

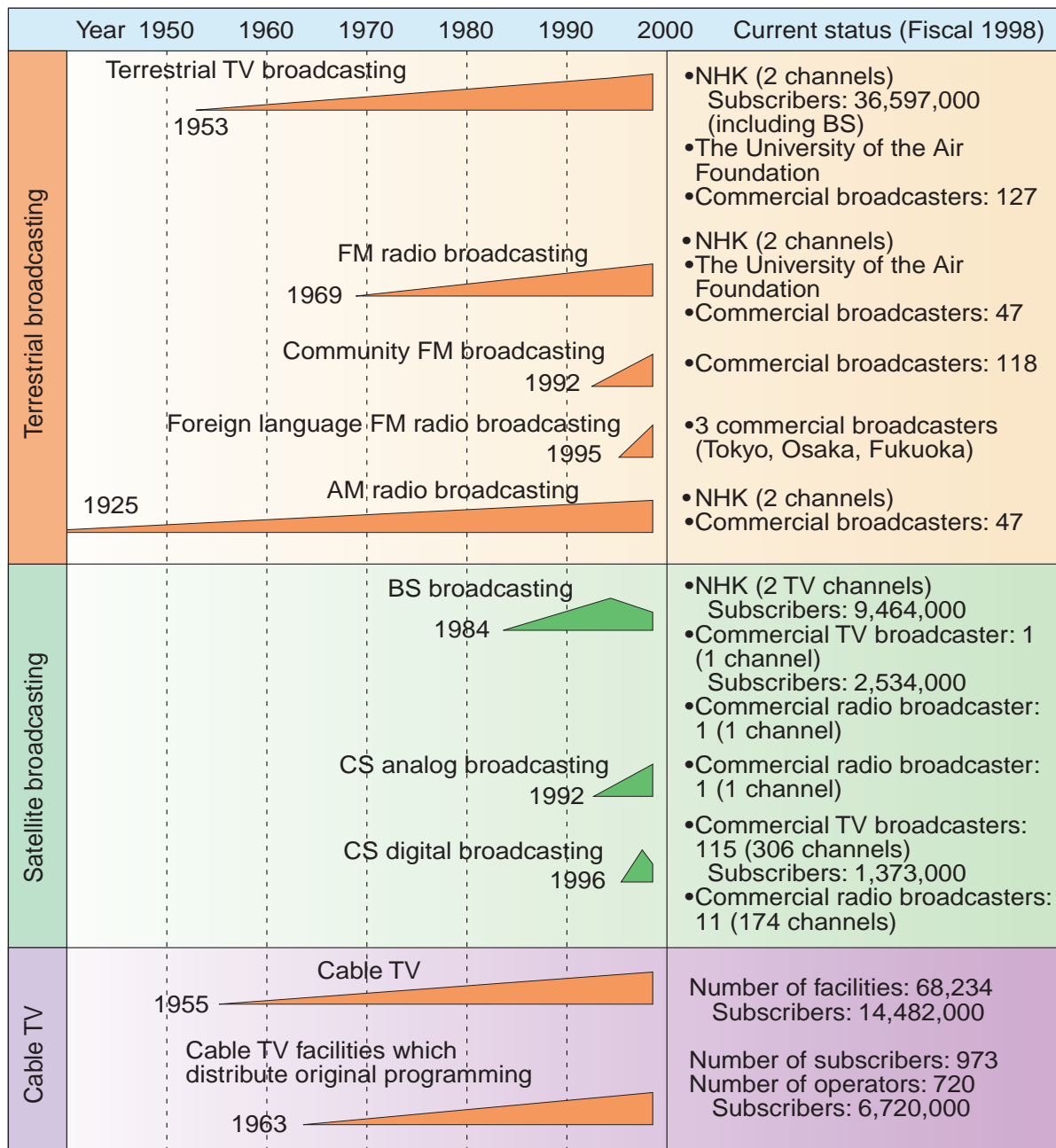
II-5-1 Outline

Recently new broadcasting media have entered the market one after another.

Japanese broadcasting is basically divided into three media: terrestrial broadcasting, satellite broadcasting and cable television. All these categories have seen new entrants in recent years. For example, since the beginning of the 1990s, community FM radio broadcasting and foreign language FM

broadcasting have been launched in the terrestrial broadcasting area, and communications satellite (CS) broadcasting has also begun. In addition, the number of companies offering cable television services, providing original programming, has been steadily increasing.

Fig. Major broadcasting media in Japan



Note: Figures for cable TV are as of the end of fiscal 1997.

Source: MPT

II-5-2 Multiplex broadcasting

Multimedia services have been promoted in data multiplex broadcasting.

A variety of multiplex broadcasting services have been developed recently, based on new data transmission technologies that use unallocated bandwidth or blanking intervals (Table).

Among them, the FM text multiplex broadcasting is known as the "visible radio" that can be watched. It airs multiple text information including news, weather forecasts, traffic information, en-

tertainment, program information and emergency information around the clock free of charge.

Recently the number of users of the terminal for this type of broadcasting (either a specially designed radio with a liquid crystal display that can demonstrate up to 30 letters or a car navigation system which can catch FM text multiplex broadcasting signals) has been increasing.

Table Outlines of major multiplex broadcasting services (as of March 31, 1999)

Categories		System and services	Broadcast hours	Number of broadcasters	Start
Television broadcasting	Television sound multiplex broadcasting	A type of broadcasting being provided by multiplexing sound or other signals on unused bandwidth or blanking intervals.	--	Terrestrial broadcasters: 28 Satellite broadcasters: 2	1982
	Television text multiplex broadcasting	<ol style="list-style-type: none"> 1. A type of broadcasting being provided by multiplexing digital signals that indicate some text or images on unused bandwidth or blanking intervals. 2. Users can anytime receive a variety of information such as news, weather forecast, traffic information and music coding by using a text tuner or a TV set with built-in decoder. 	24 hours (maximum)	Terrestrial broadcasters: 39	1985
	Television data multiplex broadcasting	<ol style="list-style-type: none"> 1. A type of broadcasting being provided by multiplexing digitized signals such as voice and other sound, or another signals indicating some text, images or motion picture on unused bandwidth or blanking intervals. Users can anytime retrieve a variety of information through a specially designed terminal, a PC or a facsimile. 2. A variety of information such as news, sports, weather forecast, as well as a variety of data such as telesoftware are being provided. 3. By combining the TV broadcasting with telephone lines (the Internet, PC networks), interactive services such as shopping, ticket booking and participating in a quiz program are available. 	24 hours (maximum)	Terrestrial broadcasters: 32 Satellite broadcaster: 1	October 1996
Radio broadcasting	FM text multiplex broadcasting	<ol style="list-style-type: none"> 1. A type of broadcasting being provided by multiplexing digital signals such as voice, other sound, or others indicating some text, images or moving pictures on unused FM bandwidth. 2. A variety of text information including news, traffic information and program information are being provided. 	24 hours (maximum)	Terrestrial broadcasters: 45	October 1994

Note: Numbers include NHK and the University of the Air Foundation.

Source: MPT

For people who are visually disabled or hearing impaired, programs with captions or descriptions are being provided. According to MPT's "Survey of broadcasting for visually disabled and hearing impaired people," NHK and commercial broadcasters offered the following services in their standard terrestrial broadcasting in fiscal 1998 (July 1998):

1. Captioned TV Broadcasting (Fig.)

Captioned television programs have been provided since 1985. In fiscal 1997, the governmental subsidy system for producing such programs was expanded and the Broadcast Law was revised to simplify the license system and oblige broadcasters to make efforts to produce more captioned programs. In November 1997, as part of government efforts to expand programming for people with visual or hearing disabilities, target numbers of hours were decided for captioned programming and released as administrative guidelines.

i) Number of broadcasters providing captioned programming

NHK and 113 of the 126 commercial broadcasters in Japan provide television programming with captions. The figure has increased dramatically since fiscal 1997, when just 14 broadcasters were providing such programming. As a result, the areas where people can watch captioned programs provided by commercial broadcasters expanded from 19 prefectures in fiscal 1997 to nationwide.

However, most of the captioned programs are re-broadcast from other content providers. Excluding five key stations in the Kanto area, among the commercial broadcasters only five offer captioned original programming.

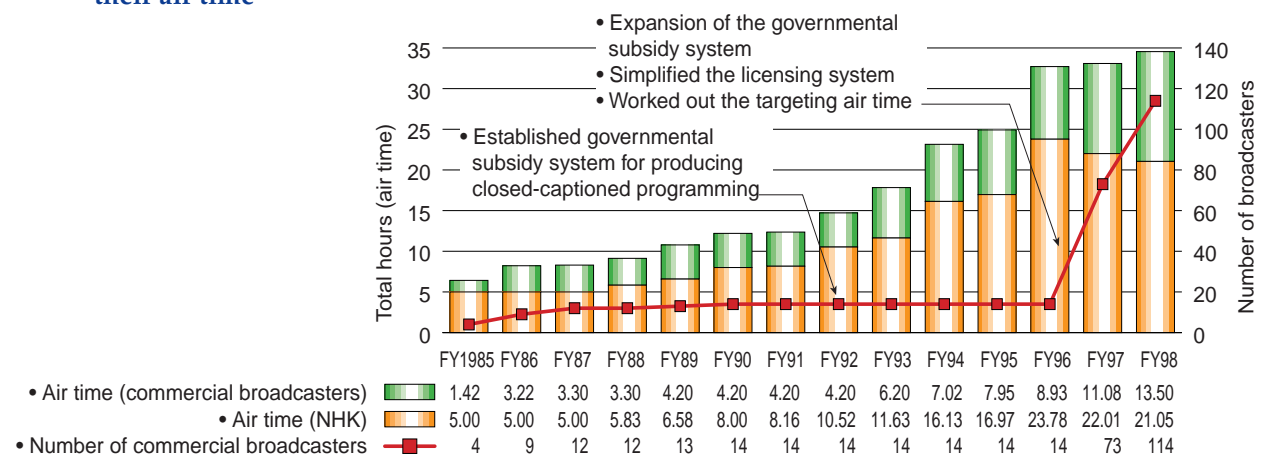
ii) Air time

The number of hours per week of captioned television programs provided by NHK was 21 hours 3 minutes, or 12.9% of all NHK broadcasting. The total figure for five key commercial broadcasters in the Kanto area was 13 hours and 29 minutes, or 1.6% of their total air time. In the U.S., approximately 70% of broadcast programming aired by major U.S. networks is closed captioned in 1995. Although the amount of programming with captions has been surging in Japan, it still has a long way to go.

2. Programming with supplementary narration

NHK and 34 commercial broadcasters provided television programming with descriptions. The figure was the same as in the previous fiscal year. The number of hours per week of such programs was 4 hours on NHK's general channel (2.5% of the total air time), and 6 hours on NHK's education channel (4.6% of the total air time). In total, the five key commercial broadcasters in the Kanto area provided one hour and 40 minutes of this type of program, or 0.2% of their total air time.

Fig. Trends in the number of commercial broadcasters providing programming with captions and their air time



- Notes: 1. Figures for the number of broadcasters indicate the numbers at the end of fiscal year until fiscal 1997. The figure for fiscal 1998 indicates the numbers in July 1998.
 2. Air time figures indicate as of July of each year.
 3. Air time figures for NHK in fiscal 1997 and 1998 decreased because many regular TV programs were replaced with Diet session coverage, typhoon news coverage and high school baseball programs during the surveyed period.

Source: "Survey on the current status of broadcasting for visually disabled and hearing impaired," MPT

II-5-3 Satellite broadcasting

Both BS and CS broadcasting services are attracting growing numbers of subscribers.

II-5

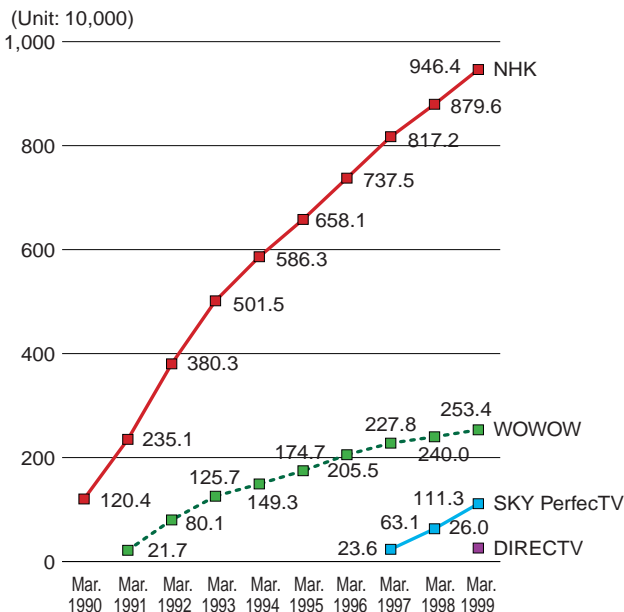
Broadcasting service

1. BS broadcasting

At present, analog broadcasting services in Japan are provided via the BSAT-1a satellite (predecessor the BS-4 satellite). There are four channels for television services: two are used by NHK; one by Japan Satellite Broadcasting (WOWOW), and one is used for large-scale pilot broadcasts in the Hi-Vision format, as part of a project being promoted by NHK and seven commercial broadcasters.

In addition, pulse code modulation (PCM) radio broadcasting is offered by the company Satellite Digital Music Broadcasting (St. GIGA), which partially owns the broadcasting facilities of WOWOW. As of the end of March 1999, NHK had a total of 9.46 million subscribers to its satellite television service, up 7.6% from the year before, and WOWOW had 2.53 million, up 5.6% (Fig. 1).

Fig. 1 Trends in the number of subscribers to satellite broadcasting



Source: MPT

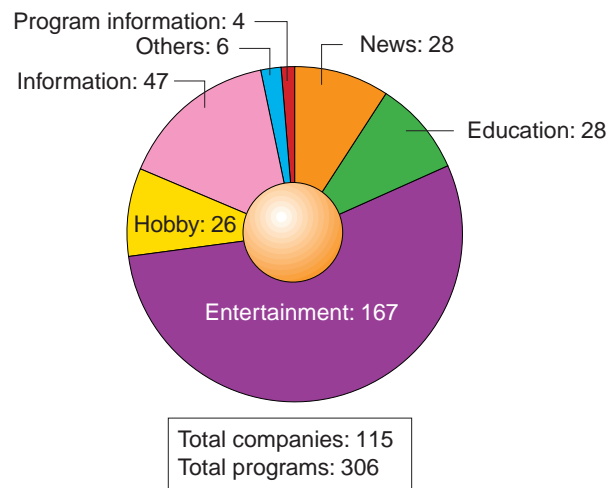
2. CS broadcasting

Digital broadcasting using CS satellites started in Japan in June 1996. As of the end of March 1999, SKYPerfectTV ! was providing services via the JCSAT-3 and JCSAT-4 satellites, and DIRECTV via SUPERBIRD C (Fig. 2).

Regarding analog broadcasting, one broadcaster which used JCSAT-2 stopped its services in March 1998 and eight others which used SUPERBIRD B stopped their business in September 1998. As of the end of March 1999, only one broadcaster was providing PCM radio services using JCSAT-2.

As of the end of March 1999, SKYPerfectTV ! had 1.113 million subscribers, up 76.4% from the year before, and DIRECTV had 260,000 (Fig. 1).

Fig. 2 Number of programs of CS broadcasting by category (as of the end of fiscal 1998)



II-5-4 Cable TV

There has been a rapid rise in the number of cable TV operators providing communications services.

When first introduced in Japan, cable television was seen as a supplementary service to terrestrial broadcasting, with the main aim of retransmitting programming in areas of poor receipt. However, cable TV has also developed in other fields and stations have appeared offering many channels of original programming, as well as interactive functions.

Nowadays, cable TV companies in Japan not only carry retransmitting terrestrial broadcasters' retransmitting programs simultaneously, but also transmit content from satellite broadcasters in addition to original programming. Also, since the abolition in December 1993 of the requirement for cable television companies to obtain licenses to operate in each locality, Multiple System Operators (MSOs) have been expanding their business.

1. Number of subscribers

At the end of fiscal 1997, Japan's total number of subscribers to cable TV was 14.482 million, up 14.7% from the previous fiscal year. Among them, the number of subscribers to cable TV companies pro-

viding original programming was 6.72 million, up 34.4% from the previous fiscal year (Fig.).

2. Full-service

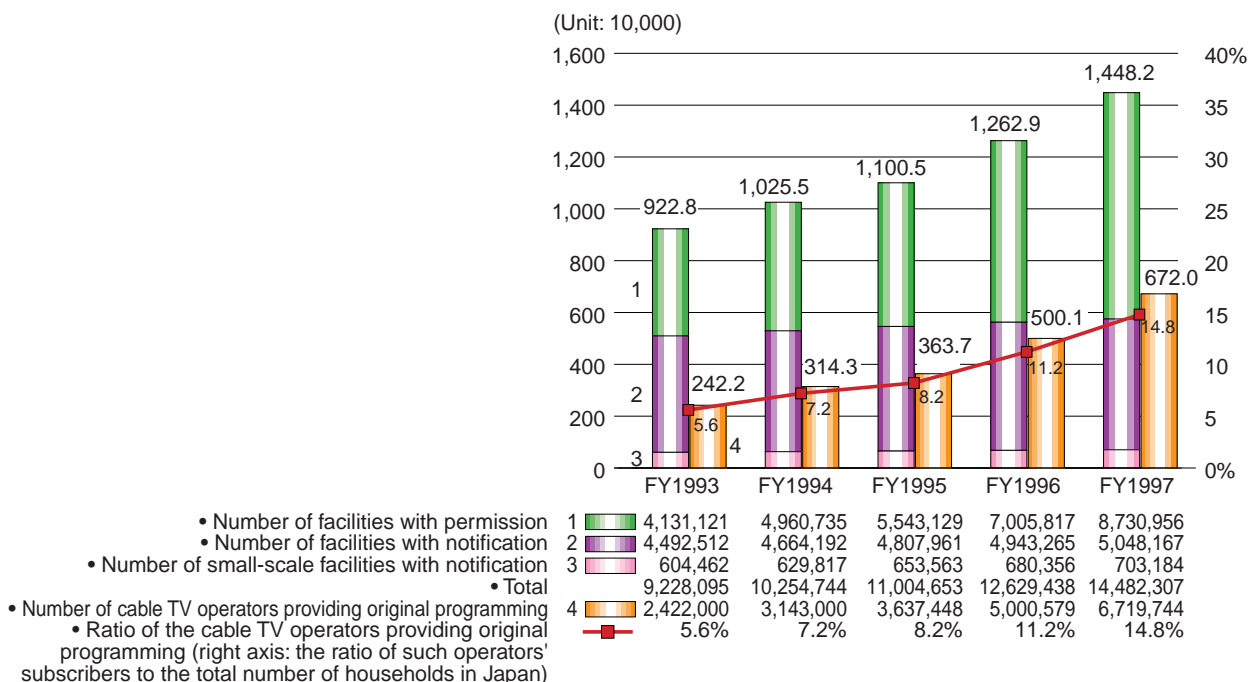
As well as providing conventional television pictures, cable TV operators have established roots in various Japanese communities as part of the local information infrastructure, by providing a range of communication services.

As of the end of fiscal 1998, 66 cable TV operators had been approved for Type I telecommunications operation, and 44 of them have since launched their businesses. Their services include:

- 1) private services such as water metering and home security (17 operators);
- 2) data transmission services, including Internet access (Refer to I-2-4-(2)) and cell relay service (56 operators); and
- 3) voice transmission services (telephony service) (2 operators).

Seven of these firms provide both 1) and 2), and two provide 2) and 3).

Fig. Trends in the number of subscribers of cable TV



Note: Total number of households in Japan is taken from the "Residents Registration Ledger."

Source: MPT

II-5-5 NHK

The number of BS subscribers has been increasing.

Japan's public service broadcaster, Nippon Hoso Kyokai (NHK), provides five terrestrial channels in Japan, comprising a general television channel and an educational television channel, as well as two AM radio channels (Radio 1 and Radio 2) and one for FM radio. NHK also offers programs through two satellite television channels, BS-1 and BS-2, as well as television sound multiplex broadcasting, television teletext multiplex broadcasting and FM teletext multiplex broadcasting. In addition, it is participating in large-scale pilot broadcasting of Hi-Vision TV.

1. Number of subscribers

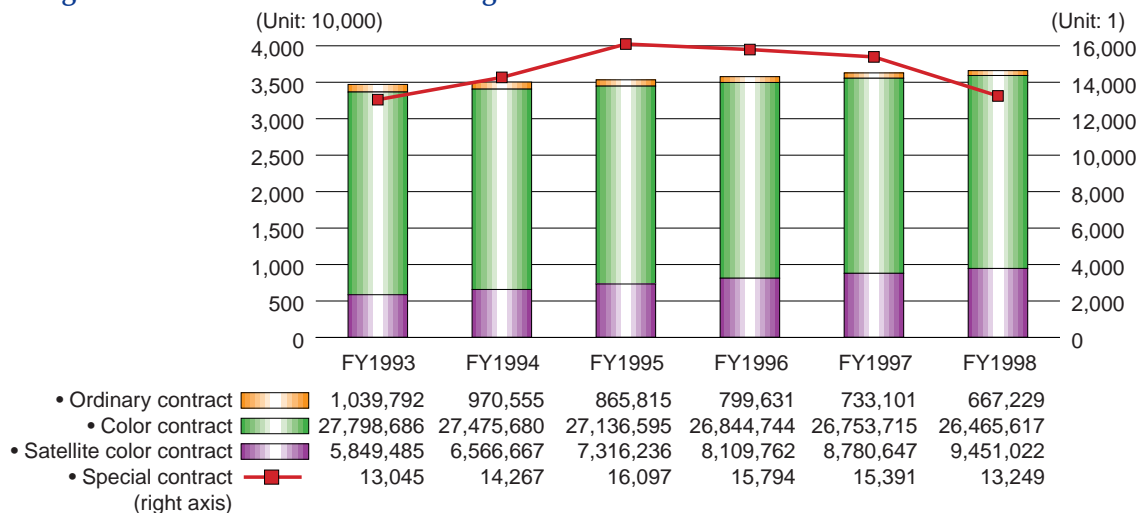
At the end of March 1999, the number of contracts

for NHK services was 36.597 million. Among these, ordinary contracts (excluding BS subscribers) accounted for 27.133 million, down 1.3% from the previous fiscal year. The number of BS contracts (satellite contracts and special contracts) was 9.46 million, up 7.5% from the previous fiscal year. These figures indicate the number of receiving contracts for satellite broadcasting has been expanding (Fig. 1).

2. Number of broadcasting hours

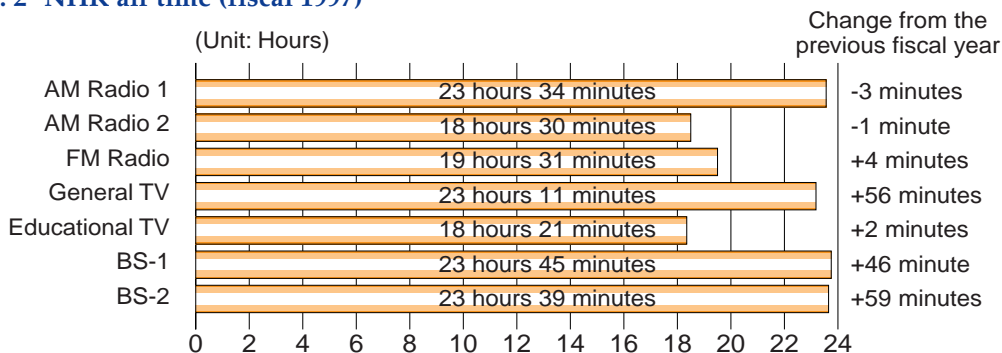
In fiscal 1997, the average air time per day on NHK's general television channel and BS-1 and BS-2 satellite channels rose remarkably, due to the expansion of late-night broadcasts (Fig. 2; Refer to Appendix 22).

Fig. 1 Trends in number of receiving contracts for NHK services



- Notes: 1. The ordinary contract is a type of contract with viewers excluding satellite TV broadcasting and terrestrial color TV broadcasting.
 2. The color contract is a type of contract including terrestrial color TV broadcasting but excluding satellite TV broadcasting.
 3. The satellite contract is a type of contract including satellite TV broadcasting and terrestrial color TV broadcasting.
 4. The special contract is a type of contract including broadcasting services via satellite but excluding terrestrial broadcasting for viewers in poor reception areas due to geographical reason or for commercial vehicles such as trains.

Fig. 2 NHK air time (fiscal 1997)



Source: NHK

II-5-6 The University of the Air

Number of students has been increasing.

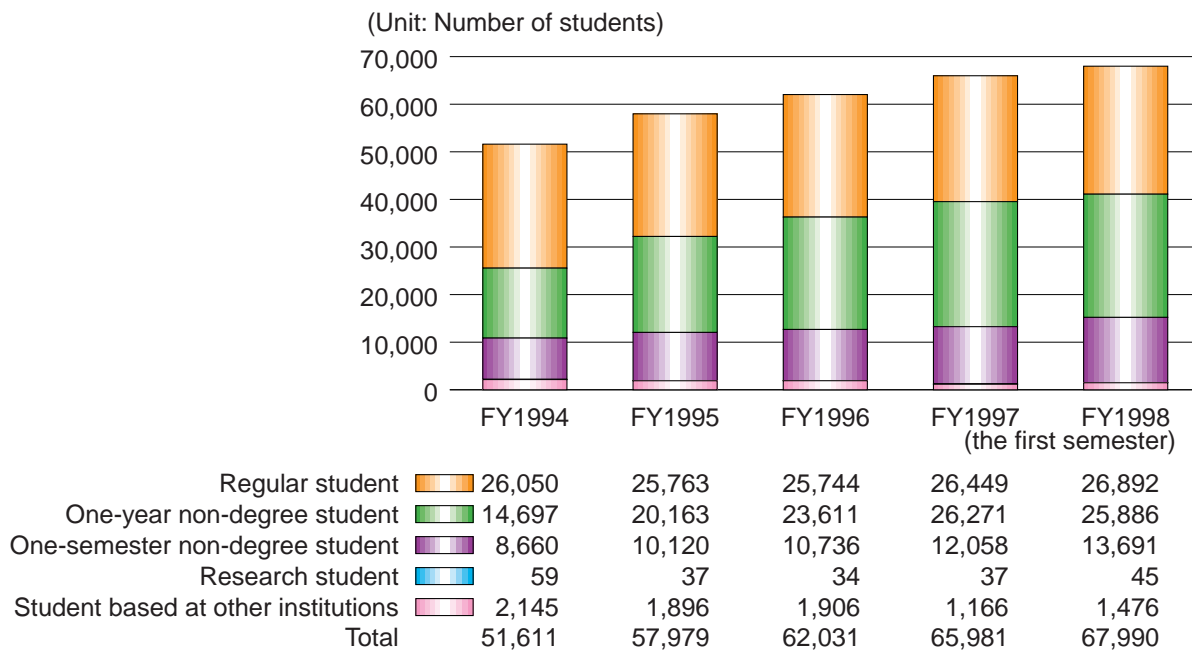
In April 1985, the University of the Air began airing programs through a terrestrial television channel and an FM radio channel in the Kanto area (Tokyo and the six surrounding prefectures). In January 1998, it also started using a CS digital system for nationwide retransmission of its programs broadcast on terrestrial TV, and the number of students has been increasing (Fig.).

In addition, these programs are available through

cable TV when the cable TV retransmits the university's programs once aired through the terrestrial broadcasting or the CS digital broadcasting.

In September 1998, new study centers were opened in four prefectures: Wakayama, Tokushima, Saga and Kagoshima. Now, every prefecture has one study center. In fiscal 1998, programs were broadcast from 6 a.m. to midnight, seven days a week at all of the media.

Fig. University of the Air: trends in student numbers



- Notes: 1. For "Regular student": They major in one of six fields and study for at least four years. When they have completed 124 credits, they receive a bachelor's degree in liberal arts.
 2. "One-year non-degree student" and "One-semester non-degree student": Not intending to graduate from the university, they take some courses according to their own study topic.
 3. "Research student": They study a certain field for one year under supervision of a faculty member. Qualification is a college/university graduate or a person having equal or surpassing college graduates in scholarly attainments.
 4. "Student based at other institutions": Upon special arrangement, students from other institutions of tertiary education may be permitted to take some courses provided by the University of the Air.

Source: The University of the Ai

II-5-7 International broadcasting from Japan

In October 1998, international TV broadcasting by NHK was extended to almost every corner of the globe.

II-5

Broadcasting from Japan to countries abroad is provided both directly and through the distribution of Japanese programming to local broadcasters and cable television companies. NHK's Radio Japan offers programs direct from Japan by shortwave radio, while NHK World TV broadcasts programs directly via satellite. Both NHK and commercial broadcasters are involved in sending their programs for transmission by other firms abroad.

1. International broadcasting

i) Shortwave international radio broadcasting (Refer to Appendix 23)

In fiscal 1998, Radio Japan broadcast a total of 65 hours of programming a day through local relay stations all over the world.

ii) International TV broadcasting (Refer to Appendix 24)

In April 1998, NHK launched international digital television broadcasting in the Asia-Pacific region. In October that year, it expanded the area of service to cover almost the entire globe, except for western and southern Africa (Fig.). A total of 18

hours of programs are aired each day, and NHK is planning to increase daily air time to 24 hours from October 1999.

2. International distribution of Japanese TV programs (Refer to Appendix 25)

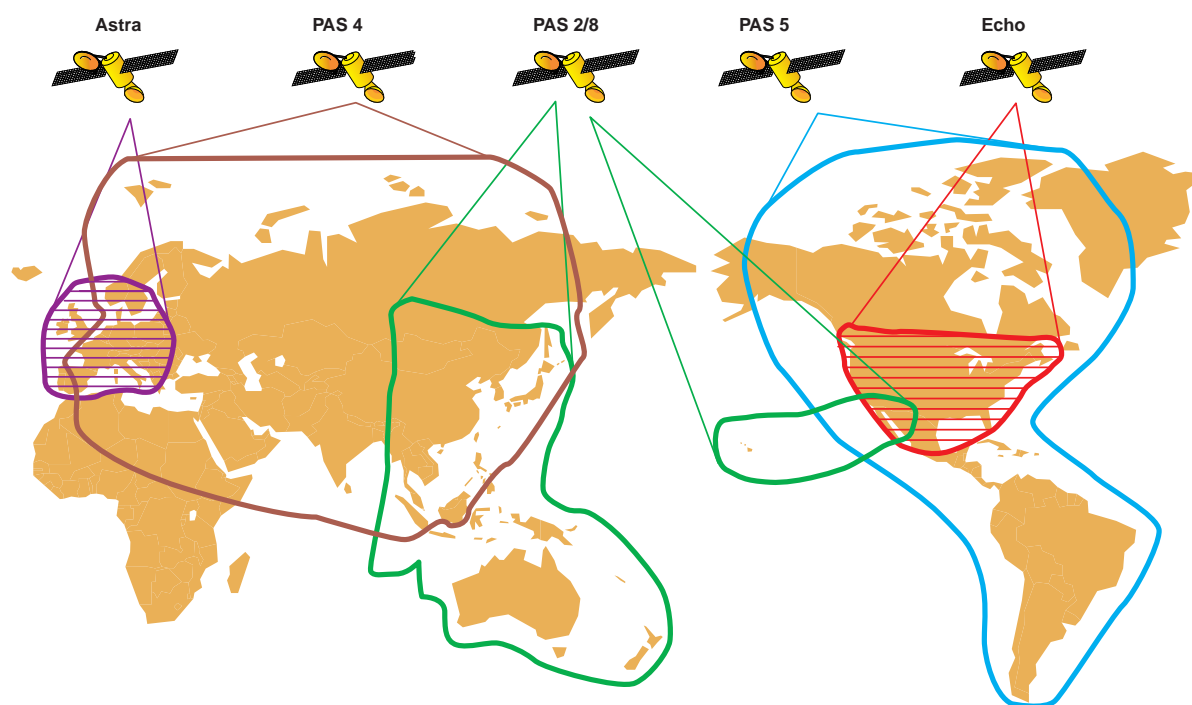
i) NHK

In July 1998, NHK expanded the areas to which it distributes television programs for retransmission by local companies. Using the same digital system as for direct television broadcasts, NHK currently sends material to 65 broadcasters or cable TV operators in 63 countries for a total of 18 hours a day.

ii) Commercial broadcasters

Japan Entertainment Television (JETTV), a joint venture of several commercial broadcasters, distributes programs to cable TV operators and other firms in the Asia-Pacific region. In April 1998, Nippon Television Network Corp. started distributing programs to a cable TV operator in Singapore, and in April 1999 it began sending coverage of Japanese professional baseball games to cable TV operators in Republic of Korea and other countries.

Fig. Footprints of NHK's international TV broadcasting (as of fiscal 1998)



Note: PAS 2/8 indicates simultaneous broadcasting via PAS 2 and PAS 8 (until the end of April 1999).

Source: MPT