 March 2015.

Satellite Services

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

Licences are required for the operation of satellites and associated facilities. As at March 2015, two Hong Kong companies were licensed to operate and provide satellite communication services, namely Asia Satellite Telecommunications Company Limited (AsiaSat) and APT Satellite Holdings Limited (APT). AsiaSat and APT were established in 1988 and 1992 respectively.

AsiaSat and APT now operate nine satellites some of which will soon reach the end of their designed operation lives. The two companies have entered a new investment cycle of launching new satellites for replacement and provision of new business. Two new satellites were launched in the second half of 2014. Another new satellite is scheduled to be launched by the end of 2015.