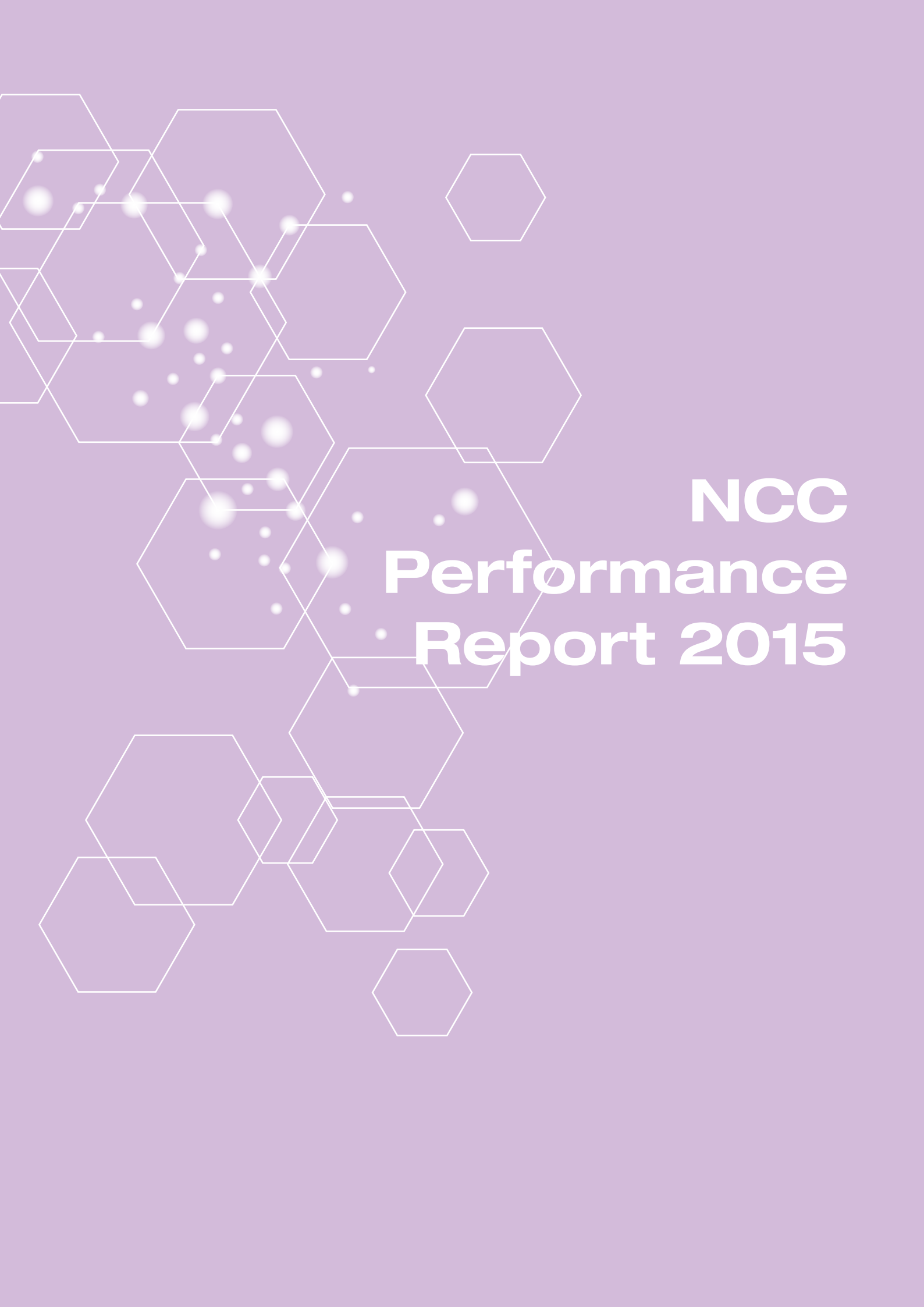




NCC Performance Report 2015



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Chairperson's Foreword



The 2015 NCC Performance Report is our tenth and also marks our tenth anniversary. As most of the commissioners' tenures are about to conclude, mine included, it is a great pleasure to be able to provide the foreword for this report and present the most recent progress we have made.

Looking back at the 498th to 704th Commission Meetings, the comments, suggestions, deductions, reminders, interpretations and debates from Commissioners Chong-Jian Liu (劉崇堅), Shyue-Win Wei (魏學文), Hsiao-Cheng Yu (虞孝成) (Vice Chairperson), Shin-Yi Peng (彭心儀), Yuan-Ling Chen (陳元玲), Yu-Fen Chiang (江幽芬), Jenn-Hwa Tu (杜建華), Yi-Ning Chen (陳憶寧), Po-Tsong Wong (翁柏宗), I am reminded of our concerted efforts to prescribe the most appropriate and effective solutions to more than two thousand items that have been on our agenda. It is clear that the Commission has remained committed to better policy designs, thereby reducing the regulatory burden and promoting a more competitive and innovative communications environment.

In another aspect, we have also visited other government ministries, local governments, remote areas, aboriginal tribes, communication sector associations, and non-profit organizations to strengthen ties with stakeholders. The feedback and suggestions we gathered with respects to our performances during such visits were invaluable and taken into account at the Commission Meetings so as to ensure we made well-informed and fit-for-purpose decisions.

Furthermore, commissioners heading NCC delegations have also participated at a number of international conferences and forums, such as those held by Asia-Pacific Economic Cooperation Telecommunications and Information Working Group (APEC TEL), Mobile World Congress (MWC), Pacific Telecommunication Council (PTC), and International Institute of Communications (IIC), and established closer relationships with many communication regulators. Together we face many of the same issues: software-defined networking (SDN), just one of the many latest communication technologies, flexible approach for spectrum management, telecom infrastructure sharing, cross-border channel supply chain, multi-stakeholder

Internet governance, and the appearance of Over-the-Top (OTT) services are just some of the challenges in front of us. It's also worth noting that the best approach to revamping the more traditional regulatory framework so as to face the incoming challenges has been repeatedly raised during Commission Meetings.

Recently, the Ministry of Economic Affairs, which is responsible for coordinating department efforts, has been leading and coordinating cross-departmental efforts in relation to the TiSA (Trade in Service Agreement) negotiations. As mentioned in this and previous performance reports, NCC was also assigned the task to review the Annex on Telecommunications Services and the Annex on Electronic Commerce concerning public telecommunications. In the meantime, we also took a proactive approach in scrutinizing our regulations and measures, to ensure compliance with new international trade norms.

In 2015, as more details about the Trans-Pacific Partnership (TPP) agreement were revealed, NCC also carefully deliberated Chapter 13 Telecommunications and Chapter 14 E-Commerce, as we prepared to proceed in the negotiations. The terms of TPP were also put into consideration when drafting the 'Convergence Communications Bill' (hereafter referred to as the 'Convergence Bill').

The Convergence Bill is, in fact, a package of draft acts containing the 'Electronic Communications Act,' 'Telecommunications Infrastructure and Resources Administration Act,' 'Telecommunications Undertakings Act,' 'Multichannel Cable Platform Service Administration Act,' and 'Broadcasting and Channel Service Suppliers Administration Act.' The drafting process has taken three years and addresses all the important policy issues. During this process, all of the drafted regulations went through extensive consultation by means of a series of public hearings, seminars, and forums so as to consider the views of a wide range of people.

The Convergence Bill improves the existing regulatory framework, which was drafted and revised mostly for 'contingency' or 'temporary transition,' and addresses issues such as the growing impact of OTT and the threat of local tele-



com operators becoming a 'dumb pipe.' The Convergence Bill is the result of decades of regulatory experiences gained since the lifting of martial law and the beginning of the liberalization of telecommunications. Particularly, the latest regulatory approach to effective reform in content, spectrum, and infrastructure is reflected in the Convergence Bill.

In addition, the Convergence Bill also aligns with new cross-border trade rules in the communications sector, which will foster further integration with international partners in facilitating future generations of the communications ecosystem; at the same time, local industry development can be sustained and the rights of our citizens protected.

The secret ingredients of our Convergence Bill, along with many other recent achievements, can be found in the following pages of the 2015 NCC Performance Report.

A stylized, handwritten signature in black ink, appearing to read 'Howard S.H.'.

Howard S.H.
Chairperson

Highlights

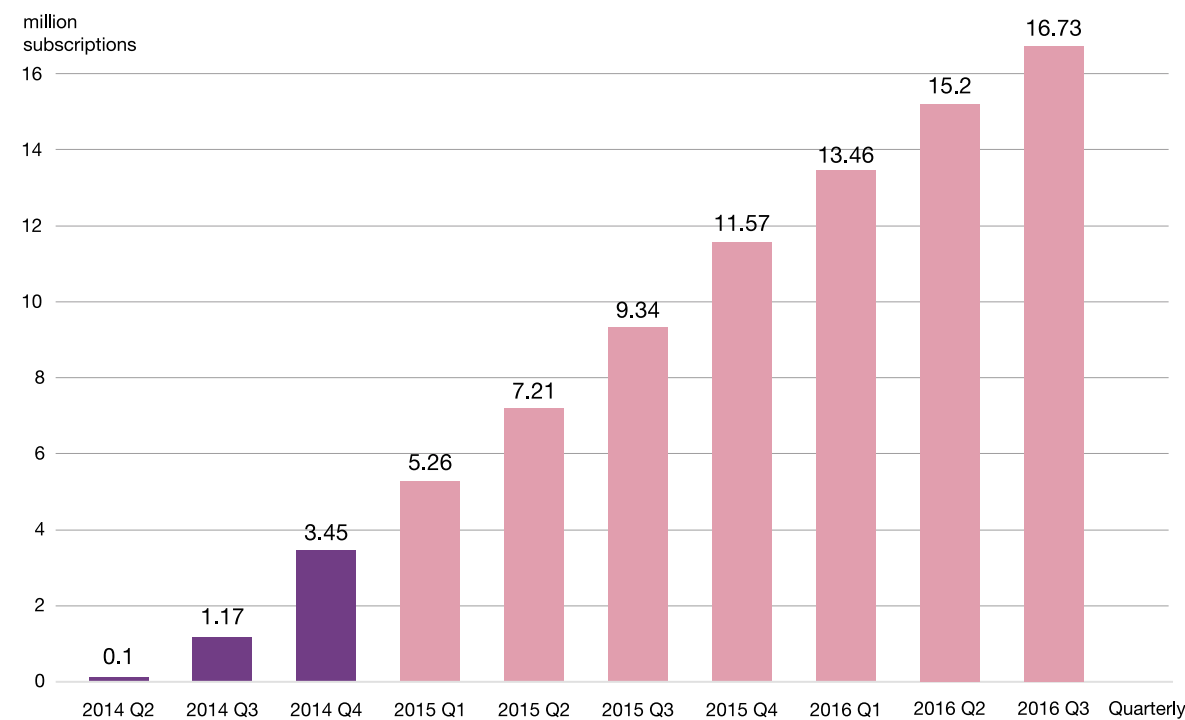


Convergence Communications Bill

With view to determining the main priorities for regulatory reform in the digital era, NCC engaged with stakeholders from industry, academia, and government departments throughout 2015, and consequently introduced the draft convergence communications bill package, containing the following five bills: the Electronic Communications Bill, Telecommunications Infrastructure and Resources Administration Bill, Broadcasting and Channel Service Suppliers Administration Bill, Multichannel Cable Platform Service Administration Bill, and Telecommunications Undertakings Bill.

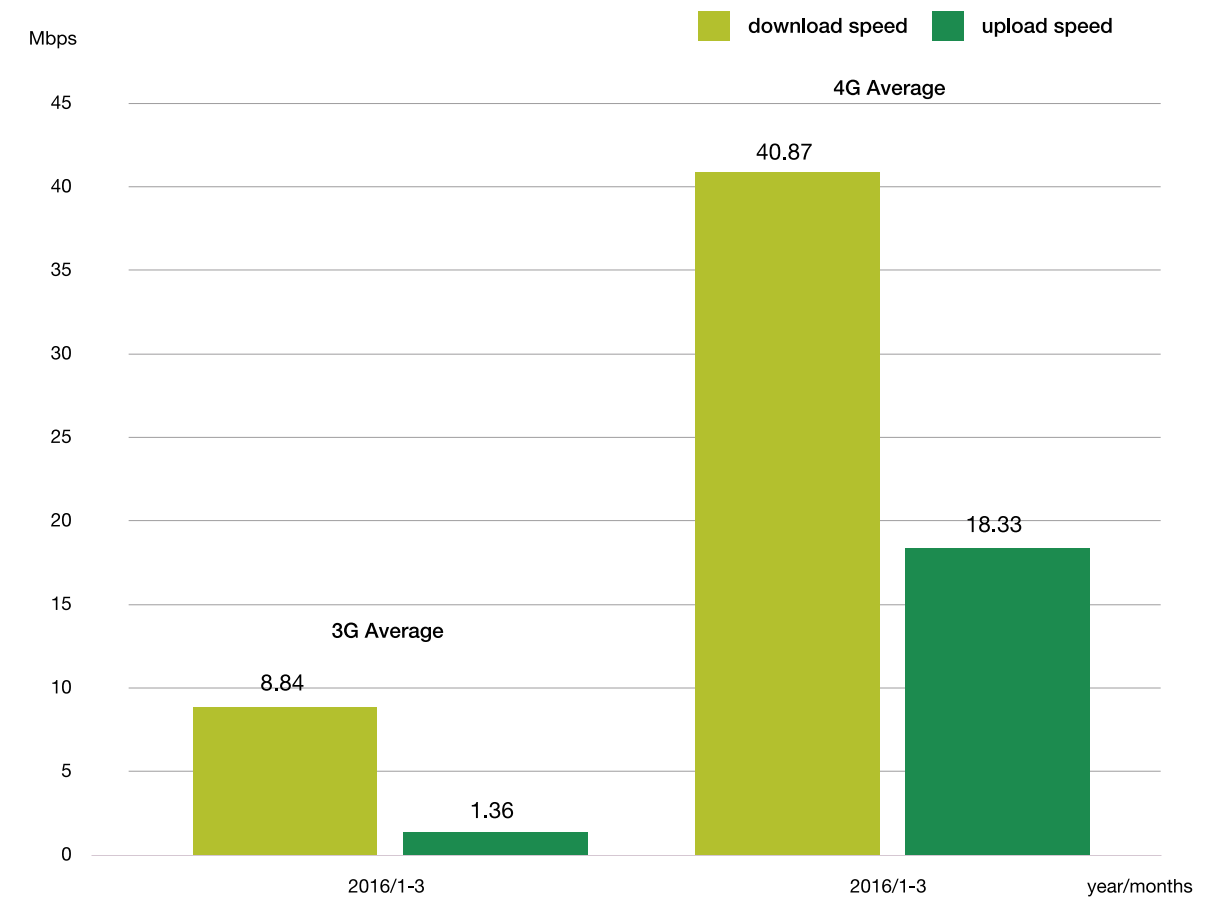
4G Adoption Accelerated

After the launch of 4G services in May 2014, operators offered various promotional plans to encourage 2G and 3G users to switch to 4G services; the plans were boosted significantly by the fact that the 4G network is a major improvement on the older networks. As a result, 4G subscribers grew significantly in 2015, reaching 11.57 million (Figure 1). NCC has coordinated closely with the industry with view to promoting widespread deployment and the more effective use of spectrum resources and ensuring everyone can enjoy the benefits brought by 4G mobile broadband (Figure 2).



The number of 4G subscribers jumped to 11.57 million in 2015 (39.4% of total subscribers).

Figure 1 4G Subscriptions

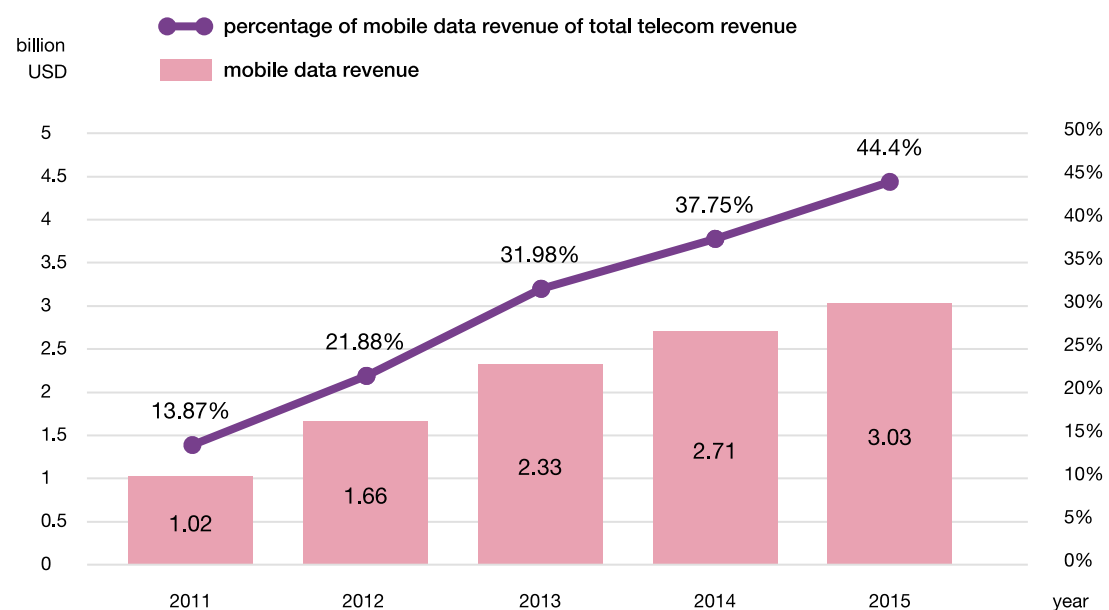


Average 4G download speed was 40.87Mbps; 4.6 times faster than the average 3G download speed.

Figure 2 Mobile Broadband Speeds



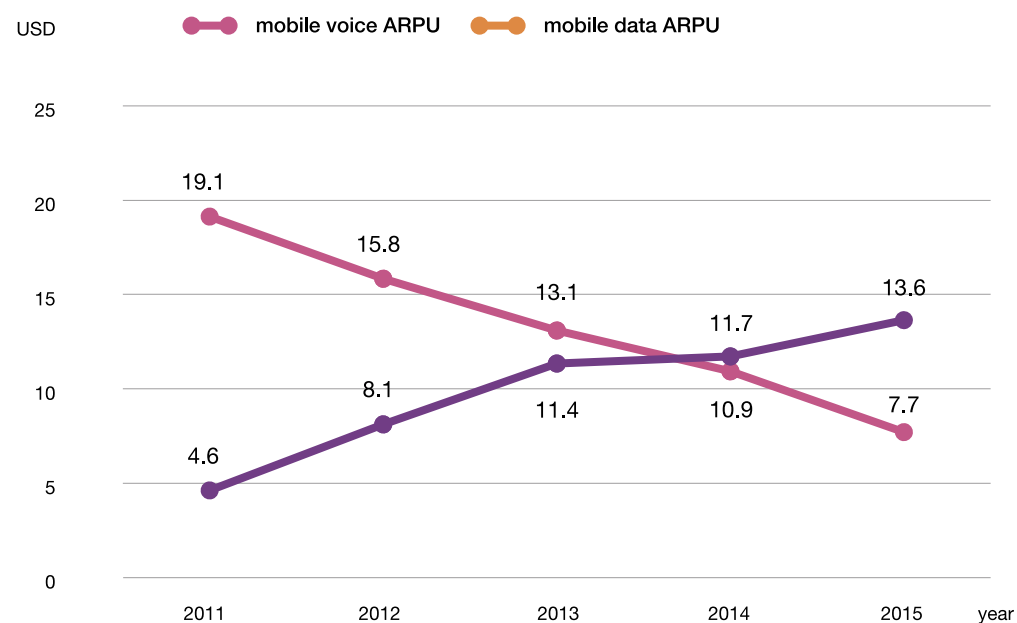
Highlights



Mobile data revenue was USD 3.03 billion; an increase of 11.77% when compared with 2014.

Figure 3 Mobile Data Revenue¹

¹ Average exchange rate of USD to TWD from 2011 to 2015: 29.496(2011), 29.659(2012), 29.751(2013), 30.351(2014), 31.678(2015). The same exchange rate applies to all the data in this report.



2015 mobile data ARPU was USD13.6; almost USD 5.9 higher than mobile voice ARPU.

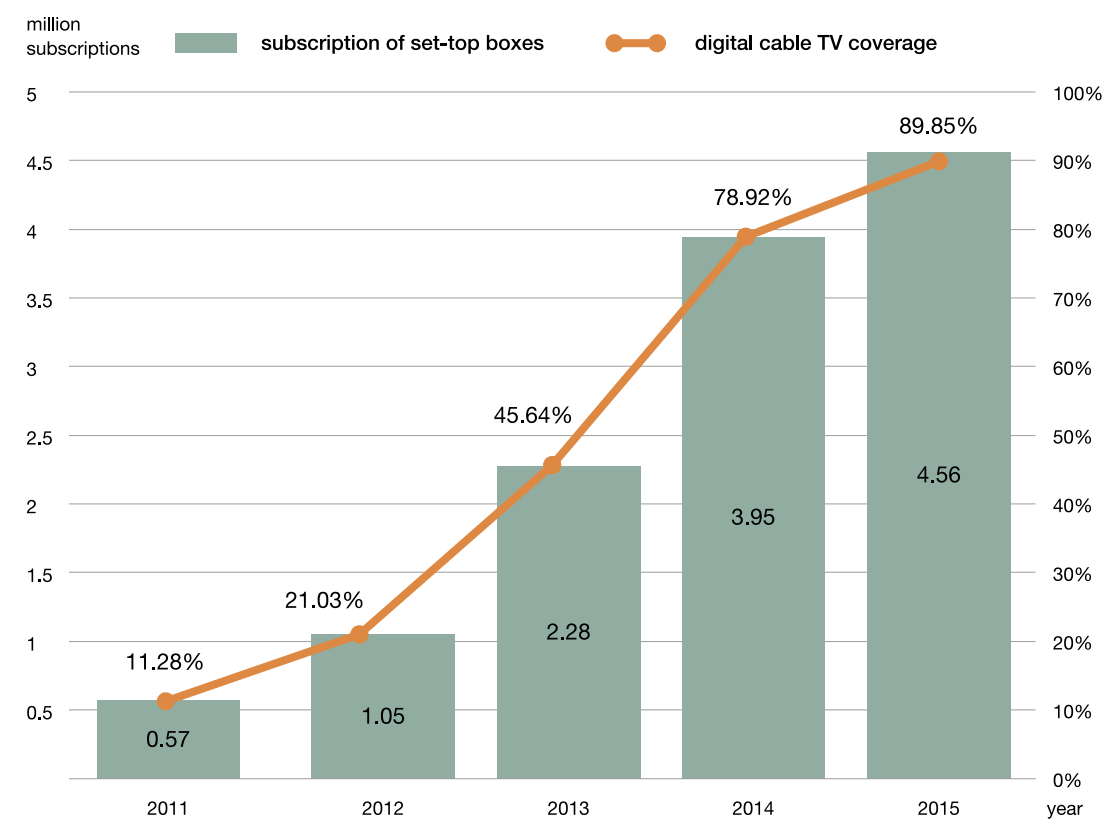
Figure 4 ARPU of Mobile Voice and Mobile Data (each Dec.)

Digital Cable TV

Promoting the full digitization of cable television has been a prioritized measure to ensure the competitiveness and availability of network infrastructure. Digital cable TV not only delivers high quality content, but also brings more smart services into homes through high speed broadband Internet services (Figure 5).

Improved Converged Services

NCC has been making notable progress in improving communication services for all. Initiatives such as conducting mobile broadband speed tests, shortening the mobile number portability process, and conducting telecom and communication contents complaints reports have all ultimately promoted competition between providers and benefited users.



Penetration rate of digital cable TV rose to 89.85%; an increase of 10.93% compared with 2014.

Figure 5 Digital Cable TV Penetration

Digital Inclusion

While working closely with communication industry to facilitate digital development and innovations, NCC also actively addresses the importance of digital inclusion, undertaking measures such as deploying broadband in remote areas (Figure 6), offering subsidies to those with low-income for high speed broadband, and commissioning media literacy programs.

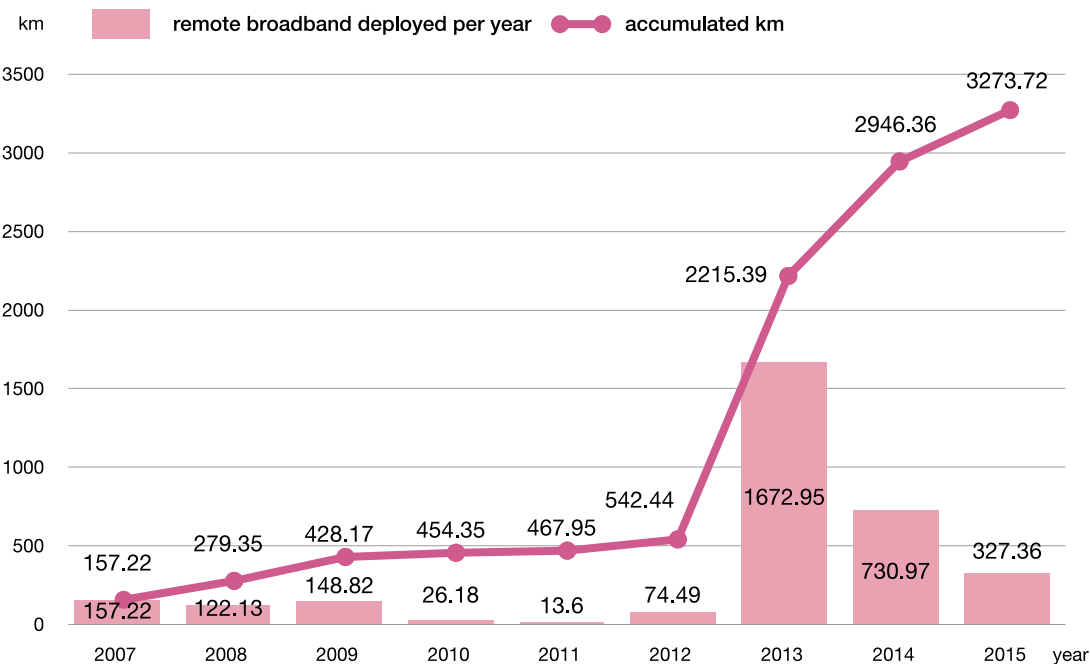
Disaster Resistance

Taiwan is constantly under the threat of natural disasters such as typhoons, floods and earthquakes. In order to prevent the disruption of communications, nine more disaster-resistant

communications platforms were built in 2015. In the case of such circumstances, NCC coordinates with relevant ministries and operators to assist with the recovery of connections in minimal time.

International Participation

In pursuit of the goal of digital convergence, NCC continuously observes latest policy ideas from communication regulatory institutions. With the same aim, NCC has also actively participated in various international events as a means to engage with governmental and non-governmental stakeholders, and share our experiences.



By 2015, service covered 96.02% of remote areas, reaching 3273.72 km.

Figure 6 Broadband in Remote Areas / Accumulated Fiber-optic Cable

Section 1 Who We Are and What We Do



Functions and Responsibilities

Legal Duties

Prior to the establishment of NCC, responsibility for overseeing telecommunications and broadcasting was separated between the Government Information Office and Directorate General of Telecommunications. However, due to the telecommunications and broadcasting sectors steadily converging, the Executive Yuan determined that an independent regulatory agency would be a more appropriate way to govern the communications sector with a broader and more accurate strategic insight, as well as a more open and efficient administration.

Proceeding the promulgation of the Fundamental Communications Act (Jan. 2004) and the National Communications Commission Organization Act (Nov. 2005), the National Communications Commission was officially established on Feb. 22, 2006 which marked a major turning point in the management of communications in Taiwan.

According to Article 1 of the National Communications Commission Organization Act, the purpose of NCC is to ensure people's freedom of speech, end the state control of the media in order to protect its neutrality, enhance broadcasting standards, ensure fair and effective competition, protect the interests of consumers, respect the rights of minorities and disadvantaged, promote cultural diversity, and enhance national competitiveness.

Regulatory Functions and Principles

According to Article 3 of the same act, NCC is charged with the purview of the following duties:

- Formulate communications supervisory policy, and formulate, draft, amend, abolish and implement communications laws and regulations;
- Manage the supervision of operations of communications enterprises and approve and issue licenses;
- Review and inspect communications systems and equipment;
- Formulate technical standards of communications engineering;
- Regulate the rating system on the content of communications transmission and other legally designated matters;
- Manage communications resources;
- Maintain the order of competitive practices in communications;
- Standardize and manage communications transmission security technology;
- Preside over major disputes between communications operators and consumer protection matters;
- Spearhead international affairs and international exchange and cooperation;
- Manage communications enterprise-related funds;
- Monitor, investigate, and establish rulings on communications operations;
- Penalize and discipline violations of communications-related laws and regulations;
- Oversee other communications-related matters.

Governance Structure

Commission Meeting

The Commission Meeting is the highest policy-making body of NCC, in which the formation, affirmation, and publication of the minutes of the Commission Meeting are conducted according to NCC Organization Act and Meeting Rules.

According to Article 9 of NCC Organization Act, the following items shall be authorized by the commission at the Commission Meeting before proceeding:

- Formulation and review of regulatory policy and systems;
- Review and evaluation of critical communications plans and proposals;
- Review and distribution of communications resources;
- Review of formulation, drafting, amendment, and abolition of communications-related laws and regulations;
- Review of public announcements of the communications industry, concession cases and ruling cases involving the acquisition, modification, or cessation of communications enterprise management rights;
- Review of the organizational chart, meeting rules, and administrative procedures;
- Review of the detailed chart of responsibility among internal units;
- Review and approval of the budget and final accounts;
- Other pertinent matters to be determined and ruled by the commissioners as required by law;

- Declaration of the recruitment and dismissal of unit heads other than that of the Human Resources Office, Accounting Office and Civil Service Ethics Office shall be conducted by the chairperson;

Commission Meetings are held on a weekly basis and additional meetings may be held when deemed necessary. The Commission Meeting is chaired by the NCC chairperson; if the chairperson is unable to attend the meeting, the vice chairperson acts on the chairperson's behalf.

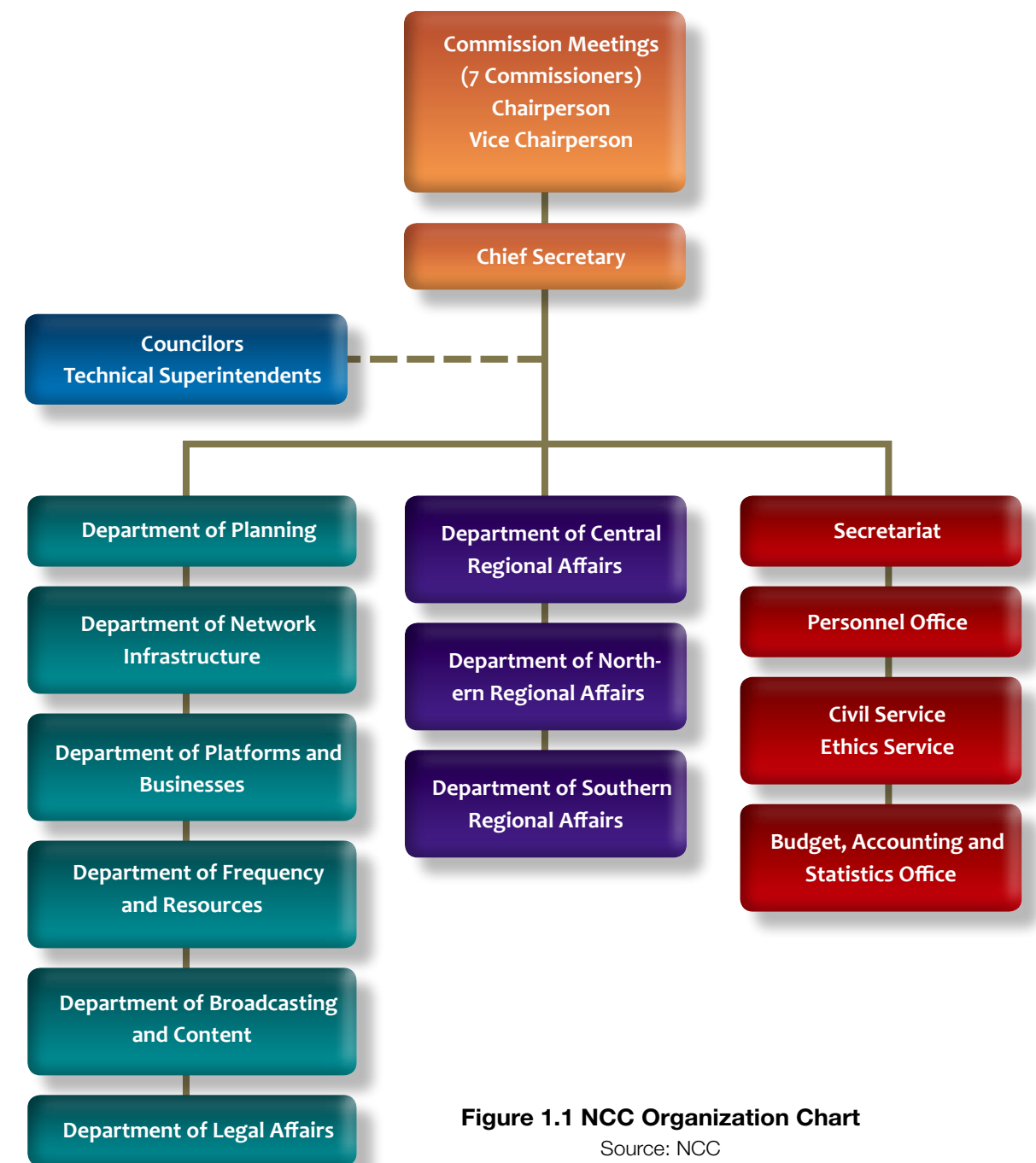
All final resolutions shall be voted on, and shall be valid at the consent of over half of the total seats on the Commission Meeting. Commissioners may present concurring opinions or dissenting opinions on particular resolutions, which are announced alongside the minutes of the meeting.



Table 1 Commissioners

Chairperson	Vice Chairperson	Commissioner
Howard S.H. Shyr (2012/08/01~ 2016/07/31)	Hsiao-Cheng Yu (2012/08/01~ 2016/07/31)	Yu-Fen Chiang (2013/01/25~ 2016/07/31) Jenn-HWA Tu (2014/08/01~ 2016/01/31) Po-Tsong Wong (2014/08/01~ 2016/07/31) Yi-Ning Chen (2014/08/01~) Yuan-Ling Chen (2012/08/01~ 2012/10/30) Shin-Yi Peng (2012/08/01~ 2016/07/31) Chorng-Jian Liu (2008/08/01~ 2014/07/31) Shyue-Win Wei (2008/08/01~ 2014/07/31)
Chan, Ting-I (2016/08/01~)	Po-Tsong Wong (2016/08/01~)	Jason C.S. Ho (2016/08/01~) Chen-Ling Hung (2016/08/01~) Wen-Chung Guo (2016/08/01~) Yi-Ning Chen (2014/08/01~) Yaw-Shyang Chen (2016/08/01~)

Departments and Offices





Accountability

Ethics Code

Commissioners are to perform their duties independently, and stringently abide by the conflict of interest recusal principle; they may not participate in the activities of political parties or serve in government agencies or state enterprise positions as consultants; they are also forbidden to serve in a communications enterprise or organization in either a full or part-time capacity.

At the 503rd Commission Meeting, the commissioners' self-regulation codes of practice were amended. This amendment introduced two main points: firstly, commissioners shall consult and listen to the opinions of the public and relevant organizations during the policy making process. However, all final decisions are to be voted on during Commission Meetings. Secondly, if a commissioner considers that the case to be reviewed involves a conflict of interests, he/she shall report it at the Commission Meeting to determine whether recusal is necessary.

Internal Audit

In order to improve administration efficiency, NCC established an internal audit panel, in which the vice chairperson serves as the chair and top senior civil servants of each department serve as auditors. The panel routinely carries out cross departmental audits in an objective manner and provides suggestions for improvements to achieve more effective operations so as to reach administrative goals.

An inspection report is released within two months after inspection and its approval by the vice chairperson. It includes both merits and deficiencies and provides suggestions for improvements. After receiving the report, the inspected department is required to begin eliminating deficiencies. Every six months, a regular follow up and progress report of corrections is made until the deficiencies have been completely removed.

Risk Management

To enhance the oversight of risk, NCC set up risk management frameworks consistent with governance visions. Risk assessment is carefully developed through the process of risk identification, risk analysis and risk evaluation. Risk standards and risk levels are also established; risk assessment and monitoring for any change in the organization's risk profile are continually undertaken.

Stakeholder Engagement

As particular policy initiatives may affect potential stakeholders, prior to passing resolutions, NCC uses various methods to engage with the public and relevant industry stakeholders, by means of public consultations, holding public meetings, or publishing relevant information online. Reasons behind possible policy options are explained in a way that ensures even the more complicated issues can be understood fairly easily by those who are interested.

Section 2 Communications



Telecommunications

Overview

Table 2.1 Fixed-line and Mobile Service Revenue

USD billion dollars

Service	2014	2015
Mobile	7.18	6.81
Fixed-line	5.26	4.83

Source: NCC

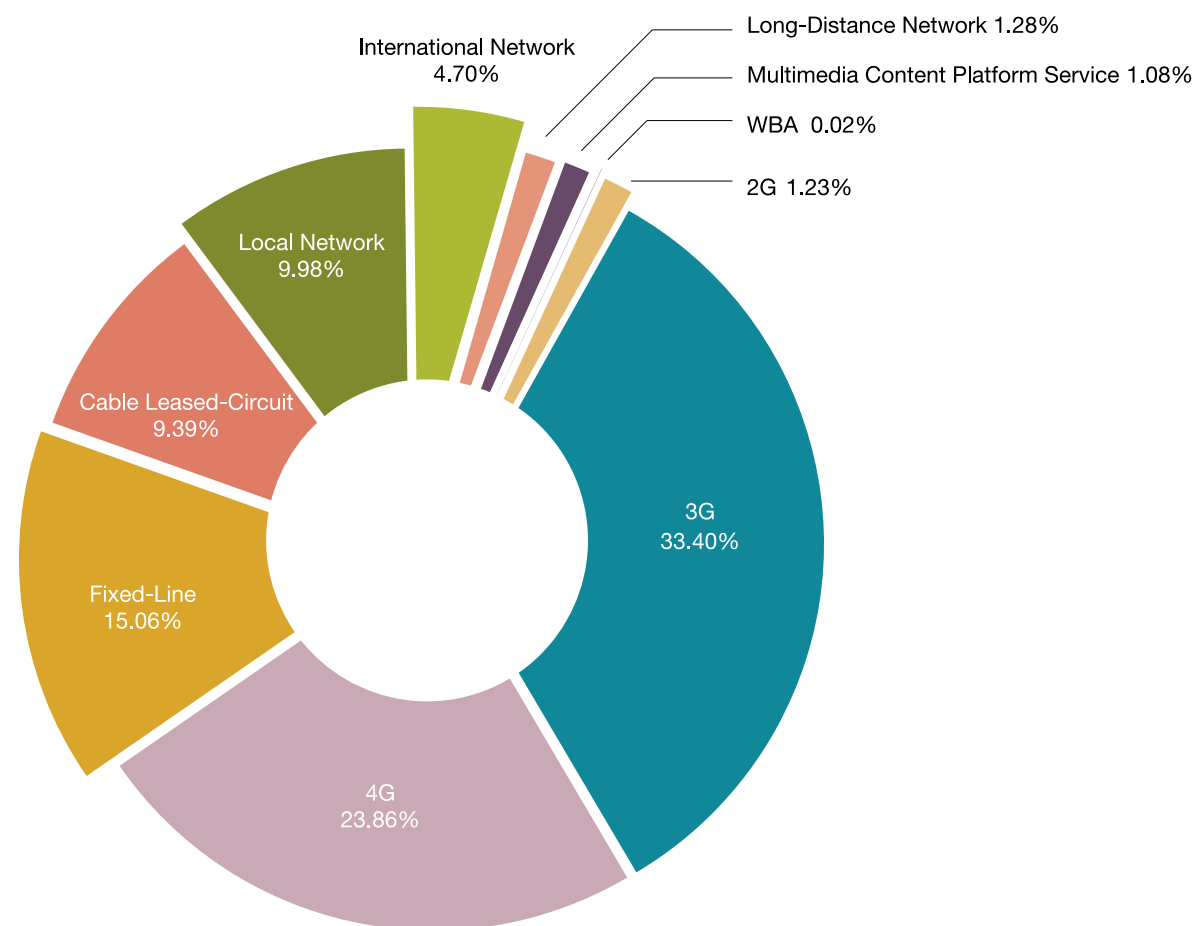


Figure 2.1 Telecom Sectors by Revenue (2015)

Source: NCC

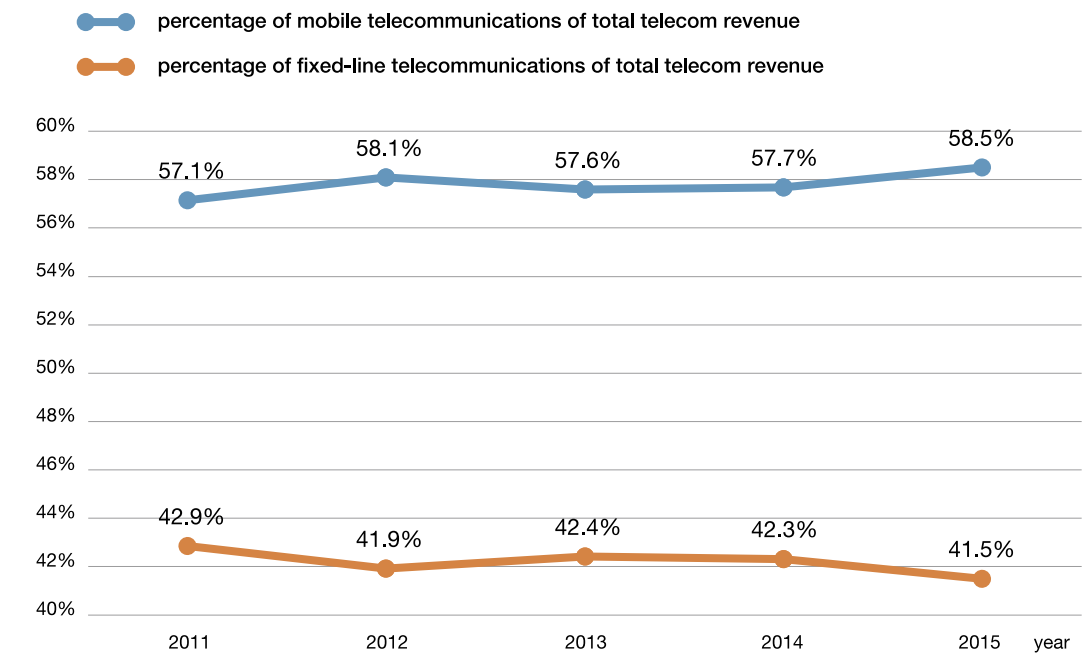


Figure 2.2 Fixed-line and Mobile Revenue

Source: NCC

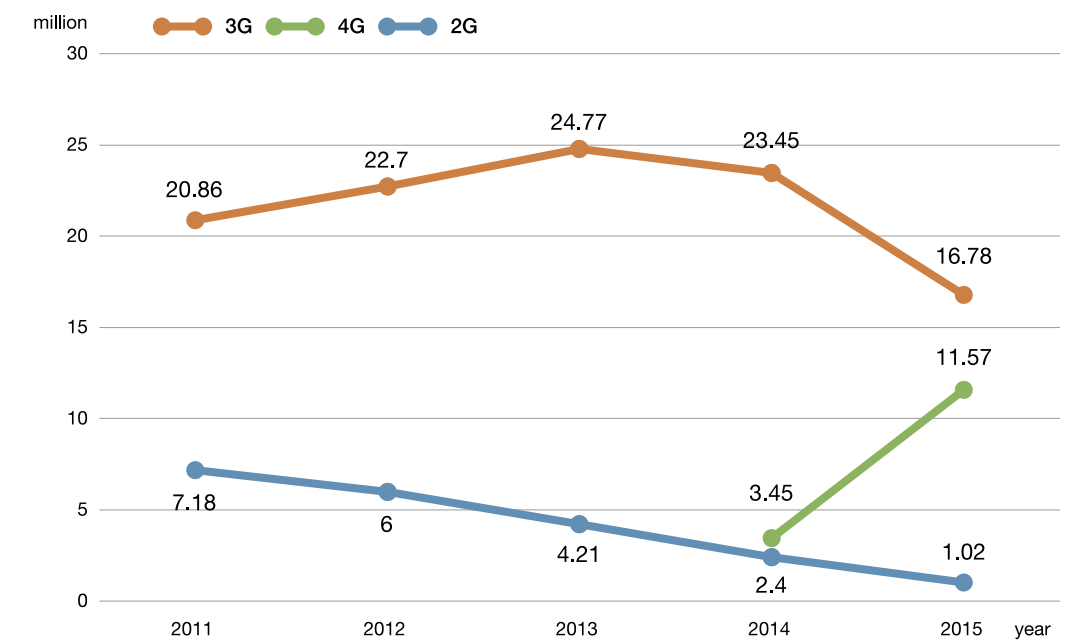


Figure 2.3 Number of 2G, 3G, 4G Subscribers

Source: NCC



Table 2.2 Type I² Telecom Services and Operators in Taiwan (2015)

Type of service		No. Licenses	Total No. Licenses	No. Operators
Mobile	2G (Mobile Telephone Business)	6	16	3
	3G (Third Generation Mobile Communications Business)	5		5
	4G (Mobile Broadband Business)	5		5
Satellite	Fixed Satellite Service	6	6	4
Fixed-line	Fixed-line network	4	80	4
	Local network	10		7
	Domestic local and long-distance land cable leased-circuit	62		61
	International submarine cable leased-circuit	4		4

Source: NCC

Table 2.3 Type II Telecom Services and Operators in Taiwan (2015)

Type of Service	No. Licenses	Total No. Licenses	No. Operators
Simple Voice Resale Service	62	776	435
Non-E.164 Internet Telephony Service	56		
E.164 Internet Telephony Service	4		
Wholesale Resale Service	149		
Intra-corporation Network Communication Service	38		
Bandwidth Resale Service	37		
Audio Conference Service	14		
Internet Access Service	225		
Store and Forward Network	38		
Store and Retrieve Network	68		
Video Conference Service	16		
Packet Switching Service	21		
Premium Rate Service	31		
Mobile Resale Service	7		
Mobile Resale and Value-added Service	10		

Source: NCC

² Telecommunications enterprises in Taiwan are categorized into two types: Type I and Type II. Type I operators refer to those that install telecommunications line facilities and equipment in order to provide telecommunications services; other operators are Type II operators.

Telecom Operators and Revenue

The total revenue in 2015 was USD11.63 billion, a drop of USD0.81 billion when compared with 2014. Since reaching its peak of USD13.11 billion in 2012, telecom revenues have continued to decline (Figure 2.4).

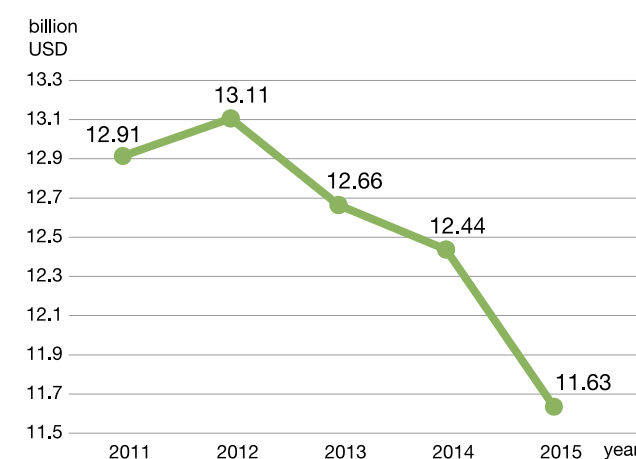


Figure 2.4 Total Telecom Revenue

Source: NCC

Mobile and Fixed-line Users and Penetration Rate

The number of mobile subscriptions maintained a growing trend from 2011 to 2014 but beginning from 2014, it declined from 30.1 million to 29.4 million in 2015. Land-line subscriptions also fell, from 12.1 million in 2014 to 11.9 million in 2015. The above figures reveal that both the mobile and fixed-line markets in Taiwan have become saturated (Figure 2.5).

However, subscriptions of fixed-line broadband continue to grow significantly: from just 5.2 million in 2010 to 7.6 million in 2015. A similar trend was evident in the subscriptions of mobile broadband: from 17.9 million in 2010 to 19.1 million in 2015.

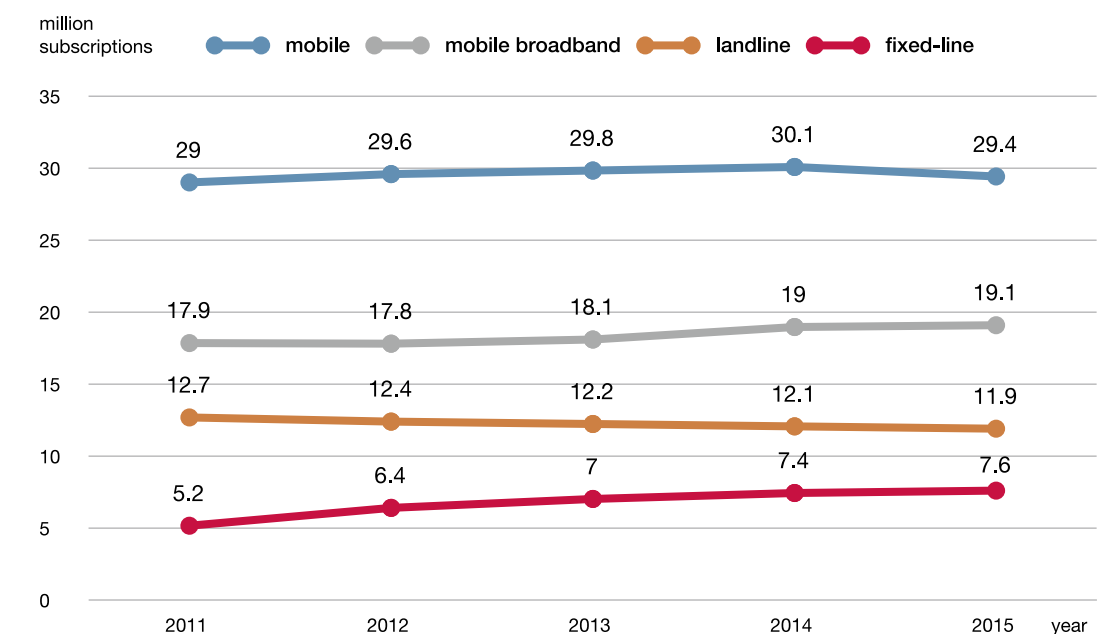


Figure 2.5 Telecommunications Subscriptions

Note: * refers to the projected value

Source: NCC



Concerning the penetration rate of main telecommunication services (Figure 2.6), mobile showed gradual growth to a peak of 128.4% in 2014, yet decreased to 125% in 2015. Land-line penetration rate also continued to decrease from 54.6% in 2011 to 50.6% in 2015. On the contrary, the penetration rate of fixed-line and mobile broadband both grew significantly; the former reached 32.4% while the latter was 81.2% in 2015. This trend reflects the vital role of broadband in the modern age.

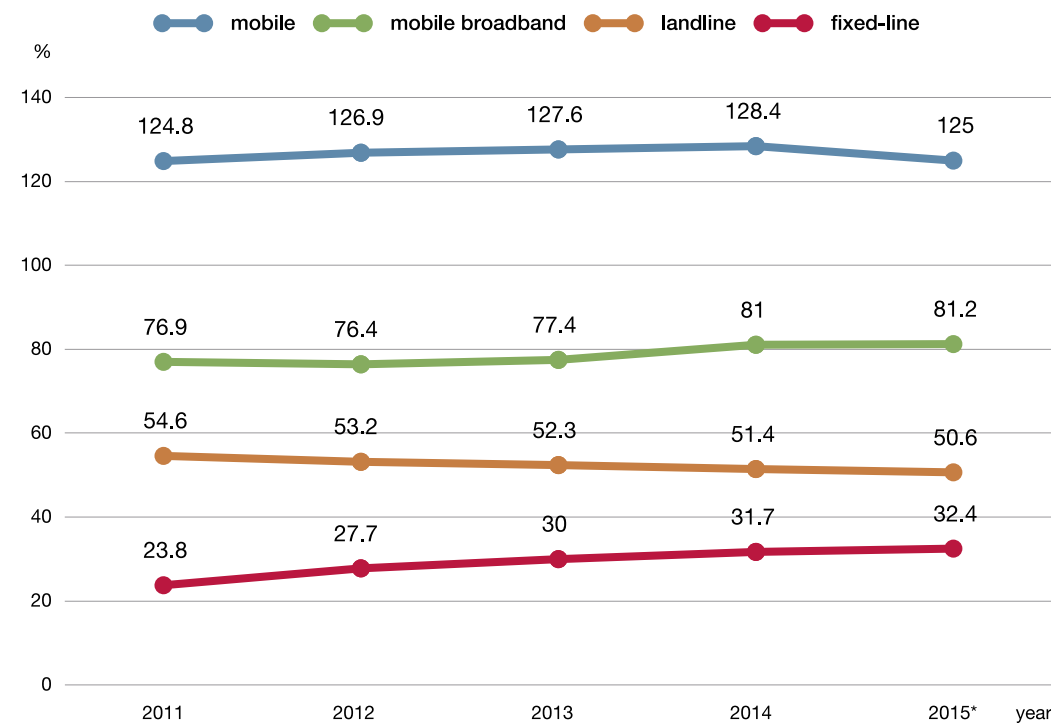


Figure 2.6 Penetration Rate

Note: * refers to the projected value
Source: NCC

Fixed-line

Fixed-line Revenue

The revenue of fixed-line telecommunications reached a peak of USD5.53 billion in 2011, and decreased slightly to USD4.83 billion in 2015 (Figure 2.7). From the period of 2011 to 2015, fixed-line market revenue accounted for between 41% and 43% of the total telecom revenue.

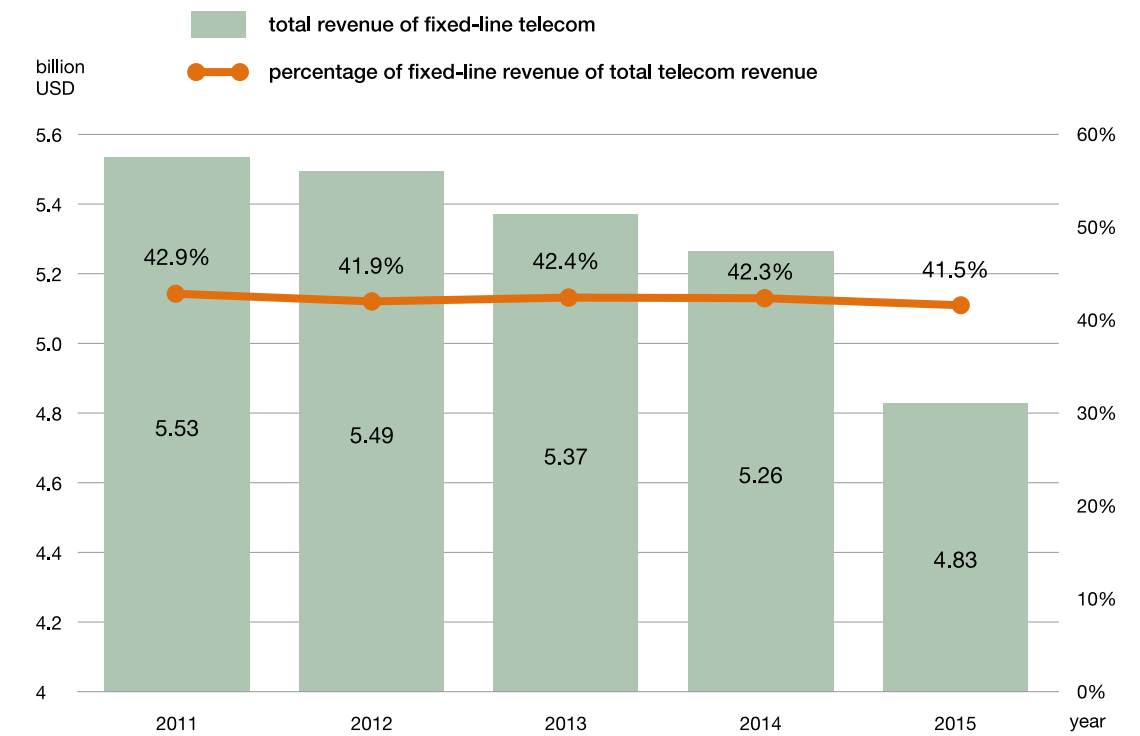


Figure 2.7 Fixed-line Revenue

Note: Revenue of MOD included
Source: NCC



Fixed-line Voice Service

Due to the popularity of mobile services, the revenue of fixed voice services has been decreasing steadily since 2011, and fell to USD1.86 billion in 2015; the percentage of fixed-line voice of the total fixed-line revenue also fell to 38.5% (Figure 2.8). The average expenses of fixed-line voice services per person each year fell to USD156.25 in 2015 (Figure 2.9).

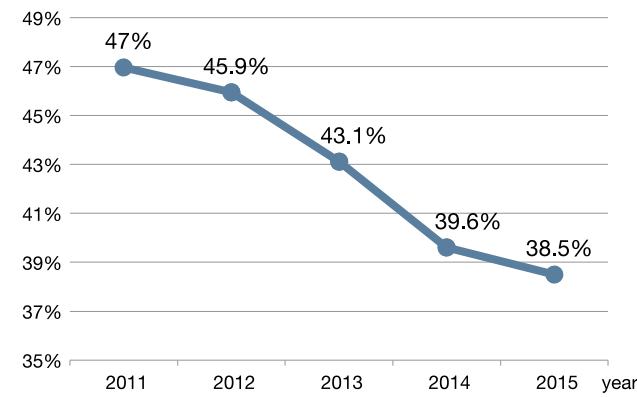


Figure 2.8 Fixed-line Voice Service Revenue of Total Telecom Revenue

Source: NCC

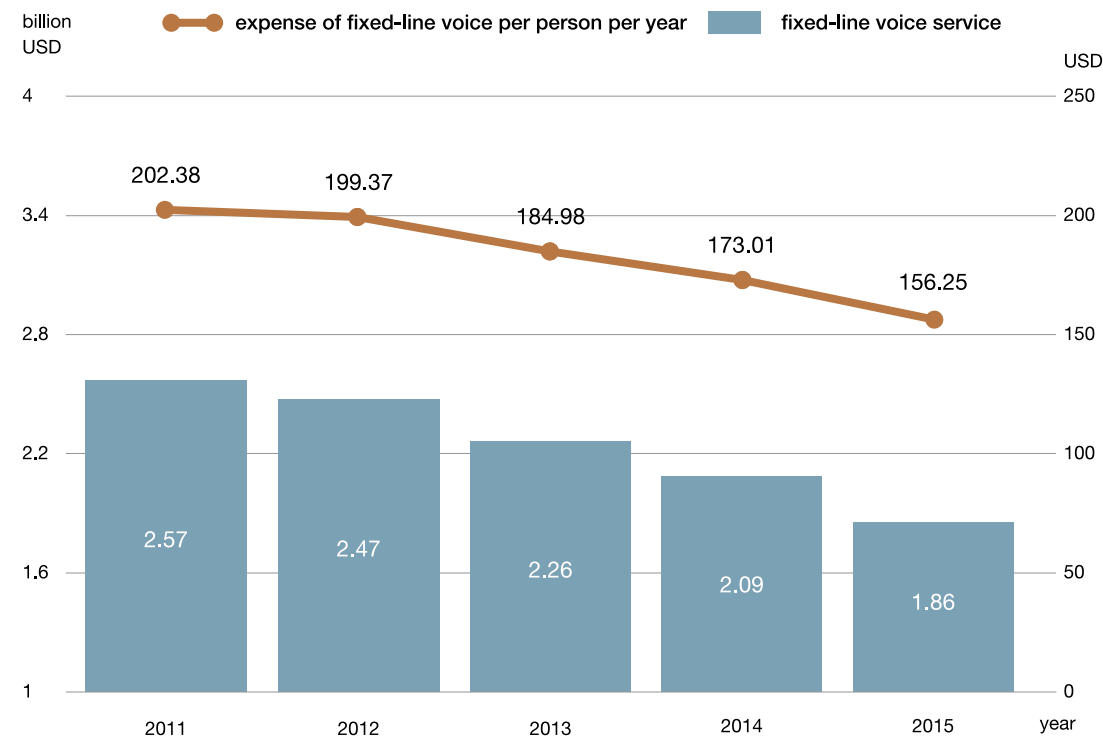


Figure 2.9 Fixed-line Voice Service Revenue / Average Cost per User

Source: NCC

Fixed-line Data Service

The revenue of fixed-line data services remained relatively stable between 2011 to 2014, but decreased slightly to USD2.85 billion in 2015 (Figure 2.10). Fixed-line data revenue accounted for 52.37% of the total fixed-line revenue in 2011, rising up to 59.24% in 2015. Fixed-line data revenue is the primary source of income for the fixed-line market.

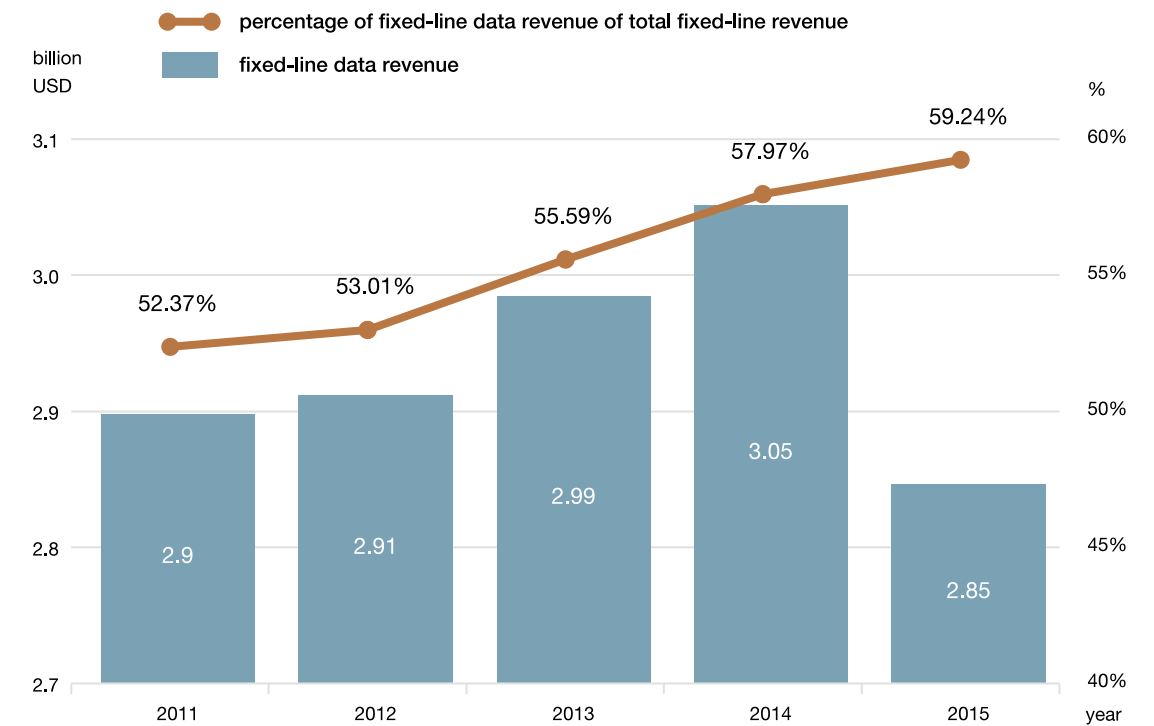


Figure 2.10 Fixed-line Data Revenue

Source: NCC



Fixed-line Market Share

Four fixed-line enterprises operate in Taiwan: Chunghwa Telecom, Taiwan Fixed Network, Asia Pacific Telecom and New Century InfoComm Tech. Chunghwa Telecom local network accounts for 93.96% of the total local network users and 96.1% of the total local network revenue. Even though there is some competitions in the international network market, Chunghwa Telecom's market share is still over 50%. Chunghwa Telecom also accounts for 60.14% of the long-distance network

revenue, meaning it remains the market leader regardless of the specific network (Figure 2.11).

Multimedia Content Platform Service

Multimedia content platform service refers to a "service that provides subscribers with accessibility to multimedia content offered by content service providers through interactive media plat-

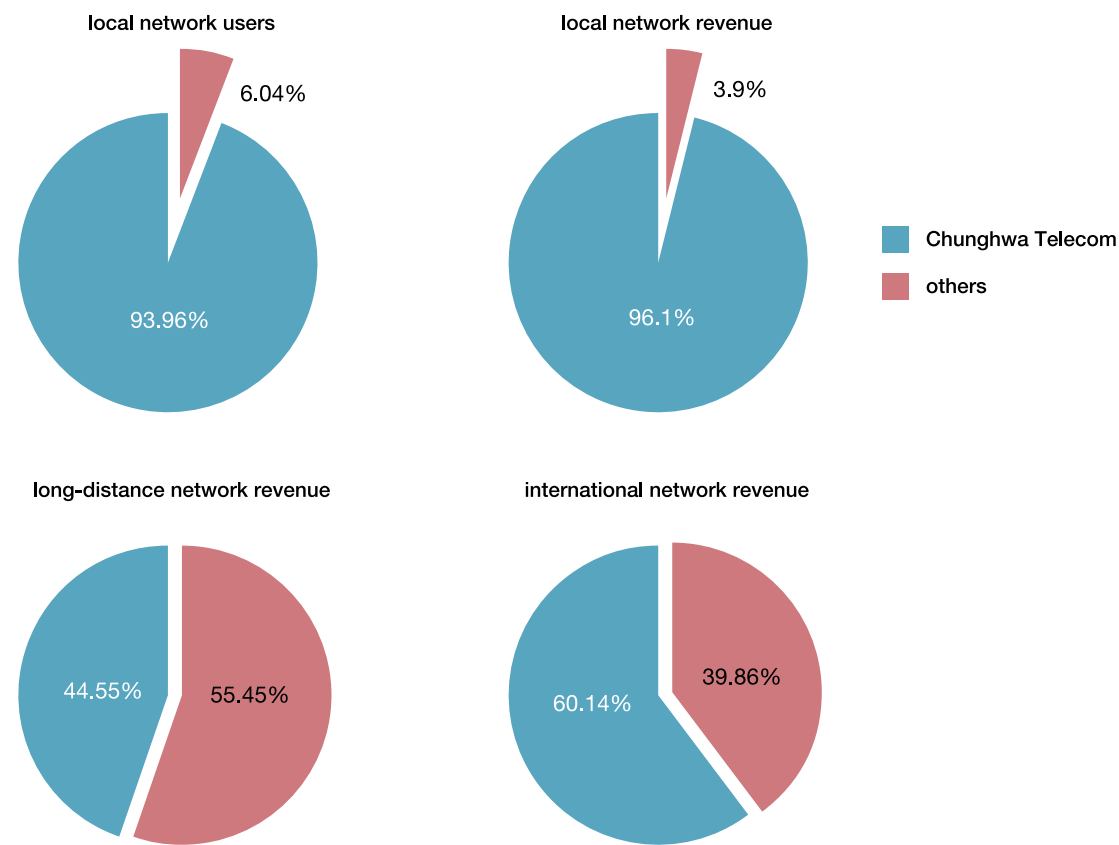


Figure 2.11 Fixed-line Communication Services
Source: NCC

form installed by a local network business operator." Currently, there is only one service provider: Chunghwa Telecom. The number of subscribers to this service was 1.06 million in 2011, and increased further to 1.29 million in 2015 (Figure 2.12).

Mobile

Mobile Market Revenue

The mobile market revenue was USD6.81 billion in 2015, a decrease of USD0.36 billion compared with the previous year (Figure 2.13). Mobile telecommunications accounts for between 57% and 59% of the total telecommunication revenue.

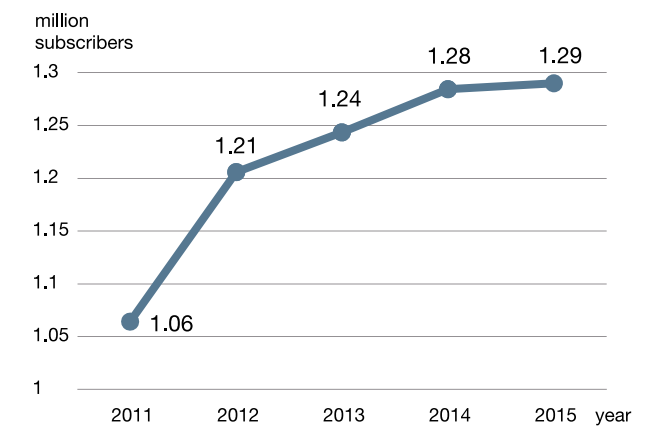


Figure 2.12 Multimedia Content Platform Subscriber
Source: NCC

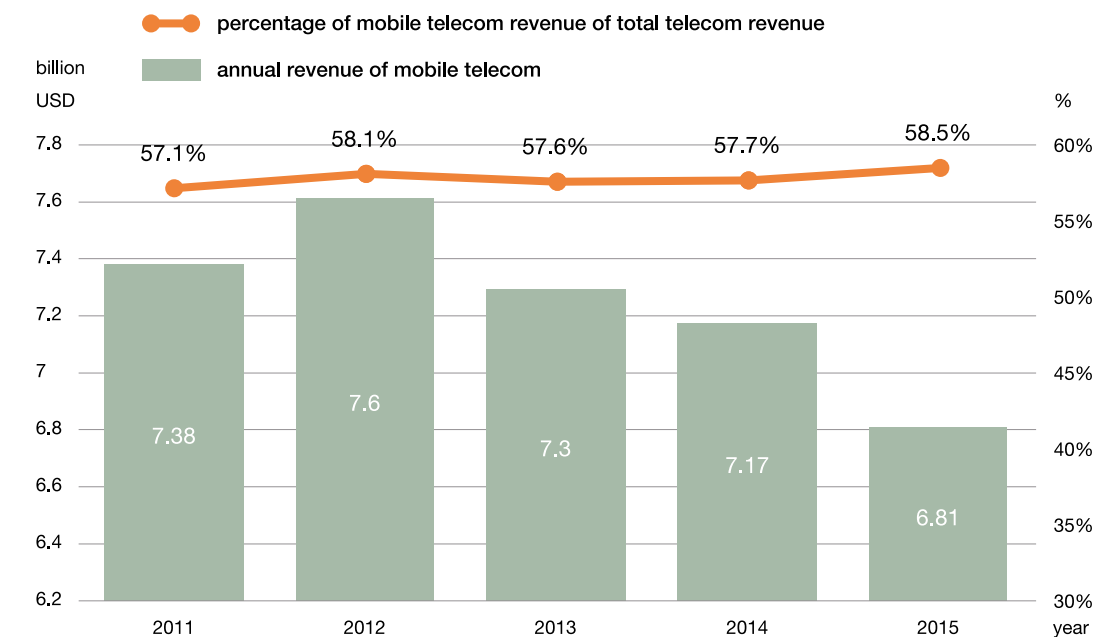


Figure 2.13 Mobile Telecommunications Revenue
Source: NCC



Mobile Voice Service Revenue

Revenue of mobile voice has declined gradually since 2011 (Figure 2.14). In 2015, it reached the lowest point of USD2.85 billion, a further decline of USD1.28 billion compared with 2014.

The average cost of mobile voice per person per year has been steadily declining from USD219.96 per person in 2011 to USD97.1 in 2015.

Mobile Data Revenue and Traffic Volume

Revenue of mobile data (Figure 2.15) has risen dramatically since 2011, increasing to USD3.03 billion in 2015. This is especially demonstrated in its contribution towards total revenue, which was only 13.87% in 2011 yet jumped to 44.4% in 2015.

Volume of mobile data traffic has also grown dramatically over recent years. After the 4G services launched in 2015, traffic volume jumped to 1.42 billion Gbytes, 2.18 times of 2014 (Figure 2.16). The continued growth of mobile data consumption shows the popularity of mobile technology and services.

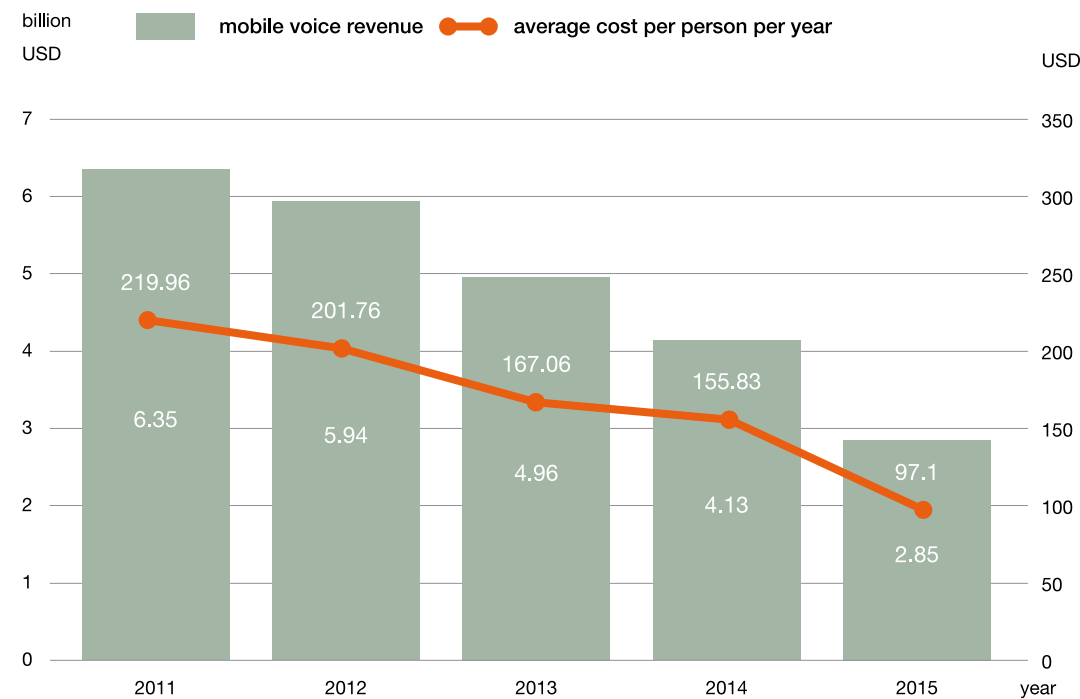


Figure 2.14 Mobile Voice Revenue
Source: NCC

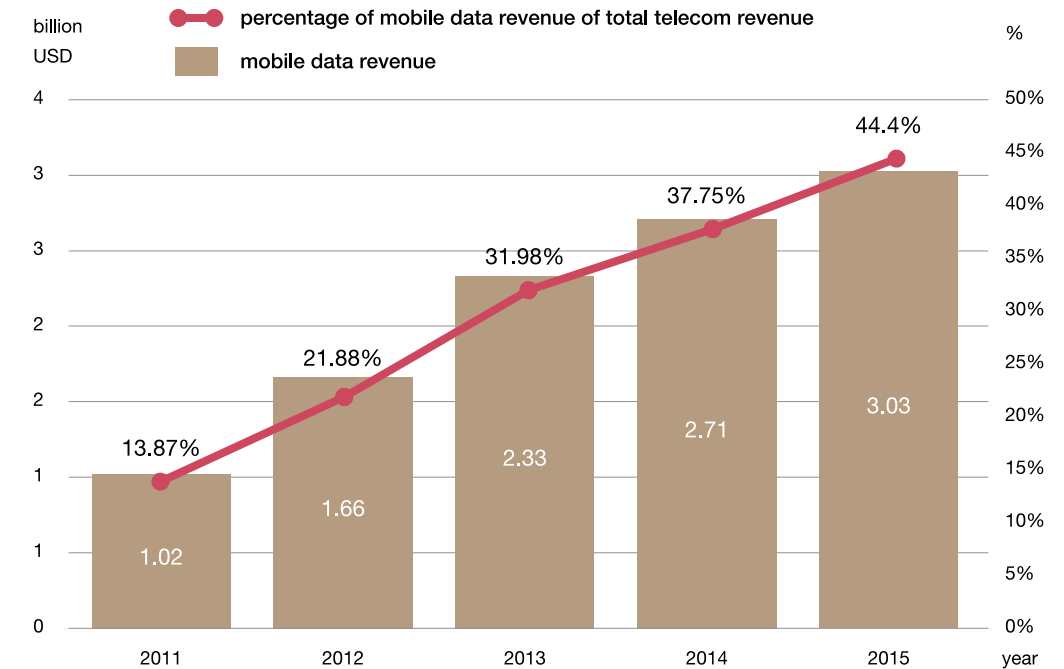


Figure 2.15 Mobile Data Revenue
Source: NCC

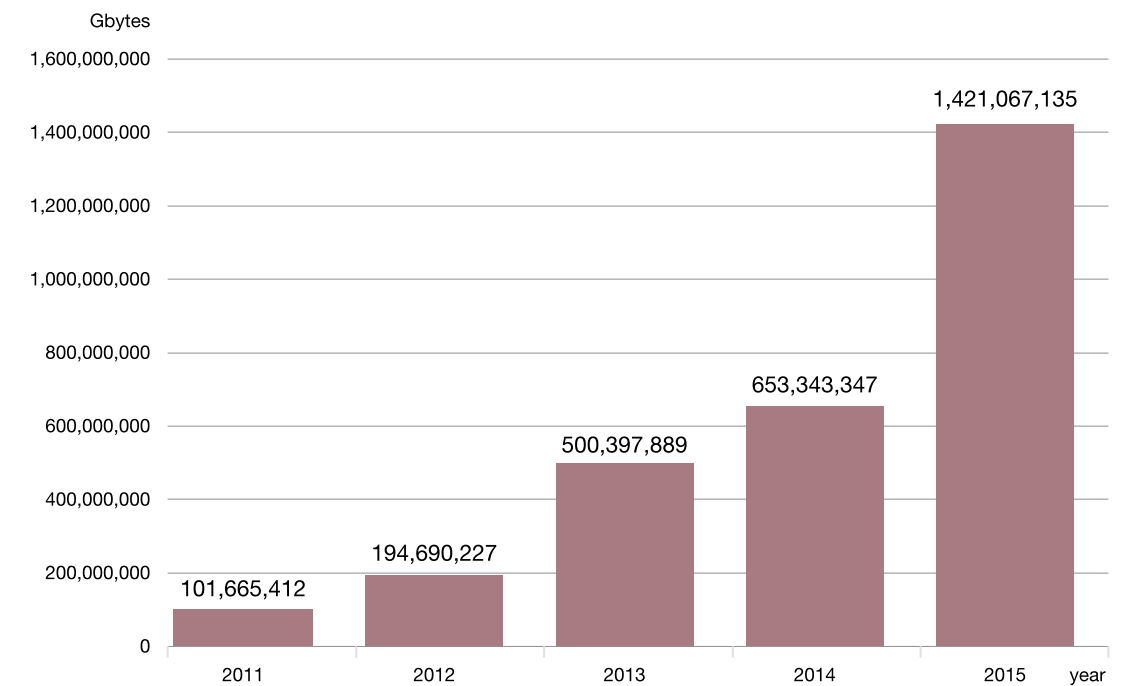


Figure 2.16 Mobile Data Traffic Volume (2011 – 2015)
Source: NCC



Broadband

Subscribers of main broadband services increased to 26.7 million in 2015 (Figure 2.17). In 2015, 4G subscribers climbed dramatically to 11.57 million compared with 3.45 million in 2014, whereas 3G subscribers decreased from 15.43 million in 2014 to 7.51 million in 2015. It can be seen that since the launch of 4G services, 3G subscribers are attracted by various promotional plans and the high-speed internet experience to upgrade to 4G.

In terms of fixed broadband, the number of Asymmetric Digital Subscriber Line (ADSL) subscribers continued to decrease from 2.12 million in 2011 to 1.06 million in 2015. On the other hand, since 2011, FTTx has become the main fixed broadband service in Taiwan; subscribers increased from 3.10 million in 2014 to 3.35 million in 2015 (Figure 2.18). For Cable Modem, the number of subscribers grew slightly from 1.21 million in 2014 to 1.25 million in 2015.

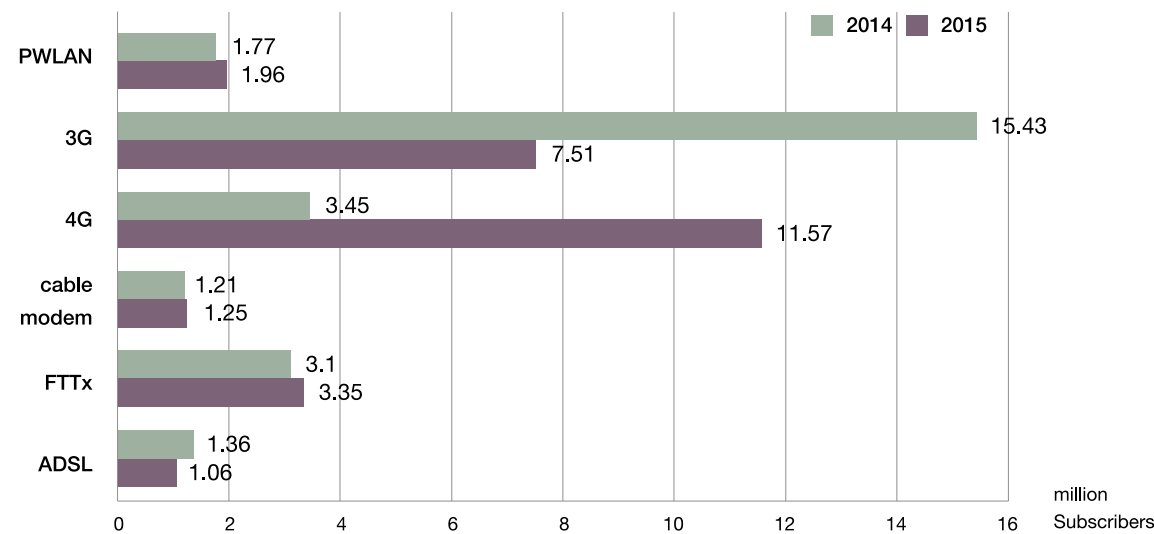


Figure 2.17 Number of Subscribers of Broadband Service (2014 - 2015)

Source: NCC

According to the data provided by the four fixed-line operator, the proportion of ADSL subscribers dropped from 40.57% in 2012 to 25.27% in 2015. In contrast, fiber-optic subscribers reached 74.73% in 2015 (Figure 2.19).

Regarding fiber-optic service, in 2012 there were still 1.6 million subscribers using below 12Mbps speed tiers but that declined significantly to 0.66 million in 2015. Today, consumers are much more likely to subscribe to higher speed tiers, which can be seen from the number of above 100Mbps speed tiers subscribers, increasing substantially from approximately 10 thousand in 2012 to 1.04 million in 2015. (Figure 2.20)

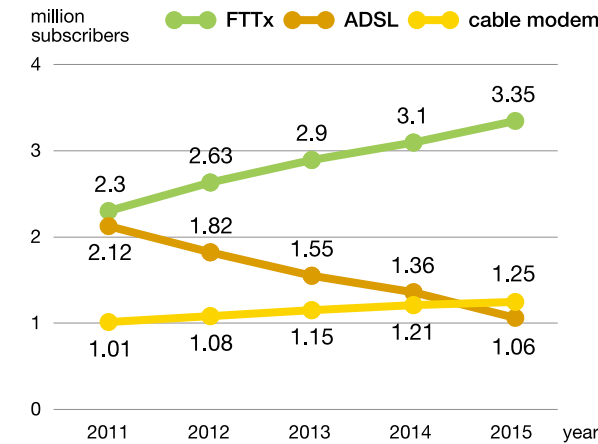


Figure 2.18 Number of Subscribers of Fixed-Broadband

Source: NCC

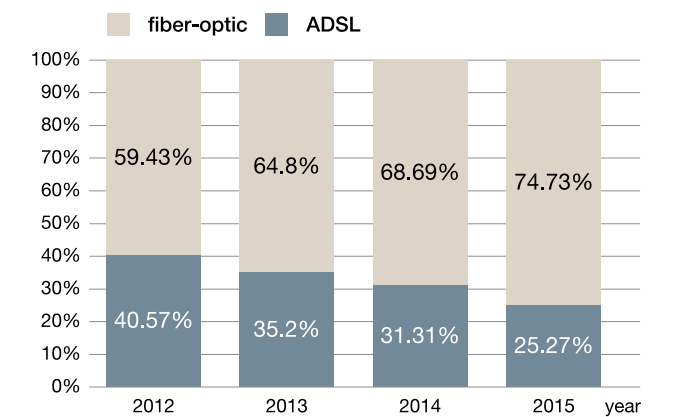


Figure 2.19 Percentage of ADSL and Fiber-Optic Subscribers from the Four Fixed-Line Internet Operators

Source: NCC

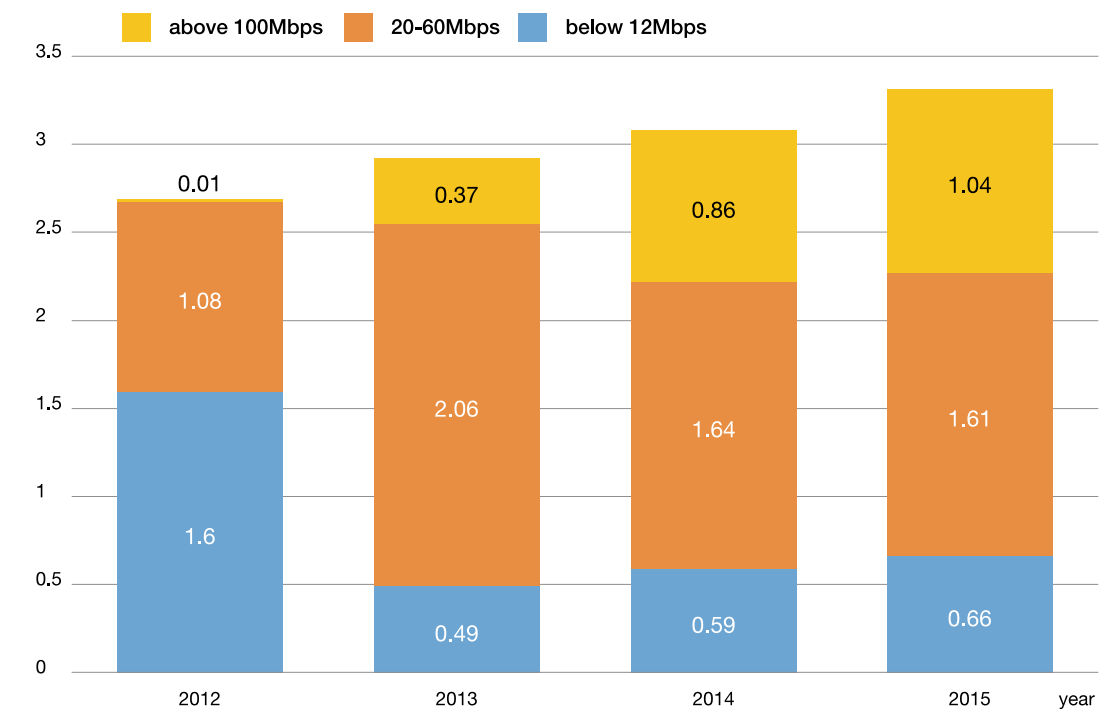


Figure 2.20 Number of Fiber-Optic Subscribers from the Four Fixed-Line Internet Operators (Speed)

Source: NCC



Broadcasting

Overview

Table 2.4 TV Broadcasting Revenue (2014 – 2015)

million USD

	2014	2015*
TV Broadcasting Total Revenue	229.57	216.91
TV Broadcasting Advertising Revenue	135.67	129.95

Note: * refers to the projected value
Source: NCC

Table 2.5 Cable TV Revenue (2014 – 2015)

million USD

	2014	2015*
Basic Channels	980.64	963.3
Premium Channels	94.16	92.5
Pay-per-view Channels	0.22	0.22
Installation	13.36	13.12
Advertising	23.25	22.84
Leased Channels	76.45	75.1
Leased Circuits	46.08	45.26
Other	48.33	47.47
Total	1,282.49	1259.81

Note: * refers to the projected value
Source: NCC

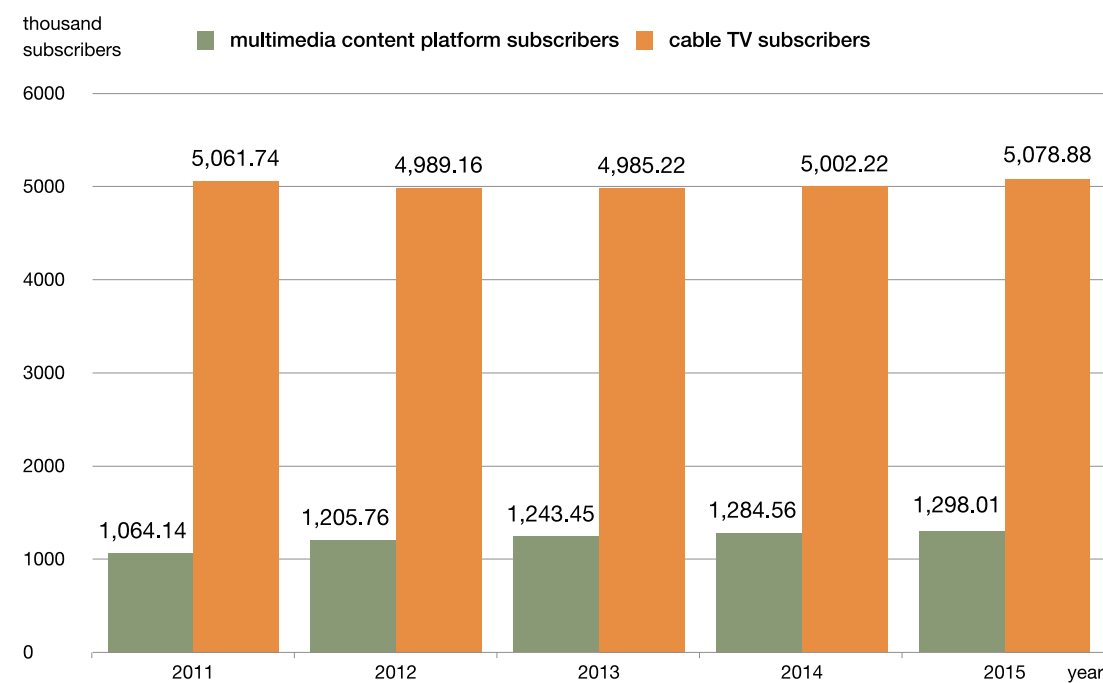


Figure 2.21 Subscribers of Cable TV and Multimedia Content Platform

Source: NCC

Table 2.6 Satellite TV Revenue (2014 – 2015)

million USD

	2014	2015*
Satellite TV Total Revenue	1,533.34	1,546.88
Satellite TV Advertising Revenue	728.87	574.58

Note: * refers to the projected value
Source: NCC

Table 2.7 Radio Broadcasting Revenue (2014 – 2015)

million USD

	2014	2015*
Radio Broadcasting total revenue	149.78	146.4
Radio Broadcasting advertising revenue	98.2	96.61

Note: * refers to the projected value
Source: NCC

Table 2.8 Television and Radio Operators

Type	No. Operators/No. Channels
Broadcast Radio	171 Operators
Broadcast TV	5 Operators/20 Channels
Community Antenna	5 Operators/7 Licenses
Direct Satellite Broadcasting Service	6 Operators
Satellite Broadcasting	115 Operators / 299Channels
Cable TV System Operators	61 Operators
Cable TV Program Transmission Systems	3 Operators

Source: NCC

Table 2.9 Broadcasting TV Licenses

Categorization	Type		Licenses	Licenses (Total)	Licenses (as of end of 2015)
Terrestrial TV	Terrestrial TV Stations		6	6	584
	Broadcasting Stations	Integrated Stations	44	209	
		AM Stations	22		
		FM Stations	143		
Cable TV	System Operators		61	64	
	Operators		3		
Satellite Broadcasting	Live Satellite Broadcasting Operators		6	305	
	Satellite Broadcasting Channel Providers	Local Channels	181		
		Overseas Channels	118		

Source: NCC



Terrestrial TV

The estimated terrestrial TV revenue in 2015 was approximately USD216.91 million; revenue of terrestrial TV advertisement decreased by USD5.72 million, falling to USD129.95 million in 2015. (Figure 2.22)

Cable TV

The market share of Cable TV in 2015 was dominated by five MSOs, with CNS (22.92%) and KKBRO (21.1%) gaining the highest market share, followed by TWM Broadband (13.8%), TFN (9.98%), and Taiwan Optical Platform (5.83%) (Figure 2.23).

As of the end of 2015, the number of cable TV subscribers that had installed a digital set-top box reached 4.56 million. Due to an incentive-based regulatory approach, the take-up rate of digital cable TV expanded by 10.93% to 89.85% in 2015 (Figure2.24).

Radio

In 2015, the radio broadcasting revenue was USD139.4 million, a decline of 10.4 million compared with 2014. The revenue of radio advertisements also decreased by 6.2 million in comparison with 2014 (Figure 2.25).

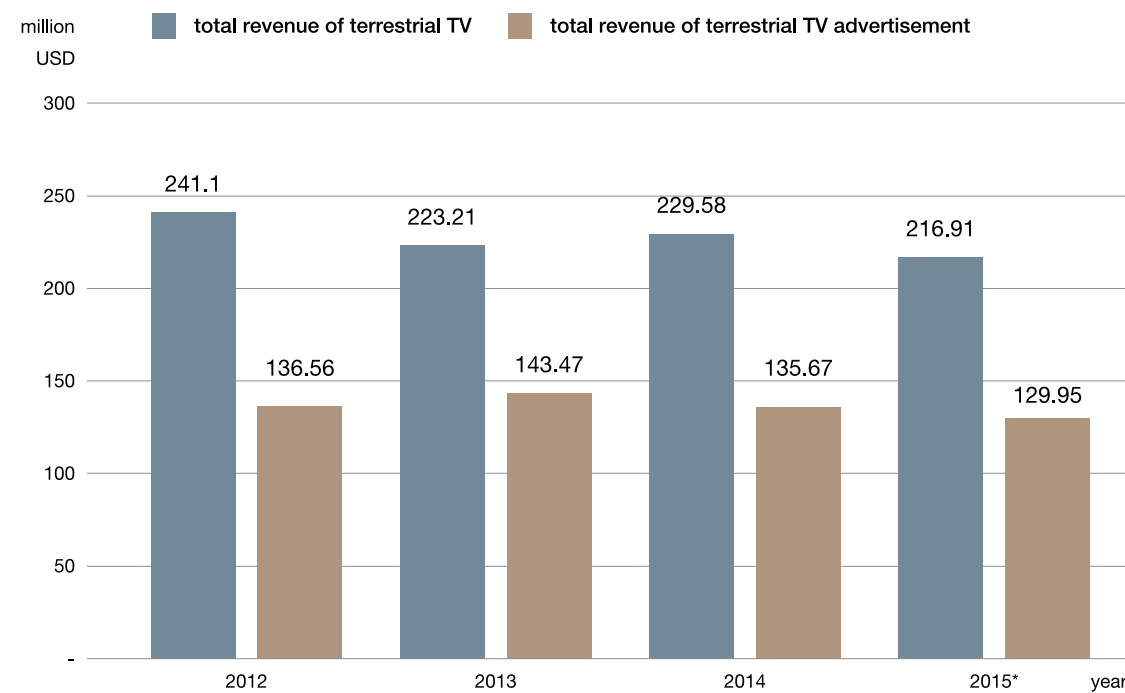


Figure 2.22 Revenue of Terrestrial TV and Advertising

Note:* refers to the projected value

Source: NCC

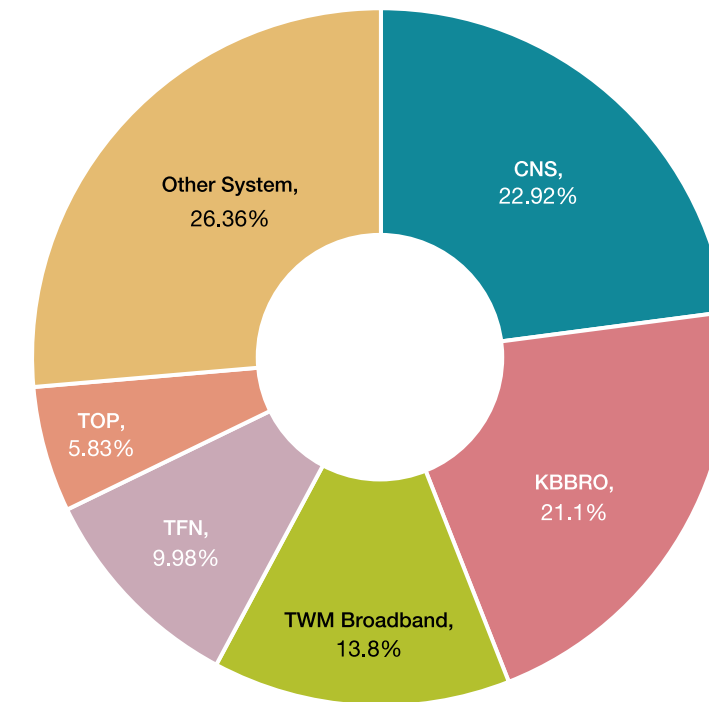


Figure 2.23 Market Share of Cable TV Operators (2014)

Source: NCC

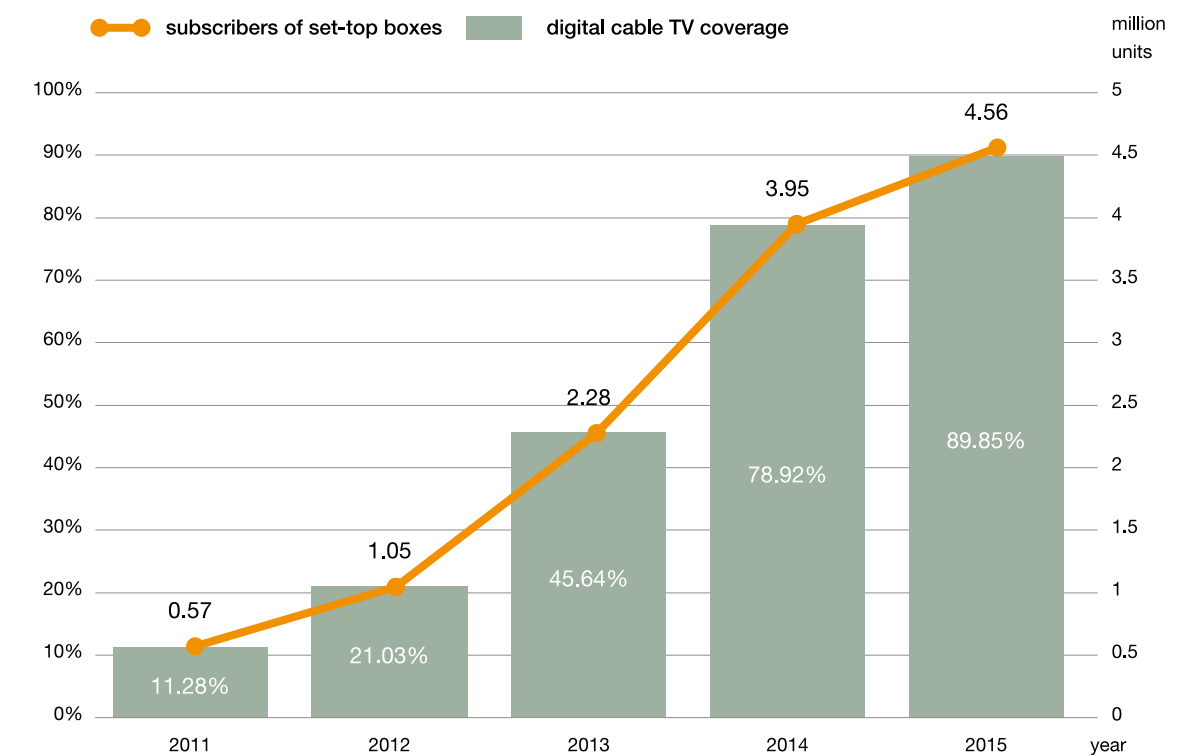


Figure 2.24 Coverage of Digital Cable TV / Subscribers of Set-top Boxes

Source: NCC



Satellite Broadcasting

The revenue of satellite broadcasting in 2015 was USD1.54 billion, an increase of USD13 million; the revenue of satellite broadcasting advertisements on the other hand dropped from USD728.9 million in 2014 to USD547 million in 2015 (Figure 2.26). Satellite broadcasting advertisement revenue accounted for 47.71% of the total revenue in 2014 and reduced to 35.25% in 2015.

As of 2015, there were 115 satellite broadcasting program suppliers: 93 domestic supplies, 30 foreign suppliers, and 8 joint local and foreign suppliers (Table 2.10).

Table 2.10 Satellite Broadcasting Program Providers (2011 – 2015)

Types of Suppliers	2011	2012	2013	2014	2015
Domestic	80	80	84	86	93
Foreign	29	29	30	29	30
Joint local and foreign	8	6	6	7	8
Total	101	103	108	108	115

Source: NCC

The number of satellite channels in 2015 remained at 299: 181 domestic and 118 foreign, 60.54% and 39.46% respectively (Figure 2.27).

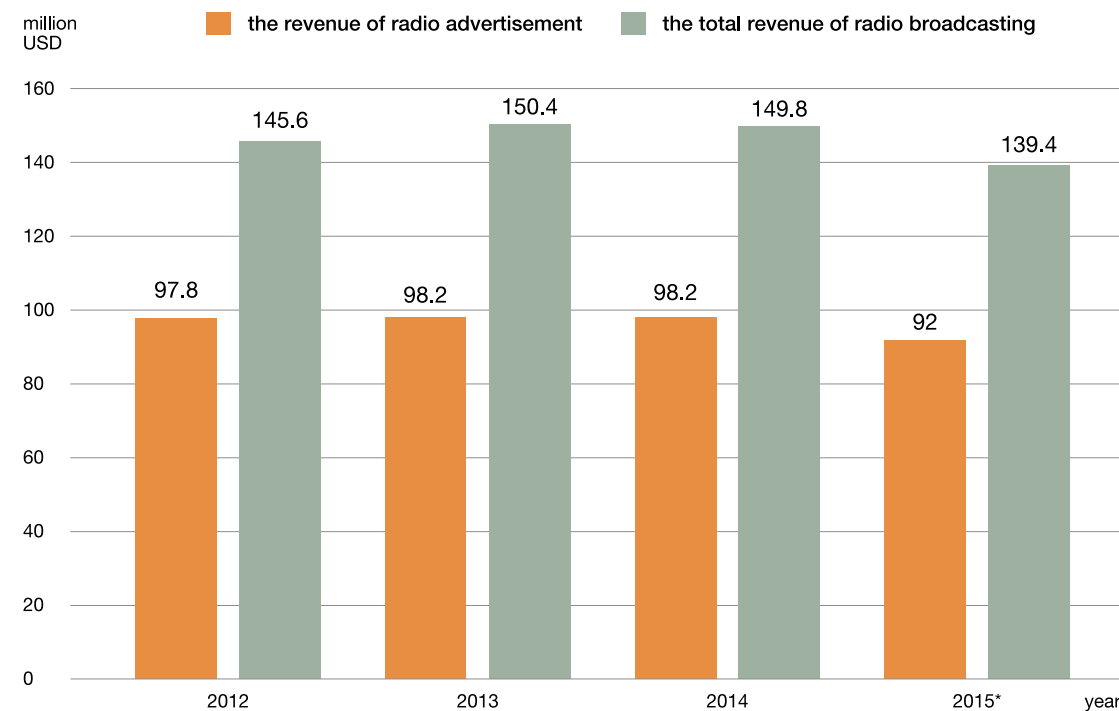


Figure 2.25 Revenue of Radio Broadcasting and Advertising

Note: * refers to the projected value

Source: NCC

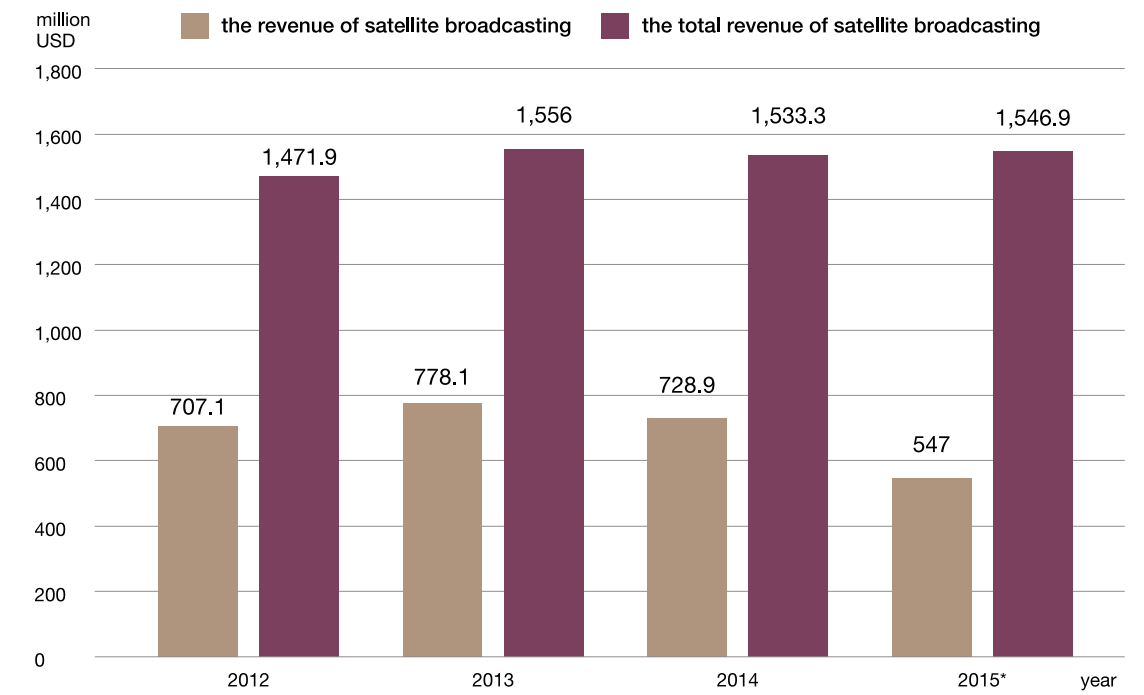


Figure 2.26 Revenue of Satellite Broadcasting and Advertising

Note: * refers to the projected value

Source: NCC

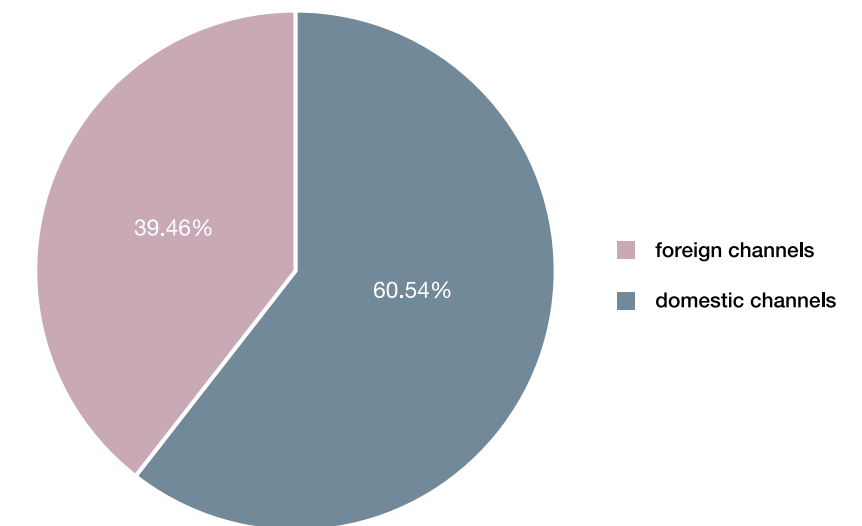


Figure 2.27 Percentage of Domestic and Foreign Channels (2015)

Source: NCC



Communications Resources

Spectrum

With the advancement of mobile technology, 2G, PHS, 3G, WiMAX(WBA) and 4G licenses have been awarded accordingly. The spectrum for mobile use can be seen in Table 2.11.

Table 2.11 Spectrum Usage (April. 2016)

Spectrum (MHz)	Usage
703-748, 758-803	4G service, license expires 2030
825-835, 870-880	3G service, license expires 2018
885-915, 930-960	910-915, 955-960 for 2G service, license expires June 2017 885-915, 930-960 for 4G service, license expires 2030
1710-1770, 1805-1865	1721.3-1732.5,1748.7-1755,1816.3-1827.5,1843.7-1850 for 2G service, license expires June 2017. 1710-1770, 1805-1865 for 4G service, license expires 2030
1885-1915 1975-1985	Under planning
1915-1975, 2010-2025; 2110-2165	1920-1975, 2110-2165 for 3G service, license expires 2018 1915-1920,2010-2025 under planning
2500-2690	4G service, license expires 2018

Source: NCC

Numbers

Most allocated numbers are for fixed-line services (32,680,000), followed by 2G (24,179,909), 3G (20,800,000), and 4G (8,100,000) (Table 2.12).

Table 2.12 Allocation of Telecommunications Numbers

User number		
Item	Service	Allocated number
1	Land line	32,680,000
2	2G	24,179,909
3	3G	20,800,000
4	4G	8,100,000
5	Premium Rate Service	250,000
6	Normal Rate Service	200,000
7	Internet Telephony Service	740,000
8	Free Phone Service	770,000
9	Personal Number Service	200,000
Internet identification		
Item	Type No.	Allocated number
1	International direct Internet code	8
2	Dialing code	5
3	Dialing Internet code	24
4	Virtual Private Network	1
5	Credit Telephone Service	0
Other allocation		
Item	Type No.	Allocated number
1	Portable number Internet code	26
2	Mobile network code	13
3	7th signal system international code	24
4	7th signal system domestic code	3,630

Source: NCC

Internet Protocol Address and Domain Name Registry

Taiwan Network Information Center (TWNIC) is the non-profit organization that is responsible for domain name registration and IP address allocation in Taiwan. To align with global Internet development, TWNIC released 4 types of domain name registration service. TWNIC consecutively releases four types of registration domain name

services, which are attributed in English, Chinese, general in Chinese, and general in English (Table 2.13). Asides from .gov.tw, .edu.tw and .mil.tw, which are issued by each authority, the issuance of domain names was authorized to 12 companies.

Table 2.13 Type of Domain and Number of Registrations

Type		Type	Process Registration facility	Released date	The number of accumulated registration
English characters	Specific	.gov.tw	National Development Council	1998/12/01	2,261
		.edu.tw	Ministry of Education	1989/07/31	481
		.mil.tw	Ministry of Defense	-	-
		.com.tw	Accredited registrars	1997/05/01	215,681
		.org.tw			11,504
		.net.tw			1,606
		.idv.tw		2000/05/01	74,674
		.game.tw		2002/10/01	202
		.club.tw		2003/01/01	331
		.ebiz.tw		2003/03/01	78
	Generic	.ascii.tw		2005/11/01	87,891
Chinese characters	Specific	.商業.tw	Accredited registrars	2000/05/01	188,884
		.組織.tw			7,536
		.網路.tw			1,201
	Generic	.中文.tw		2001/02/16	43,118
		.中文.台灣		2010/10/24	43,118
Total					678,546

Source: TWNIC



IPv4

As of the end of 2015, a total of 35,495,424 ($138,654 \times 2^8$) IPv4 addresses had been issued (Figure 2.28).

IPv6

Since IPv4 addresses are almost depleted, Taiwan has worked on migration towards the new version of the Internet address protocol, IPv6, to ensure availability. A total of $2,359 \times 2^{96}$ IPv6 addresses had been assigned by the end of 2015 (Figure 2.29).

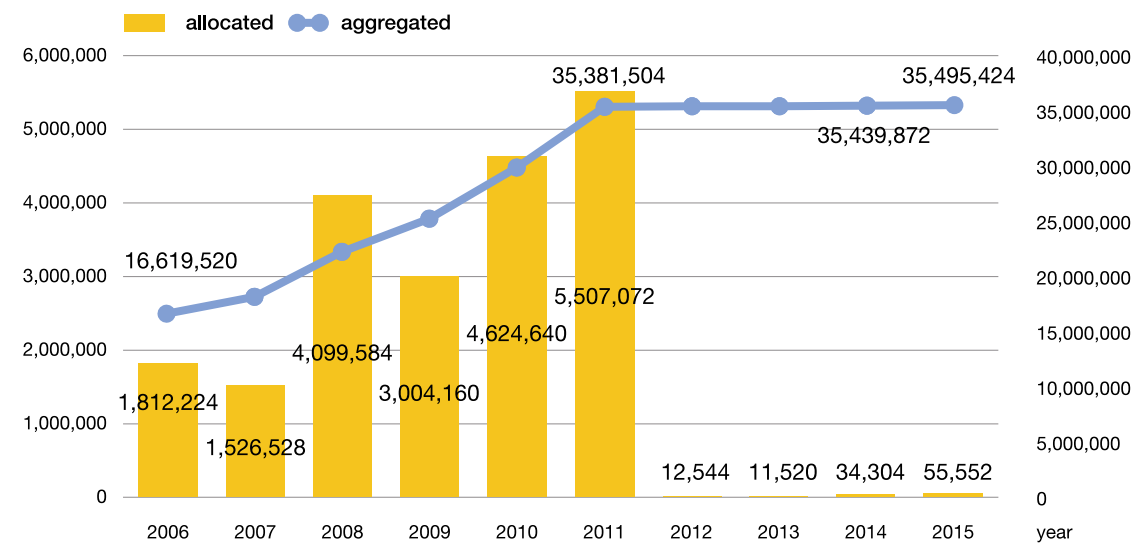


Figure 2.28 IPv4

Source: TWNIC

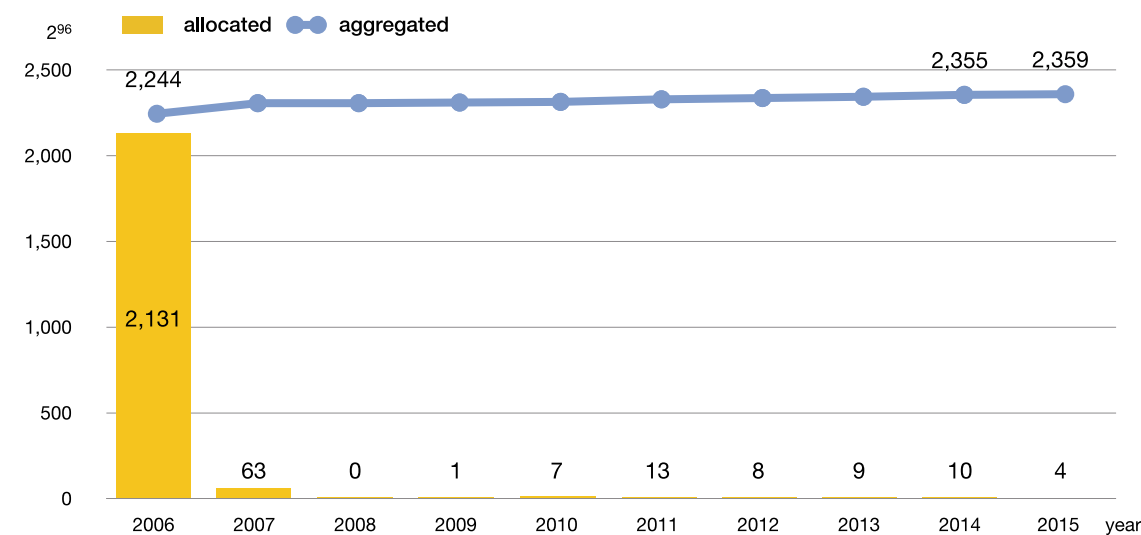


Figure 2.29 IPv6

Source: TWNIC

Section 3 Regulatory Reform



Restructuring the Legal Framework

Convergence Communications Bill Package

Digital transformation and extensive high-speed broadband coverage has facilitated a digitally converged environment, and fueled unprecedented growth of numerous innovative services. Consequently, determining the right policy framework and regulations in the new digital landscape has become a considerable challenge. In order to propose the most appropriate approach when drafting bills, six public meetings were held and consultations papers were published, encompassing a wide range of issues concerning the convergence communication bills (Table 3.1).

Table 3.1 Public Meetings Concerning Convergence Communications Bill Package

Date	Subject
2015/02/13	Spectrum Release and Management
2015/11/27	Broadcasting and Channel and Channel Service Suppliers Administration Bill
	Multichannel Cable Platform Service Administration Bill
2015/12/21	Telecommunications Undertakings Bill
	Telecommunications Infrastructure and Resources Administration Bill
	Electronic Communications Bill

Source: NCC

NCC proposed the Convergence Communications Bill package, consisting of 5 bills: the Electronic Communications Bill, the Telecommunications Infrastructure and Resources Administration Bill, the Telecommunications Undertakings Bill, the Multichannel Cable Platform Service Administration Bill, and the Broadcasting and Channel and Channel Service Suppliers Administration Bill. With the spirit of “more convergence, less regulation,” it is expected the new legal framework will provide greater flexibility to facilitate innovation and cross-sector cooperation in the communications industry (Figure 3.1).

Radio Broadcasting Licensing

To stimulate radio broadcasting industry and facilitate more diversified and higher quality services, the Executive Yuan agreed the 11th Radio Licensing Plan, which was the first radio license release since 2000. A total of 34 licenses were scheduled for release, including 1 national license, 9 regional FM licenses, 22 community FM licenses and a further 2 for AM (Table 3.2 and 3.3).

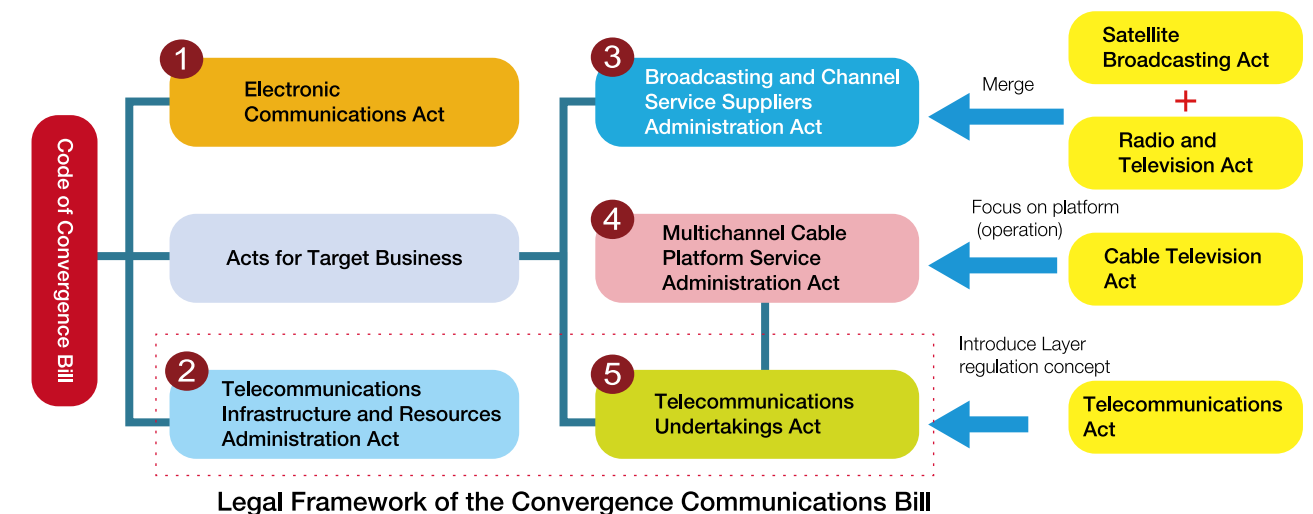


Figure 3.1 Convergence Communication Bill Package

Source: NCC

Table 3.2 The 11th Radio Broadcasting Licensing

Area	Community	Regional	National
Keelung	2	1	1
Taipei	0	1	
Taoyuan	1	1	
Hsinchu	1	1	
Miaoli	1	0	
Taichung	2	0	
Nantou	1	0	
Changhua	1	0	
Yunlin	2	0	
Chiayi	1	0	
Tainan	1	0	
Kaohsiung	0	0	
Pingtung (Hengchun)	2(0)	0(1)	
Yilan	1	1	
Hualien	1	1	
Taitung	1	1	
Penghu	1	0	
Kinmen	2	1	
Matsu	1	0	
	22	9	1

Source: NCC

Table 3.3 The 11th Radio Broadcasting Licensing (AM License)

Installation Area	Service Area	License
Kaohsiung	Kaohsiung, Tainan, Pingtung County, Chiayi County (Designated Area)	1
Hualien	Hualien County	1

Source: NCC

NCC also drafted “Radio Businesses Establishment Regulation” and, on March 3rd 2016, held a public meeting to gain feedback on the draft. Based on the public consultation, NCC thoroughly reviewed the proposals and promulgated the Regulation on May 3rd 2016.



4G Adoption Accelerated

4G Subscribers and Penetration Rate

After the launch of 4G services in May 2014, by December 2015, the number of 4G subscribers had surged to 11.57 million, accounting for 39.4% of the total mobile subscribers (Figure 3.2).

Measuring Mobile Broadband Speeds

In order to ensure consumers receive more transparent information on the rate of mobile broadband speeds, throughout 2016, NCC continued to commission Telecom Technology Center (TTC) to conduct measurements on mobile broadband speeds and for the first time include 4G services.

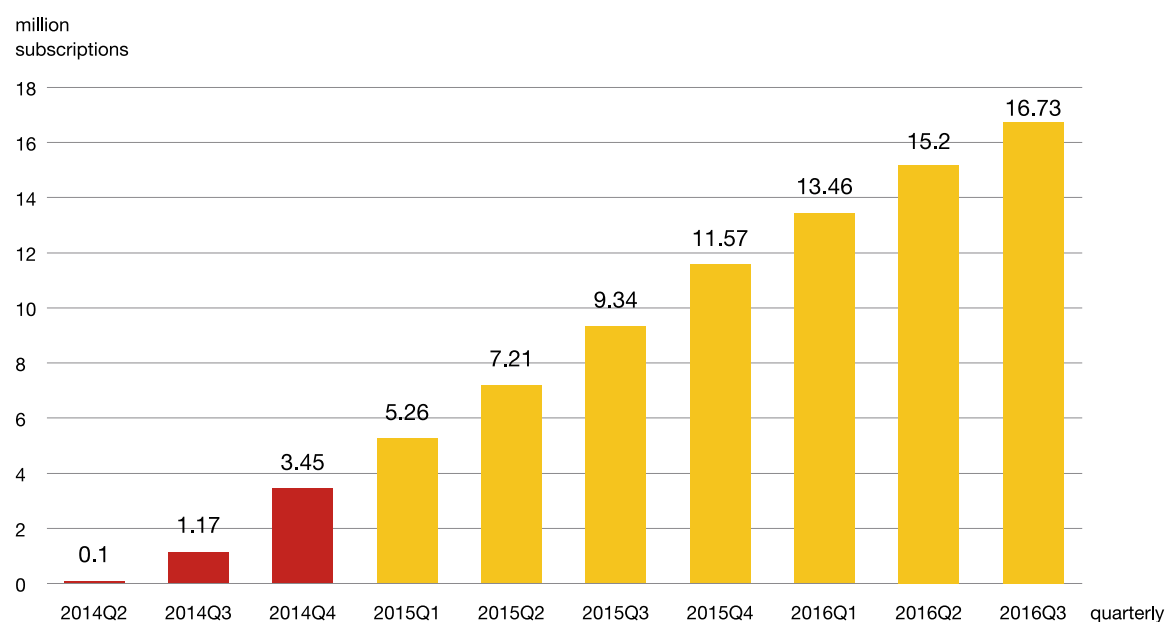


Figure 3.2 4G Subscribers

Source: NCC

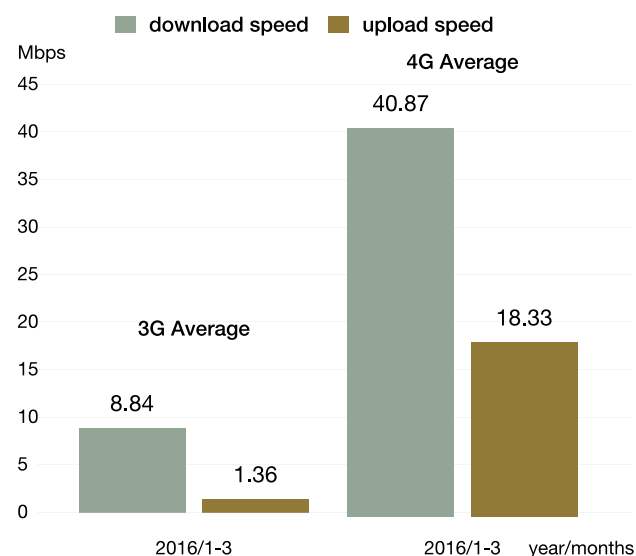


Figure 3.3 Mobile Broadband Consumer-end Speed Result

Source: TTC

The results showed the average download speed for 4G was 40.87Mbps, 4.6 times more than the average download speed for 3G. The average upload speed for 4G was 18.33Mbps, 13.5 times faster than the average upload speed for 3G (Figure 3.3).

More Spectrum for 4G

Facing increasingly high volume of traffic on 4G networks, the government proposed to release a further 190MHz of spectrum in the 2500MHz and 2600MHz bands (Figure 3.4). It is expected that freeing up of this spectrum can not only support the feasibility of 4G, but also facilitate future advanced wireless technologies, thereby enhancing the consumer experience.

NCC held a public meeting on the proposal (Figure 3.5) and promulgated the amended Regulations for Administration of Mobile Broadband Businesses in July 2015. The auction was successfully completed by the end of 2015.

In addition, it should be noted that NCC is planning to release even more spectrum, this time in the 2100MHz (currently used for 3G services) and 2300MHz bands to meet the growing demand from new mobile technologies and services.

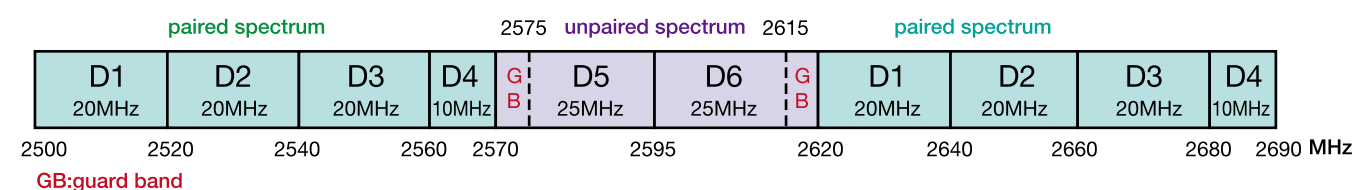


Figure 3.4 Spectrum Release Plan for 2500 & 2600MHz

Source: NCC



Figure 3.5 Public Meeting for 2500MHz and 2600MHz Spectrum Release

Source: NCC



Digital Cable TV

Reaching Full Digitization

By the end of 2015, the digitization rate of cable television had reached 89.85%, showing an increase of 10.93% compared with the year earlier (Figure 3.6 and 3.7). A total of 14 cable system operators (including incumbent and new entrants) had completed the digital switchover (Table 3.4).

Table 3.4 100% Digitized cable system operators

City/County	Service Area	System Operators
Taipei City	Taipei City	Taipei Net
New Taipei City	New Taipei City	DCTV
		Dafeng
		NCTV
	Banqiao Dist.	Sky Digital
Chiayi City		Dafeng
		DMG
Chiayi City		CYC
Chiayi County	Dalin District	KSTV
	Puzi District	TY Cable TV
Tainan City	South District	Suncrown
	North District	Twinstars
	Yongkang District	HYA Cable TV
	Xiaying District	KBRO
Kaohsiung City	Kaohsiung City	NKH

Source: NCC

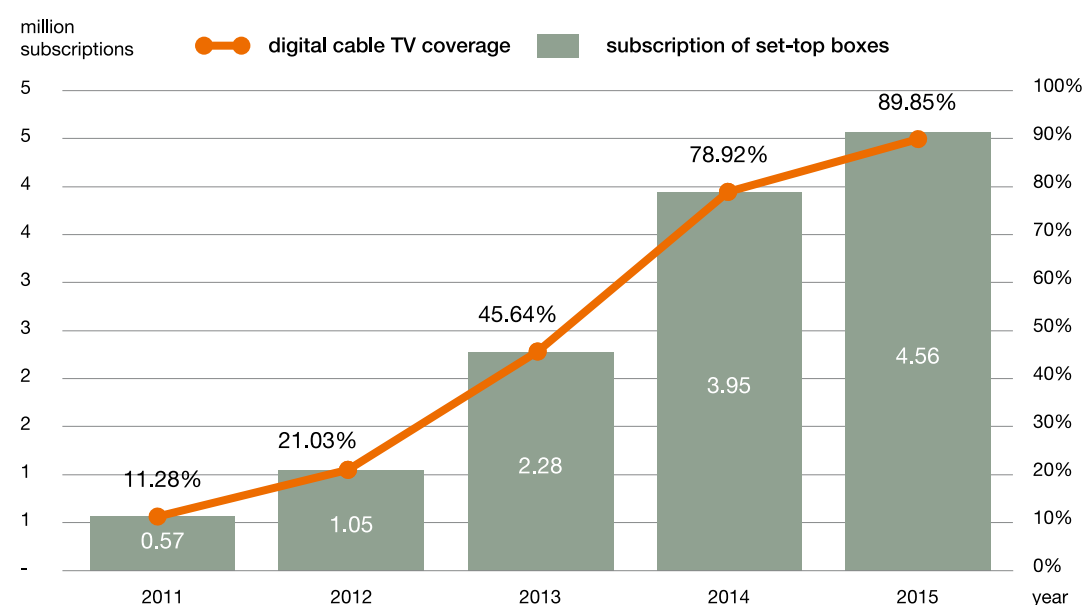


Figure 3.6 Digital Cable TV Penetration

Source: NCC

Penetration Rate of Digital Cable TV

89.85%

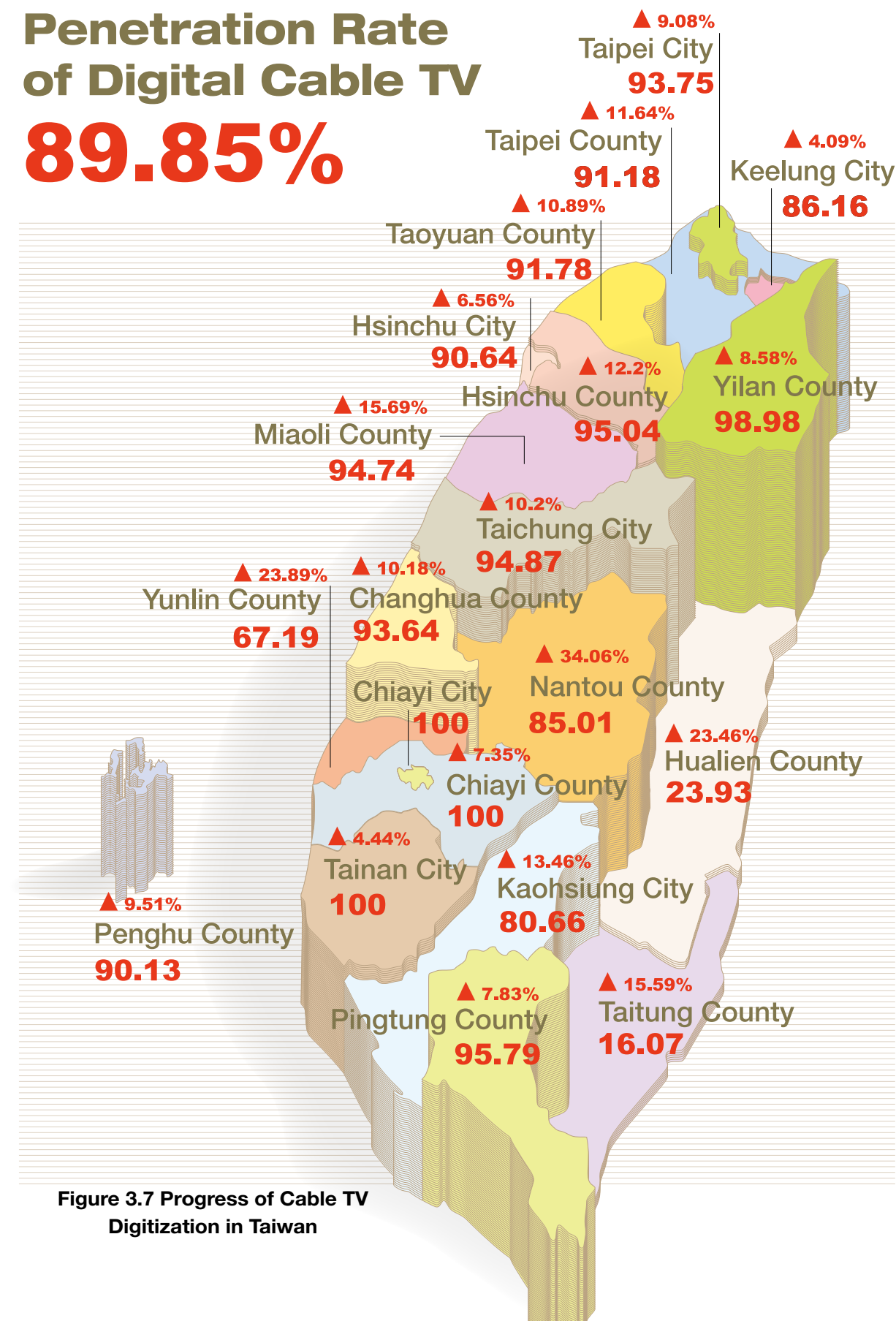


Figure 3.7 Progress of Cable TV Digitization in Taiwan



Better Convergence Services

Incentive-based Plans to Promote Digitization

In 2015, NCC continued to receive applications from cable operators with respects to subsidy programs for promoting the transformation of the digitization of cable TV. There were two subsidy plans: 'Promoting Digital Cable TV Deployment Subsidy Program' and 'Offshore Islands, Hualien and Taitung Subsidy Program,' the former being for operators that have 100% digitization in their area of operation, while the latter is for operators on offshore islands (excluding Penghu), Hualien, and Taitung, which are among the most remote areas of Taiwan. NCC processed 10 applications during 2015, with the total subsidies amounting to USD1.45 million.

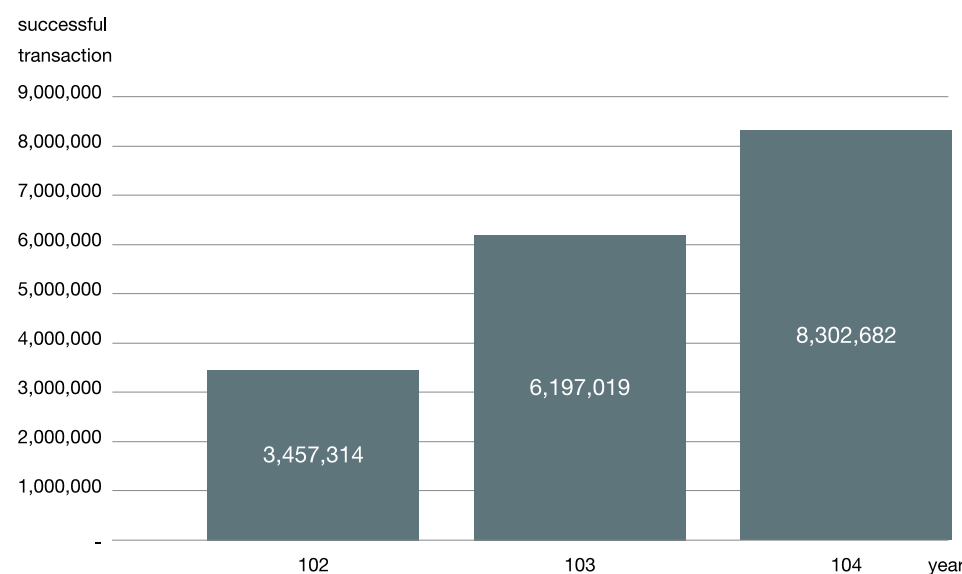


Figure 3.8 Number Portability (2013 - 2015)

Source: NCC

Faster Number Portability

Number portability is a mechanism to ensure subscribers can switch operators while retaining the same telephone number. The purpose is to ensure consumers have greater choices and therefore stimulate market competition.

To further shorten the process of number portability, NCC invited telecom operators to discuss the "D+0" plan. The "D+0" means that the processing time for number portability has shortened to less than one day. If the subscribers completes the application by 8pm, the porting process will be completed by 6am the next day.

The number of mobile numbers being ported increased significantly, from 3,457,314 numbers in 2013 to 8,302,682 during 2015 (Figure 3.8).

Lower Interconnection Charges

To offer more competitive pricing for fixed broadband services, NCC approved Chunghwa Telecom (the leading operator in fixed line market) to reduce monthly rents for leased local network circuits by 3.99%~4.3% from the April 1, 2015. Approximately 4.45 million subscribers benefitted, saving up to USD26.54 million.

In November 2015, NCC also approved Chunghwa Telecom to adjust the termination rate of fixed network operators, the interconnection rate of calling from mobile to landline reduced from USD0.0165 to USD0.0153 per minute during normal hours, and from USD0.0086 to USD0.0080 in reduced hours.

Improving Communication Service Quality

NCC encourages consumers to express opinions directly to service providers, but still offers mechanisms to file complaints in case disputes between operators and consumers cannot be properly resolved.

As for telecom services, Telecom Complaints Reports are published monthly and yearly. In 2015 a total of 7,781 complaints were made, most of which were concerning connection quality (45.65%), or application/transfer/renewal (12.66%) (Figure 3.9). Compared with the previous year, the number of complaints reduced by 21.4%.

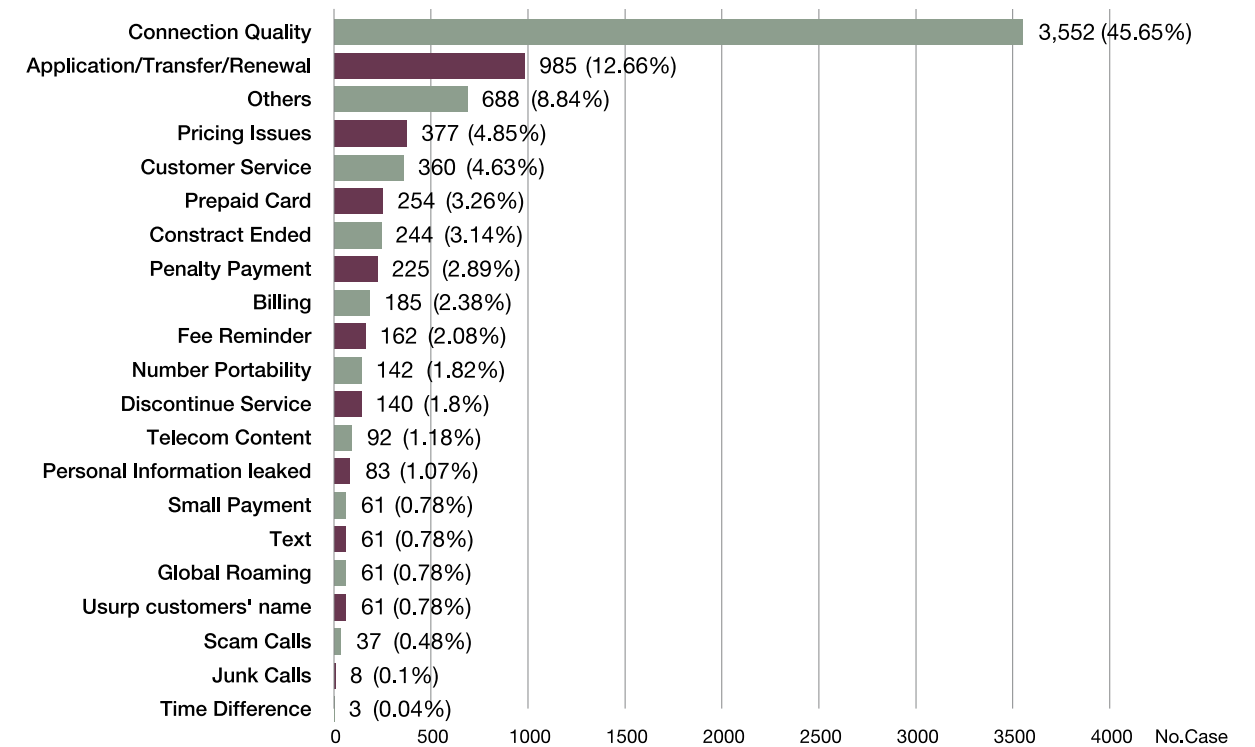


Figure 3.9 Communications Related Complaints

Source: NCC



To ensure the viewers or listeners can enjoy high quality and diverse programs, NCC also receives complaints if the viewer or listener finds the content offensive or inappropriate. A total of 2,243 complaints were received in 2015, 2,112 of which were regarding TV and 131 were regarding radio. Among them the most common type of complaint was regarding unfair/misleading contents, with 678 complaints (30.23%).

Digital Inclusion

Improving Access for Disabled People

From 2014, in order to protect the legal rights and interests of people with disabilities, NCC began drafting the “Accessible Communications Environment for Disable People Action Plan,”

which was based on “Convention on the Rights of Persons with Disabilities” and “People with Disabilities Rights Protection Act.” The main pillars of the plan consist of needs/participation, integration/convergence, supply/encouragement and partnership/education (Figure 3.10).

High Speed Broadband in Remote Areas

In order to shorten the digital divide between urban and rural areas, NCC has been promoting broadband deployment in rural areas. By the end of 2015, the coverage of broadband services up to 12Mbps was 96.02%, reaching 304 villages and 299 tribes. Over 3,200 kilometers of fiber optical cable was deployed, with investments amounted to USD2.8 million (Figure 3.11, 3.12, 3.13).

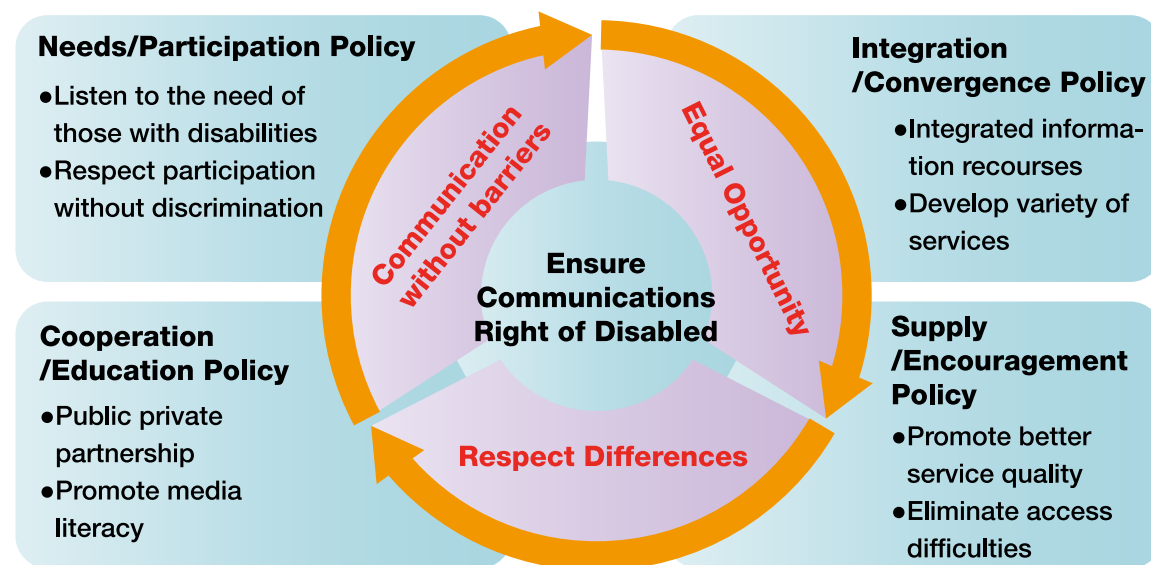


Figure 3.10 Policy of Mobile Communications Environment for the Disabled

Source: NCC

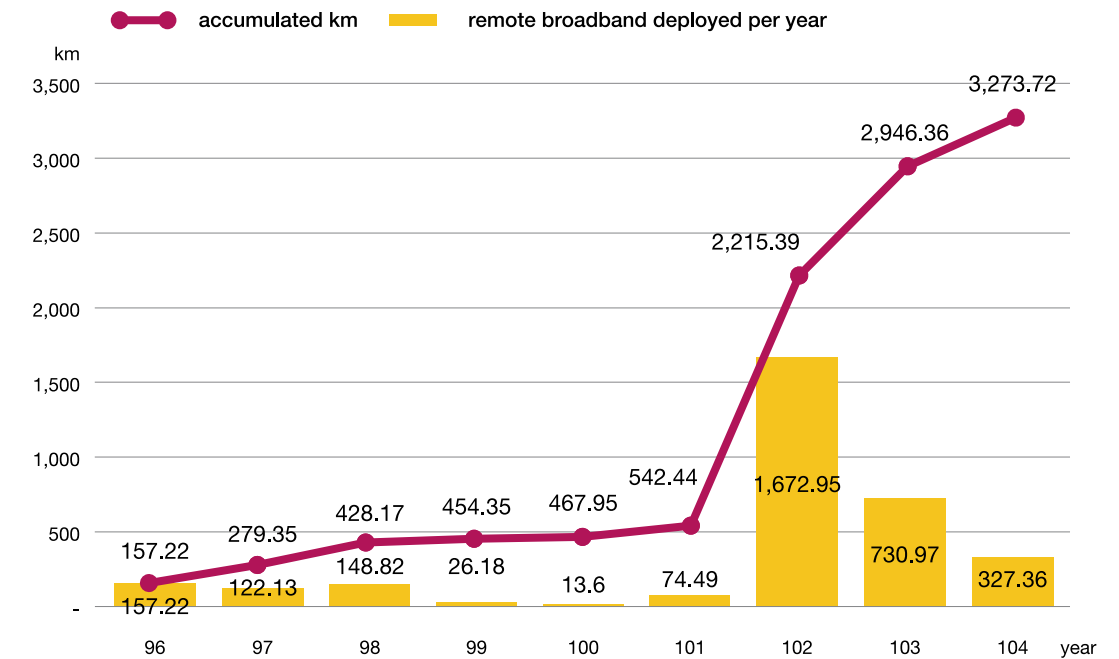


Figure 3.11 Broadband in Remote Areas / Accumulated Fiber-optic Cable

Source: NCC

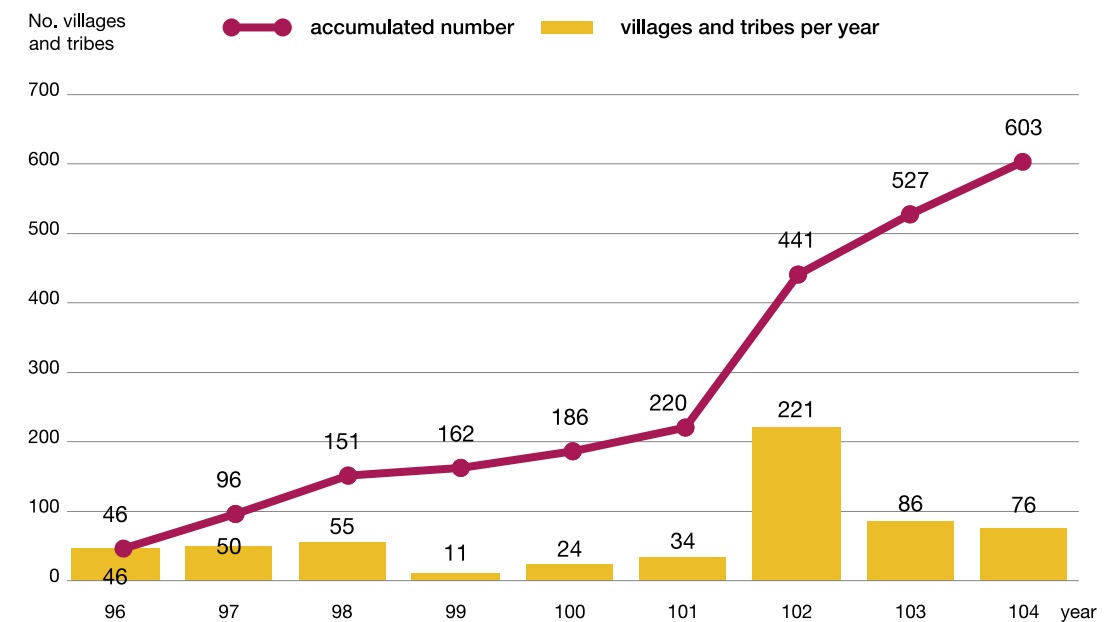


Figure 3.12 Broadband in Remote Areas / Accumulated Villages and Tribes

Source: NCC



Figure 3.13 Universal Service Workshop in Smangus, Hsinchu County (Feb. 2015)

Source: NCC

iWin Protects Children and Youths Online

With the popularity of the Internet and the ubiquity of connected devices, children and youths are easily exposed to inappropriate contents. Therefore, NCC along with other ministries launched the Institute of Watching Internet Network (iWIN), the Internet content self-regulation platform. In 2015, iWIN received 5,580 complaints, with obscene content accounting for 92.97%.

Promoting Media Literacy

To promote media literacy, NCC commissioned broadcasting operators, schools and organizations to hold a variety of media literacy programs

(Figure 3.14). The number of participants attending the commissioned media literacy activities grew significantly over the past three years (Table 3.5).

Table 3.5 Media Literacy Subsidy Application and Amount (2013 - 2015)

	Number of Applications	Amount of Subsidy	Number of Participants
2013	3	234,735	477
2014	6	442,357	1,111
2015	11	736,184	1,779

Source: NCC



Figure 3.14 Media Literacy Program, Nantou (Oct. 2015)

Source: NCC

Strengthening Disaster Resistance

Communications for Disaster Relief

Reconstructing Wulai Telecom Services in six days

In August 2015, Typhoon Soudelor seriously impacted the north of Taiwan, especially in Wulai, causing disruption of communications. NCC took immediate action to contact operators to restore telecom services (Figure 3.15).

During this time, NCC dispatched 50 personnel, telecom operators also dispatched over 400 maintenance technicians to restore landline and mobile telecom services (Figure 3.16).



Figure 3.15 National Airborne Service Corps Assist in Transporting Micro and Satellite Equipment to Wulai

Source: NCC



Figure 3.16 Maintenance Crew Carry Base Station Equipment to Wulai

Source: NCC



Disaster-Resistant Communications Platforms

When natural disaster strikes, it is crucial to keep mobile communications unaffected in extreme situations, as they are required to send disaster warnings and emergency information that help rescue operations.

In partnership with local governments, NCC planned to build disaster-resistant communications platforms in high-risk areas, during 2014, a total of 9 sites were built, while another 9 sites were built in 2015 (Figure 3.17, 3.18).



Figure 3.17 Disaster-Resistant Communications Platform (Pingtung County)

Source: NCC



Figure 3.18 Disaster-Resistant Communications Platform (Chiayi County)

Source: NCC

International Participation

Expanding Our International Participation

By participating in international forums and meetings, NCC has engaged in discussions on a wide range of communications issues with key international organizations, regulators, scholars, and industry representatives.

In March 2015, Chairperson Shyr led officials of NCC, Ministry of Foreign Affairs and Ministry of Transportation and Communications, to Malaysia to attend the 10th APEC TELMIN10 conference to share our successful experiences on 'Digital Opportunity Centers' (Figure 3.19).



10TH APEC TELECOMMUNICATIONS & INFORMATION MINISTERIAL MEETING
"ICTs : INVESTING FOR FUTURE GROWTH"
30 MARCH 2015
KUALA LUMPUR, MALAYSIA



Figure 3.19 Chairperson Shyr (top row, fourth right) at 10th APEC TELMIN10 Conference



Figure 3.20 Commissioner Shin-Yi Peng (second right) at Broadband for All conference.

Source: NCC

In June 2015, Commissioner Shin-Yi Peng attended the conference entitled, “Broadband for All” held by the Swedish Post and Telecom Authority (PTS) (Figure 3.20). In the panel discussion, Commissioner Peng shared ideas concerning 4G development in Taiwan, and raised issues concerning the latest discussions on assigning spectrum for 5G.

Strengthening International Relations

Asides from participating in various international organizations and conferences, NCC has also been committed to expanding its international relations so as to align with other regulations and regimes.

In October 2015, NCC Commissioner Yi-Ning Chen attended the International Regulators Forum, co-hosted by the Federal Communications

Commission (FCC) and International Institute of Communications (IIC), presenting “How Taiwan Regulates Advertising on OTT.” Commissioner Chen also shared OTT development in Taiwan, highlighting the opportunities and threats that regulators faced (Figure 3.21).

In October 2015, Vice-chairperson Hsiao-Cheng Yu attended the annual meeting held by The Cable and Satellite Broadcasting Association of Asia (CASBAA) (Figure 3.22). The aim of the meeting also focused on the emergence and challenges posed by OTT video platforms.

In 2015, NCC invited international regulators such as FCC of the US and The National Broadcasting Telecommunications Commission (NBTC) of Thailand to visit Taiwan, and exchange communication policy issues (Figure 3.23).



Figure 3.21 Commissioner Yi-Ning Chen (Right) Presents “How Taiwan Regulates Advertising on OTT”

Source: NCC



Figure 3.22 Vice-chairperson Hsiao-Cheng Yu at the CASBAA Annual Meeting

Source: NCC



Figure 3.23 NBTC Officials Visit NCC

Source: NCC



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