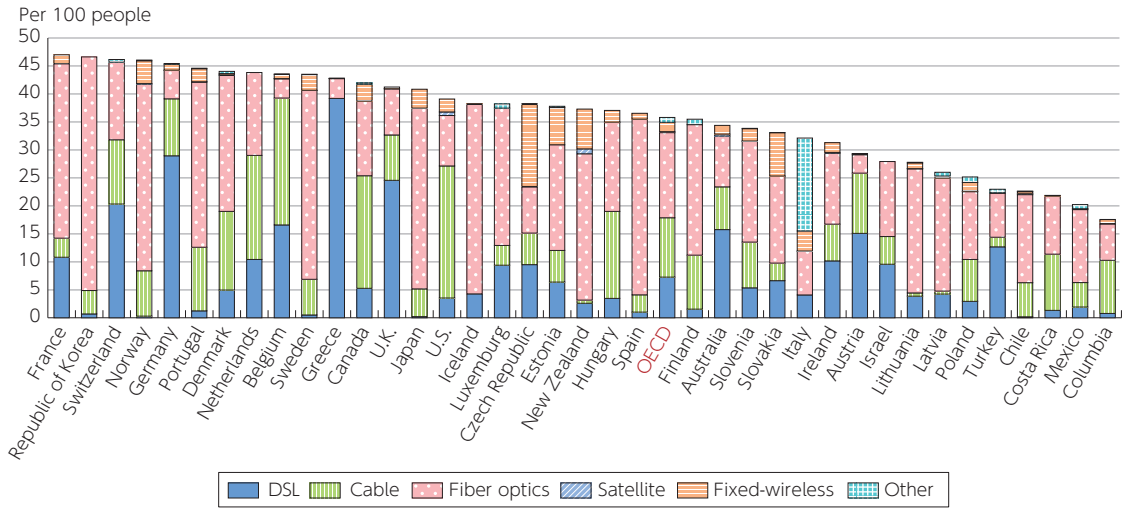
Section 2 Trends in the telecommunications field

1. Trends in the domestic and overseas telecommunications market

According to OECD, France had the highest number of broadband service subscribers per 100 people (as of December 2023) with 47.0 contracts, followed by the Republic of Korea with 46.6 contracts and Switzerland with 46.2 contracts. Broadband services include DSL, cables, fiber optics (FTTH), satellites, fixed wireless, and others. Japan ranked in the 14th place with 40.8 contracts, exceeding the OECD average of 35.8 contracts **(Figure 2-1-2-1)**.

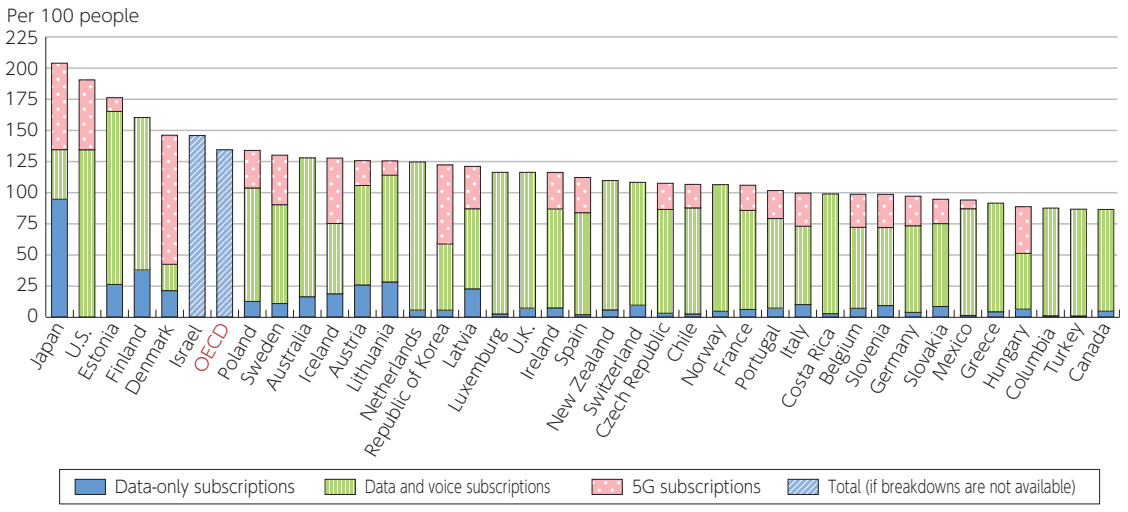
In terms of mobile broadband service subscriptions per 100 people, the largest number of subscriptions was in Japan (203.5 contracts). This was followed by the U.S. (190.1 contracts), Estonia (175.9 contracts), Finland (159.9 contracts), and Denmark (145.8 contracts). Among mobile broadband services, the number of 5G service subscriptions was the highest in Denmark with 103.6 contracts, followed by Japan with 69.4 contracts, and the Republic of Korea with 63.5 contracts **(Figure 2-1-2-2)**.

Figure 2-1-2-1 Number of broadband service subscribers per 100 people



(Source) OECD[1]

Figure 2-1-2-2 Number of mobile broadband service subscriptions per 100 people



(Source) OECD[2]

[1] OECD statistics. From OECD Broadband statistics <https://www.oecd.org/en/topics/sub-issues/broadband-statistics.html>, 1.2.1. OECD Fixed broadband subscriptions per 100 inhabitants, by technology, December 2023.
Fiber optics include FTTH, FTTP and FTTB, but do not include FTTC and FTTN.

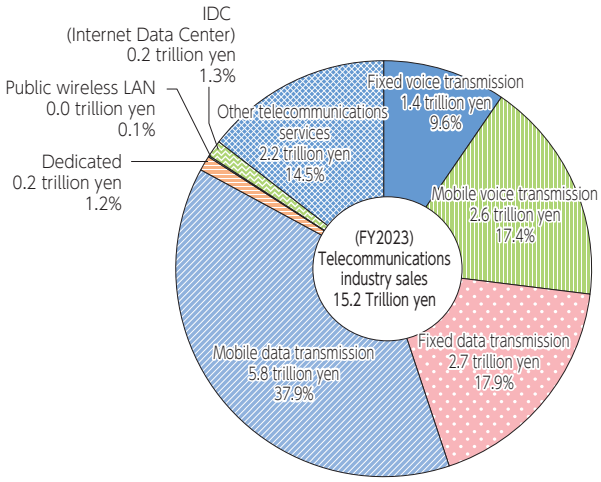
[2] OECD statistics. From OECD Broadband statistics <https://www.oecd.org/en/topics/sub-issues/broadband-statistics.html>, 1.2.2. OECD Mobile broadband subscriptions per 100 inhabitants, by technology, December 2023.

2. Current status of the telecommunications field in Japan

(1) Market size

The total revenue of the telecommunications industry for FY2023 is estimated to be approximately 15 trillion yen. Breaking it down, data transmission (both fixed and mobile) accounts for about 8.5 trillion yen (55.9%), and voice transmission (both fixed and mobile) accounts for about 4.1 trillion yen (26.9%)(**Figure 2-1-2-3**).

Figure 2-1-2-3 Composition of sales in the telecommunications industry



*1 "Fixed voice transmission" is the sum of domestic and international services.

*2 "Fixed data transmission" includes sales through Internet access (ISP, FTTH etc.), IP-VPN and wide area Ethernet.

*3 The sales in the telecommunications industry does not match the sum of sales by service because some companies did not provide the figures for the sales by service.

*4 Due to rounding, the simple sum of the numbers in this graph does not match the numbers in the main text ("data transmission (both fixed and mobile)" and voice transmission (both fixed and mobile)) of this white paper.

(Source) Prepared based on MIC "Basic Survey on the Information and Communications Industry"[3]

(2) Number of carriers

As of the end of FY2024, the number of telecommunications carriers is 26,642 (339 registered carriers and 26,303 notified carriers), continuing the increasing trend from the previous year (**Figure 2-1-2-4**).

Figure 2-1-2-4 Changes in the number of telecommunications carriers

End of FY	2016	2017	2018	2019	2020	2021	2022	2023	2024
Number of telecommunications carriers	18,177	19,079	19,818	20,947	21,913	23,111	24,272	25,534	26,642

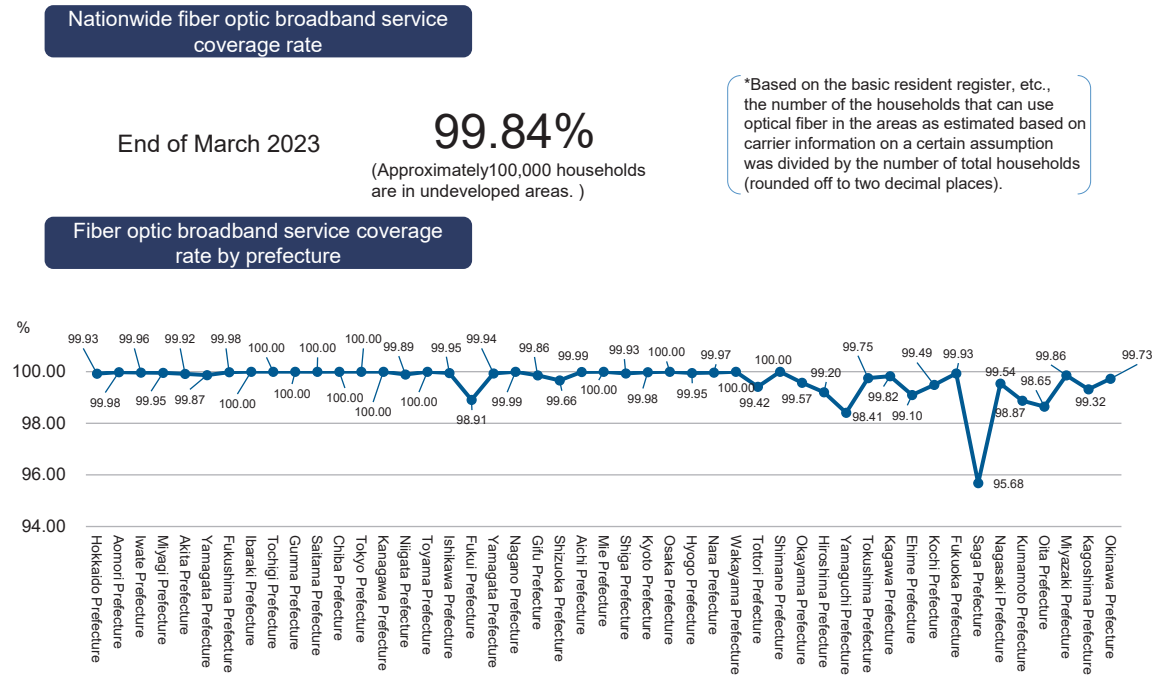
(Source) Information and Communications Statistics Database[4]

[3] https://www.soumu.go.jp/johotsusintokei/statistics/statistics07.html
[4] https://www.soumu.go.jp/johotsusintokei/field/tsuushin04.html

(3) Infrastructure development status

As of the end of FY2022, the national coverage rate for fiber optic broadband services (household coverage rate) is 99.84% (**Figure 2-1-2-5**).

Figure 2-1-2-5 Fiber optic broadband service coverage rate in Japan (as of end of FY2022)



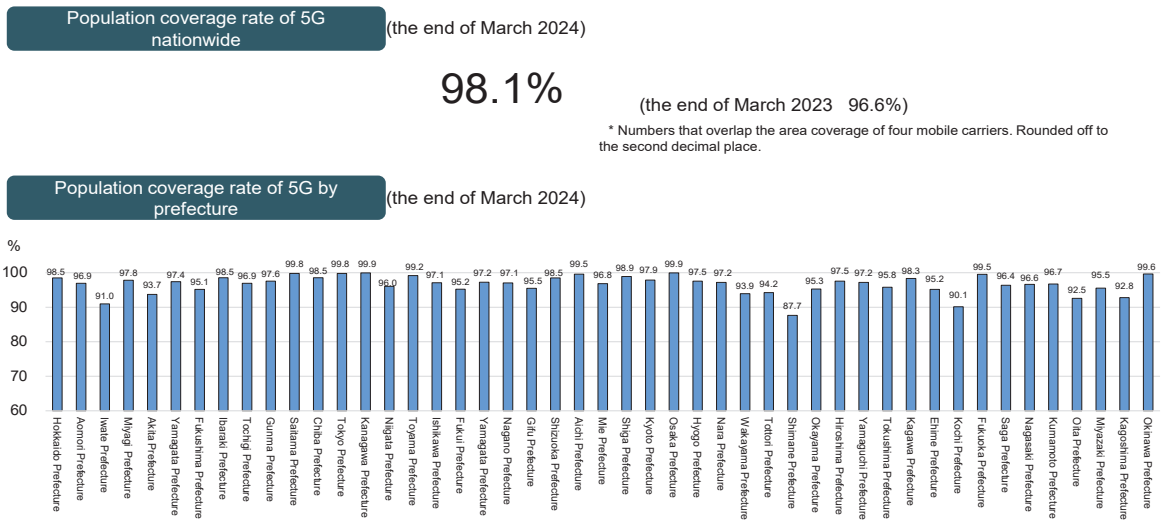
(Source) MIC "Survey on Broadband Infrastructure Coverage Rate at End of FY2022"[5]

According to the OECD, as of December 2023, the proportion of fiber optics in Japan's fixed broadband is the fifth highest among the member countries.

Figure (related data) Percentage of optical fiber in fixed broadband in the OECD member countries
Source: OECD Broadband statistics. Percentage of fibre connections in total fixed broadband, December 2023
URL: https://www.soumu.go.jp/johotsusintokei/whitepaper/ja/r07/html/datashu.html#f00129
(Data collection)

Additionally, as of the end of FY2023, the nationwide 5G population coverage rate in Japan is 98.1%, and all prefectures have exceeded 85% (**Figure 2-1-2-6**).

Figure 2-1-2-6 Japan's 5G coverage as percentage of population (as of end of FY2023)

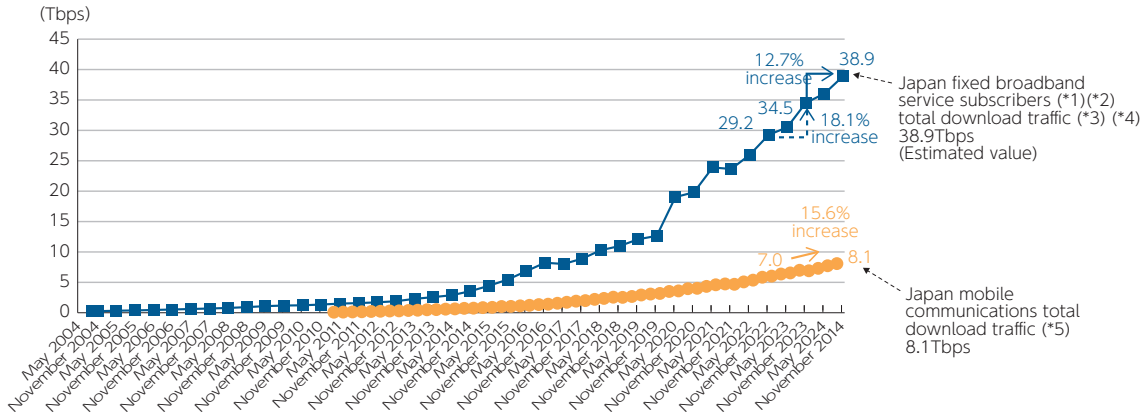


[5] https://www.soumu.go.jp/menu_news/s-news/01kiban07_02000026.html

(4) The status of traffic

The total download traffic of fixed broadband service subscribers in Japan experienced a sharp increase after the outbreak of the COVID-19 pandemic. Subsequently, despite fluctuations in growth rates, it has generally continued to increase, reaching a 12.7% increase compared with the same month of the previous year as of November 2024. The total download traffic for mobile communication also continues to increase, with a 15.6% increase compared with the same month of the previous year as of November 2024 (**Figure 2-1-2-7**).

Figure 2-1-2-7 Change in Internet traffic (fixed/mobile systems, download traffic)



*1 Services for individuals (FTTH, DSL, CATV, FWA)

*2 Including some corporations

*3 Up to May 2011, this also includes some mobile communications traffic to and from mobile phone networks

*4 Since May 2017, the number of cooperating ISPs increased from five to nine, resulting in discontinuities due to aggregated and estimated values based on information from the nine ISPs

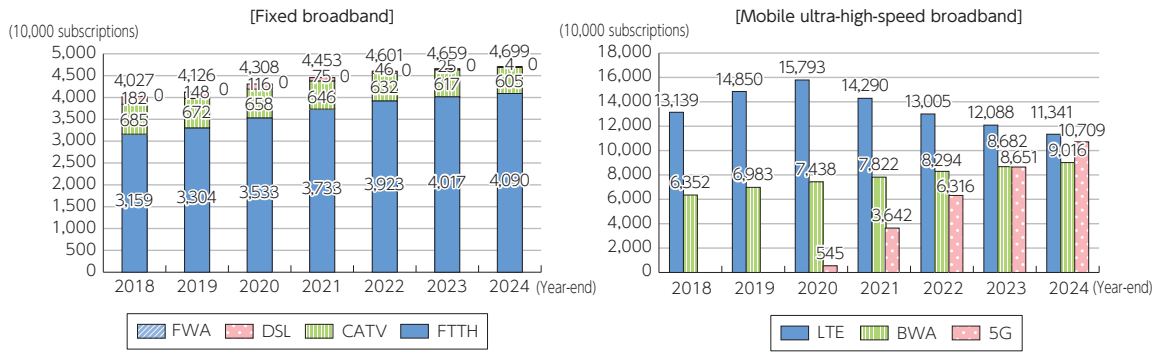
*5 From "MIC Current State of Mobile Communications Traffic in Japan (Sept 2024)" (measured in March, June, Sept, and Dec)

(Source) MIC (2025) "Results of Aggregating Internet Traffic in Japan (for November 2024)"[6]

(5) The status of use of broadband

As of the end of December 2024, the number of fixed broadband subscriptions[7] was 46.99 million (a 0.9% increase from the same period of the previous year). Among the subscriptions for mobile ultra-high-speed broadband[8], the number of 3.9-4th generation mobile phones (LTE) was 113.41 million (a 6.2% decrease from the same period of the previous year), 5th generation mobile phones was 107.09 million (a 23.8 % increase from the same period of the previous year), and BWA was 90.16 million (a 3.8% increase from the same period of the previous year) (**Figure 2-1-2-8**).

Figure 2-1-2-8 Changes in the number of broadband subscriptions



*The figures of the past differ from those published last year due to revisions in business operator reports.

(Source) Prepared based on MIC "Publication of Quarterly Data on the Number of Subscriptions and Share of Telecommunications Services (Q3 of FY2024 (End of December))"[9]

[6] https://www.soumu.go.jp/main_content/000992366.pdf
[7] The number of fixed-line broadband subscription is the sum of the FTTH, CATV (limited to coaxial, HFC), DSL and FWA subscriptions.
[8] This is the number of LTE, BWA and 5G subscriptions, and does not include 3G or PHS subscriptions.
[9] https://www.soumu.go.jp/menu_news/s-news/01kiban04_02000255.html

(6) Satellite communications

Satellite communications utilize both geostationary satellites[10] and non-geostationary satellites[11] to provide communication infrastructure in remote islands, mountainous areas, and for communication with ships and aircraft, and during emergencies such as natural disasters, making use of advantages such as wide area coverage, simultaneous communications and disaster resistance.

Figure (related data) Major geostationary satellites used as communication services in Japan (as of end of FY2024)
URL: https://www.soumu.go.jp/johotsusintokei/whitepaper/ja/r07/html/datashu.html#f00137
(Data collection)

Figure (related data) Major non-geostationary satellites used as communication services in Japan (as of end of FY2024)
URL: https://www.soumu.go.jp/johotsusintokei/whitepaper/ja/r07/html/datashu.html#f00138
(Data collection)

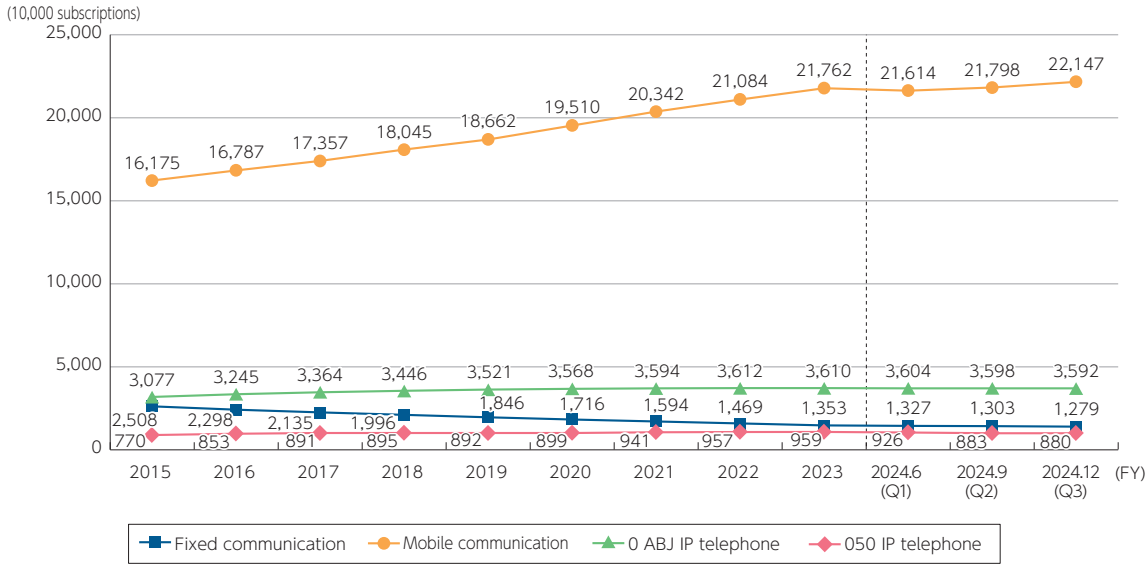
(7) Status of voice communication service subscription contracts

As for the status of voice communication service subscription contracts, the number of fixed communication contracts (including NTT East/West subscribed telephone services (including ISDN), non-NTT telephone services[12], and CATV telephone services, excluding 0ABJ type IP phone services) has been declining in recent years, while the number of mobile communications contracts (mobile phones, PHS, and BWA) has been showing steady growth. As of the end of December 2024, the number of mobile communication contracts is approximately 17.3 times that of fixed communication contracts (**Figure 2-1-2-9**).

Furthermore, as of the end of December 2024, the market share of mobile communication contracts by operator is as follows: NTT DOCOMO at 34.2% (a decrease of 0.9 percentage points from the same period of the previous year; 40.4% when including those provided to MVNO), KDDI Group at 27.1% (a decrease of 0.2 percentage points; 31.6% when including those provided to MVNO), SoftBank at 19.1% (a decrease of 0.3 percentage points; 24.2% when including those provided to MVNO), Rakuten Mobile at 3.2% (an increase of 0.5 percentage points; 3.8% when including those provided to MVNO), and MVNO at 16.3% (an increase of 0.9 percentage points) (**Figure 2-1-2-10**).

[10] An artificial satellite that orbits the Earth at an altitude of approximately 36,000 kilometers above the equator, synchronized with the Earth's rotation. With three satellites, it is possible to cover the entire Earth except for the polar regions.
[11] These satellites orbit at lower altitudes than geostationary satellites. Due to their lower orbit, they have lower transmission delays compared with geostationary satellites, enabling high-speed, high-capacity communication, and also allowing communication in polar regions. However, because the satellites move across the sky in a short period of time, simultaneous operation of a large number of satellites is required.
[12] Non-NTT telephone services are subscribed telephone services by telecommunications carriers other than NTT East/West and includes direct subscriber telephone, ISDN services, new-type non-NTT telephone and ISDN services.

Figure 2-1-2-9 Changes in the number of subscriptions to voice communications services



*1 For FY2024, data up to the end of December was used, so care must be taken when making year-on-year comparisons.

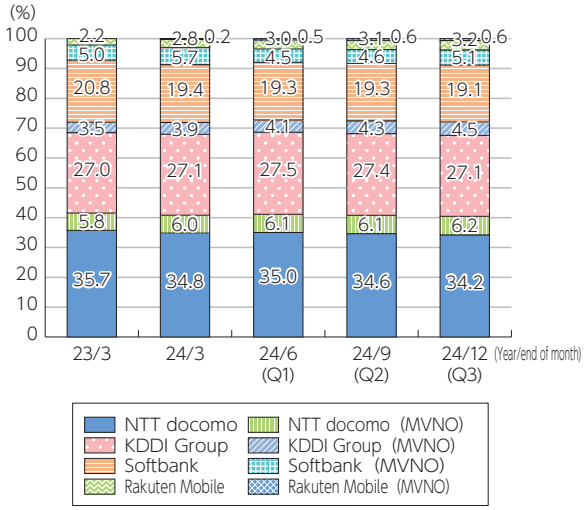
*2 The number of mobile communications subscriptions is the sum of mobile phones, PHS and BWA subscriptions.

*3 The number of mobile communication subscriptions, unless otherwise specified, refers to the figures "after intra-group transaction adjustments." "After intra-group transaction adjustments" means that when an MNO provides mobile phone or BWA services received from another MNO within the same group in the capacity of an MVNO, along with its own services, it is counted as one subscription instead of two.

*4 The reporting of MVNO service-specific subscription numbers was added from the fourth quarter of the FY2015, resulting in differences in the calculation methods for the adjusted subscription numbers before the fourth quarter of the FY2014 and after the fourth quarter of the FY2015.

(Source) MIC "Publication of Quarterly Data on the Number of Subscriptions and Share of Telecommunications Services (Q3 of FY2024 (End of December))"[13], "Publication of Quarterly Data on the Number of Subscriptions and Share of Telecommunications Services (Q4 of FY2021 (End of March))"[14], and "Information and Communications Statistics Database-Number of Subscriptions"[15]

Figure 2-1-2-10 Changes in share of mobile communications subscriptions (adjusted for intra-group transactions) by operator



*1 The number of mobile communication subscriptions, unless otherwise specified, refers to the figures "after intra-group transaction adjustments," and does not include subscriptions for wireless fixed broadband services provided via mobile phones or BWA or subscriptions for mobile network fixed telephone and wireless fixed telephone services. "After intra-group transaction adjustments" means that when an MNO provides mobile phone or BWA services received from another MNO within the same group in the capacity of an MVNO, along with its own services, it is counted as one subscription instead of two.

*2 Up to the fourth quarter of FY2022 (23/3), the number of mobile communications subscriptions includes subscriptions for wireless fixed broadband services provided via mobile phones or BWA.

*3 The share of the KDDI Group includes KDDI Okinawa Cellular and UQ Communications.

*4 The share of MVNO is calculated by MNO group that provides services and is indicated by the supplementary note (MVNO) after the name of the MNO group.

*5 Rakuten Mobile's share as an MNO. MVNO services provided by Rakuten Mobile are included in NTT docomo (MVNO) and KDDI Group (MVNO).

(Source) Prepared from MIC "Publication of Quarterly Data on the Number of Subscriptions and Share of Telecommunications Services (Q3 of FY2024 (End of December))"

[13] https://www.soumu.go.jp/menu_news/s-news/01kiban04_02000255.html
[14] https://www.soumu.go.jp/menu_news/s-news/01kiban04_02000206.html
[15] https://www.soumu.go.jp/johotsusintokei/field/tsuushin02.html

(8) International comparison of communication charges

When comparing communication charges in Tokyo (Japan), New York (the U.S.), London (the UK), Paris (France), Dusseldorf (Germany), and Seoul (the Republic of Korea) as of March 2025, the smartphone (4G, for the leading MNO, for new contracts) fees in Tokyo were at a median level.

The fees for fixed-line telephones, including basic fees and the cost of a 3-minute local call at 12:00 on weekdays, were also at a median level.

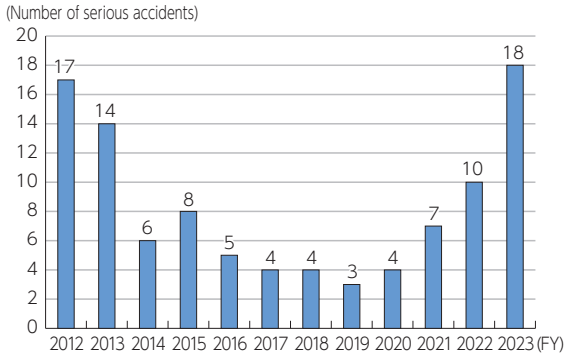
Figure (related data) International comparison of mobile phone charges by model (FY2024)
Source: MIC "FY2024 Survey on Domestic-Overseas Price Difference of Telecommunications Service"
URL: https://www.soumu.go.jp/johotsusintokei/whitepaper/ja/r07/html/datashu.html#f00149
(Data collection)

Figure (related data) International comparison of fixed telephone charges based on individual charges (FY2024)
Source: MIC "FY2024 Survey on Domestic-Overseas Price Difference of Telecommunications Service"
URL: https://www.soumu.go.jp/johotsusintokei/whitepaper/ja/r07/html/datashu.html#f00150
(Data collection)

(9) Status of occurrence of telecommunications service accidents

In FY2023, there were 7,261 reported accidents requiring quarterly reports, of which 18 were classified as serious accidents[16]. This represents an increasing trend since FY2019 (**Figure 2-1-2-11**).

Figure 2-1-2-11 Changes in the number of serious accidents



(Source) MIC "Verification Report on Telecommunications Accidents in FY2023"[17]

(10) Complaints and consultations regarding telecommunications services and consultations on illegal and harmful information

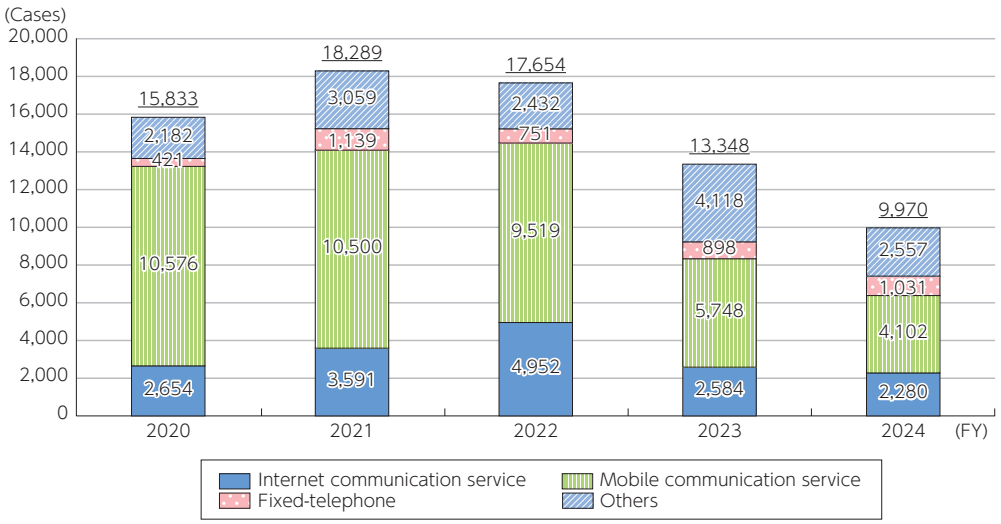
A Complaints and Consultations Regarding Telecommunications Services

In FY2024, the number of complaints and consultations regarding telecommunications services received by the MIC was 9,970, which represents a decrease from the previous fiscal year **(Figure 2-1-2-12)**. Additionally, when looking at the details of complaints and consultations received by consumer centers nationwide and the MIC by service type, those related to "MNO services" were the highest **(Figure 2-1-2-13)**.

[16] Accidents falling under the Article 28 of the Telecommunications Business Act "When a serious accident specified by an Ordinance of the Ministry of Internal Affairs and Communications has occurred with respect to telecommunications activities, (the telecommunications carrier) shall report without delay to the Minister for Internal Affairs and Communications to that effect including its reason or cause."

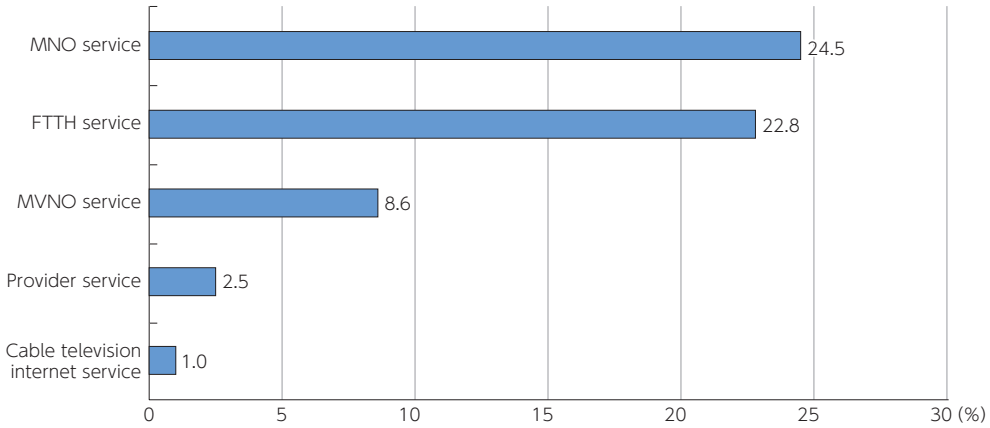
[17] https://www.soumu.go.jp/menu_news/s-news/01kiban05_02000340.html
* The number of reports from business operators. With regard to serious accidents, from FY2008, a decline in the quality of a telecommunications service is also classified as a serious accident, and from FY2015, reporting standards have been set for each category of telecommunications service, rather than uniformly for telecommunications services, so changes from year to year cannot be simply compared.

Figure 2-1-2-12 Changes in the number of complaints and inquiries received by the MIC



(Source) Prepared by MIC

Figure 2-1-2-13 Breakdown of complaints and consultations received by consumer centers nationwide and the MIC (random sample of those received between April 2023 and March 2024)



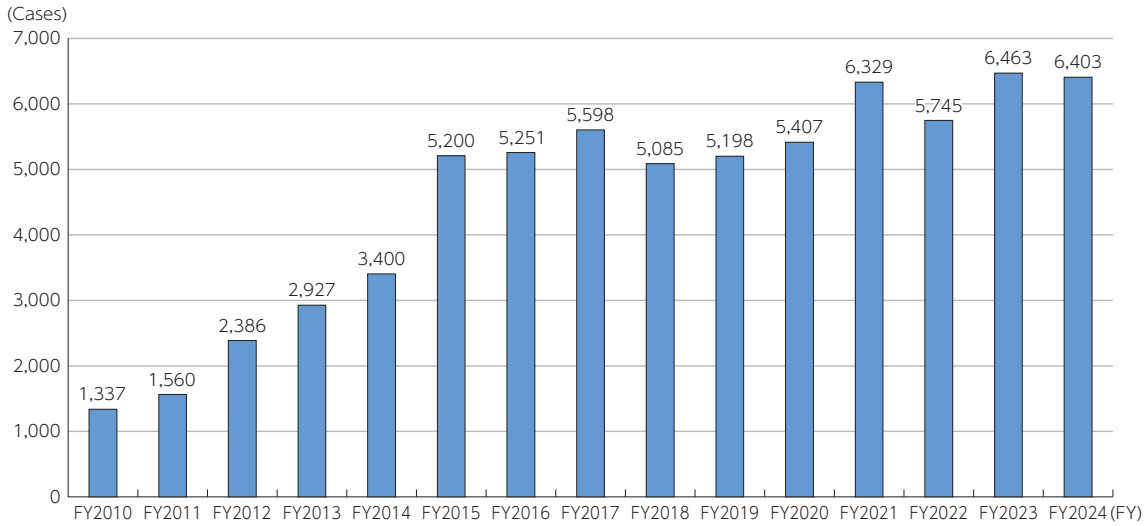
* There is a possibility that ISP services provided together with FTTH lines are only included in provider services.

(Source) MIC "Regular Meeting for Monitoring the Implementation Status of Consumer Protection Rules (17th meeting)"

B Consultations on illegal and harmful information

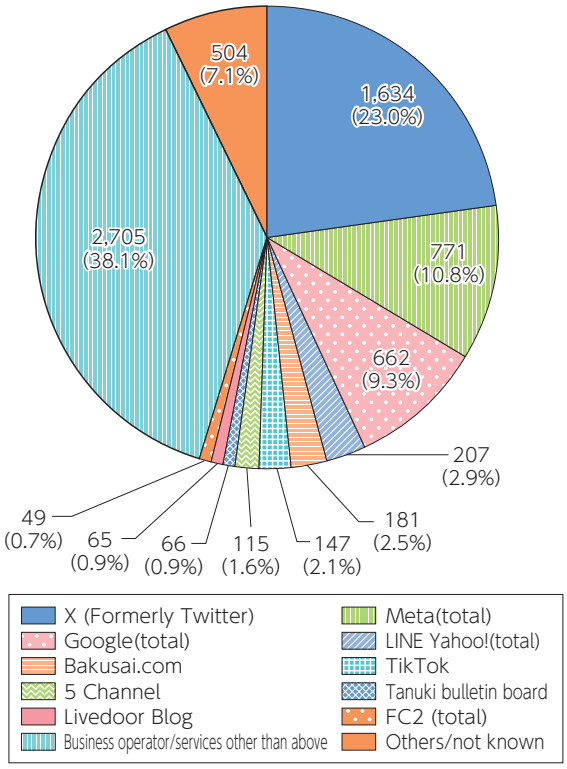
The number of consultations received by the Illegal and Harmful Information Consultation Center, which is operated under the commission of the MIC, has remained high, with 6,403 consultations in FY2024 (**Figure 2-1-2-14**). The top five companies for the number of consultations in FY2024 were X (formerly Twitter), Meta, Google, LINE Yahoo, and Bakusai (**Figure 2-1-2-15**).

Figure 2-1-2-14 Changes in the number of consultations regarding illegal and harmful information



(Source) MIC "Regular Monitoring Meetings on the Implementation Status of Consumer Protection Rules (17th meeting)"

Figure 2-1-2-15 Breakdown of the number of consultations provided at the Illegal Harmful Hotline by business operator



Business operator, service, etc.			Number of requests	Percentage
X (Formerly Twitter)			1,634	23.0%
Meta (total)			771	10.8%
	Instagram		587	
	Facebook		114	
	Threads		69	
	Whatsapp		1	
Google (total)			662	9.3%
	Google search		253	
	Google map		220	
	YouTube		168	
	Others			
LINE Yahoo! (total)			207	2.9%
	LINE (total)		148	2.1%
	Yahoo! (total)			0.8%
		Yahoo! search	12	
		Yahoo (others)	47	
Bakusai.com			181	2.5%
TikTok			147	2.1%
5 Channel			115	1.6%
Tanuki bulletin board			66	0.9%
Livedoor Blog			65	0.9%
FC2 (total)			49	0.7%
Business operator/services other than above			2,705	38.1%
Others/not known				7.1%

*1 The number of consultations is based on the collected cases; the consultation center did not determine if each case constitutes an infringement of rights.

*2 The number of consultations (6,430) may not match the total number of consultations in the chart above (7,106), because respondents may have chosen multiple services.

*3 The data provided in the above chart cannot precisely be considered statistical information, because, depending on consultations, respondents may have chosen the same service for multiple times.

*4 Unique domains are used in some cases, which makes it difficult to identify the actual domain.

(Source) MIC "Regular Monitoring Meetings on the Implementation Status of Consumer Protection Rules (17th meeting)"

3. New trends in the communications field

(1) All photonics network

All photonics network technology is a core technology for next-generation information and communication infrastructure. By utilizing photonics-electronics convergence technology in wired networks and information and communications equipment and devices, and minimizing electrical-to-optical signal conversion, it enables low pow-

er consumption, low latency, and large capacity, making it a potential game changer. Its primary use case is high-speed, low-latency interconnection between data centers. In line with recent trends, integration with generative AI technologies is also progressing. NTT Communications Corporation successfully achieved the world's first large language model (LLM) training demonstration experiment in an environment with distributed GPU servers located across three datacenters connected via photonics-electronics convergence[18]. The high-speed, low-latency connections enabled by photonics-electronics convergence allow rapid and efficient data transfer between GPU servers, delivering performance on par with that of a single datacenter for relatively light processing, such as pre-training and additional training of small-scale AI models. This will unlock the potential to flexibly build GPU clusters across multiple data center environments, thereby enabling more efficient resource utilization.

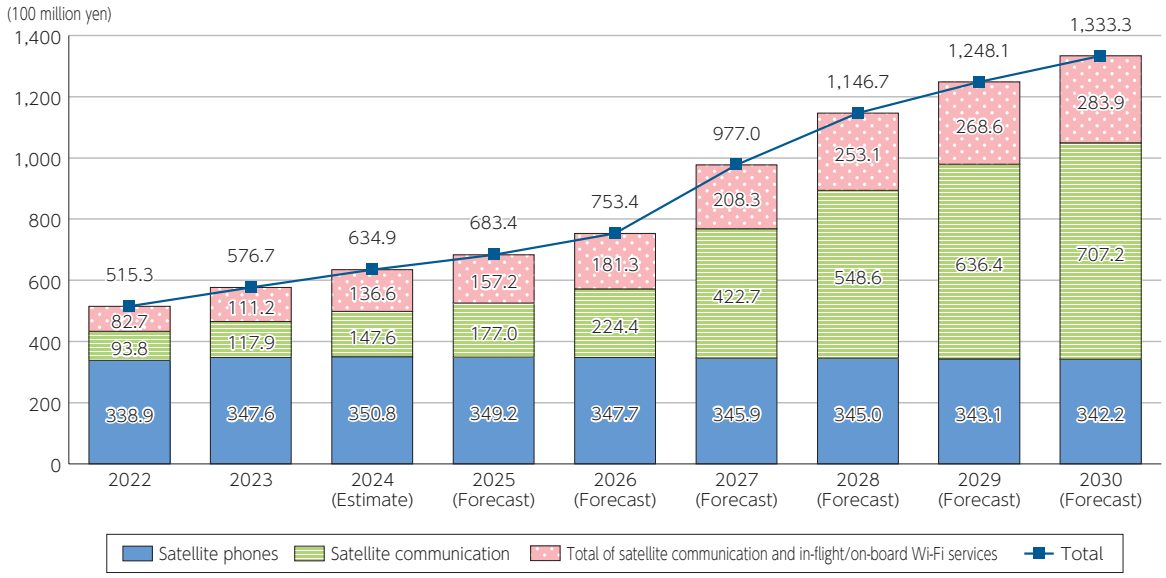
Furthermore, utilizing all photonics networks is expected to accelerate the decentralization of datacenter locations, which are currently concentrated in metropolitan areas, to areas where renewable energy is available. This, in turn, is expected to strengthen Japan's AI development capabilities, promote the use of AI, and provide safe, secure, and reliable AI with low environmental impact (green AI) across society.

(2) Non-Terrestrial Network (NTN)

Non-Terrestrial Network (NTN) refers to a multi-layered mobile communication network that connects not only terrestrial areas but also the sea, sky, and space. By using HAPS (High Altitude Platform Station) and satellite communications, it allows for seamless communication services even in areas where terrestrial communication infrastructure is not developed.

The domestic satellite communications service market is expected to reach 57.7 billion yen in 2023 and 63.5 billion yen in 2024 (a 10.1% increase from the previous year), and is expected to continue to grow thereafter **(Figure 2-1-2-17)**.

Figure 2-1-2-17 Changes and forecasts of the size of the domestic satellite communications service market



* The market size includes: 1) satellite phones and satellite data communication services provided by telecommunications carriers using GEO (geostationary satellites)/MEO (medium earth orbit satellites), LEO (low earth orbit satellite constellations), and HAPS; 2) in-flight and on-board Wi-Fi services provided by service providers (public transportation operators: airplanes, passenger ships, etc.); and 3) direct satellite communication services via smartphones. Broadcast network services such as BS/CS broadcasting and J-ALERT are not included.

(Source) Yano Research Institute Ltd., "Satellite Communication Service Market in Japan: Key Research Findings 2024" (published on March 24,2025)[19]

(3) Quantum cryptographic communication

Quantum cryptographic communication is a secure encryption key distribution technology that utilizes quantum properties to address the threat of cryptography being compromised by the realization of quantum computers, and is attracting growing interest both in Japan and overseas.

China has developed and begun using a nationwide quantum cryptographic communication network spanning over 10,000 kilometers. Similarly, Europe has also begun building a large-scale quantum cryptographic communication network spanning the entire continent, accelerating the efforts toward its social implementation.

In Japan, the MIC and the National Institute of Information and Communications Technology (NICT) have been promoting research and development on quantum cryptographic communication, and established a quantum cryptographic communication testbed called the "Tokyo QKD Network" in 2010 to demonstrate and verify quantum cryptographic communication, which has been in continuous operation since then.

[18] https://www.ntt.com/about-us/press-releases/news/article/2025/0319.html
[19] https://www.yanoresearch.com/en/press-release/show/press_id/3611