

# Outline of the Telecommunications Business in Japan



**TELECOMMUNICATIONS BUREAU,  
MINISTRY OF PUBLIC MANAGEMENT,  
HOME AFFAIRS, POSTS AND  
TELECOMMUNICATIONS (MPHPT)**

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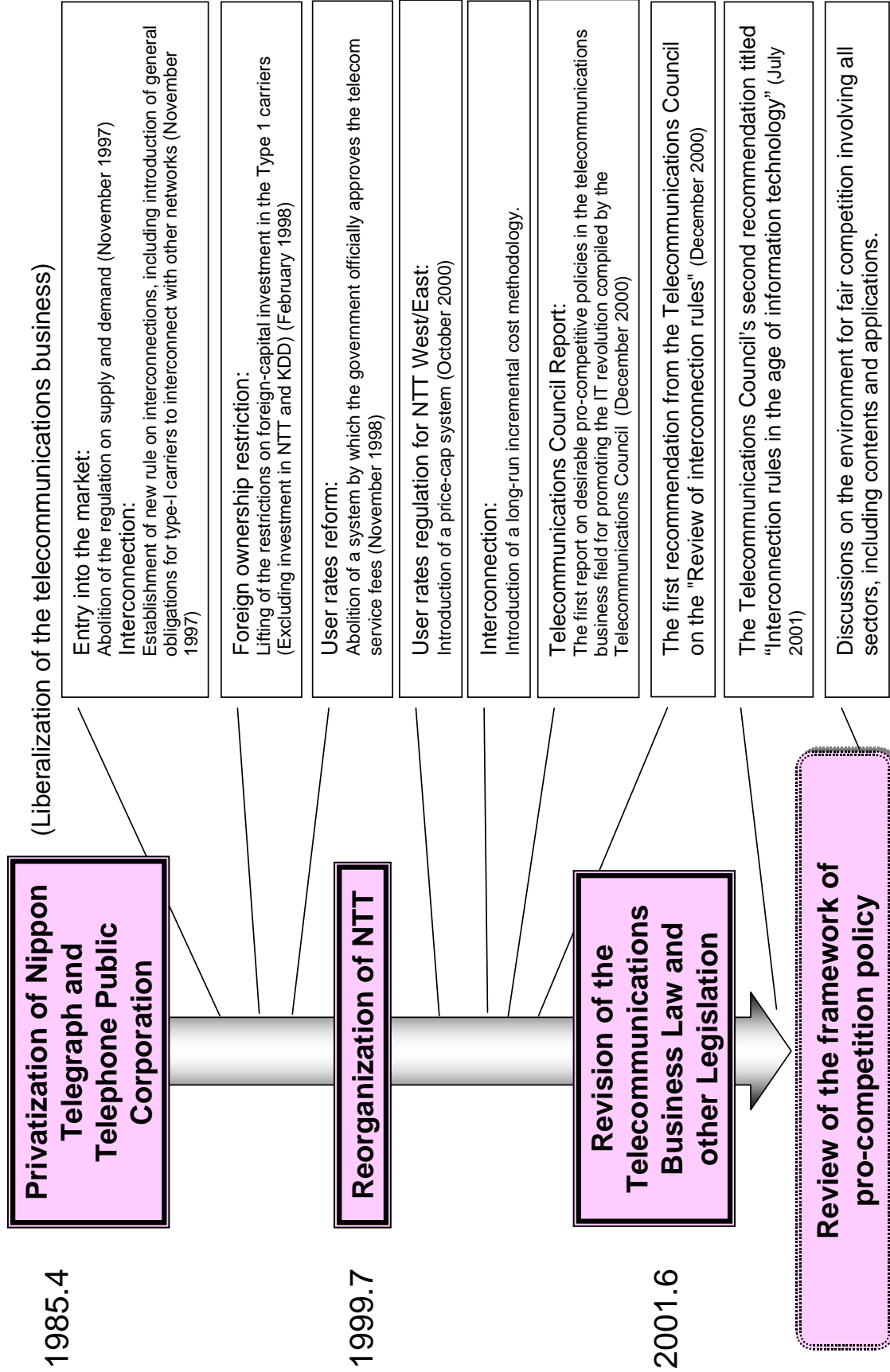
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# I. Development of Japanese pro-competition policy

## 1. Outline



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## **2. Pro-competition policy in the telecommunications carriers business for promoting the IT revolution**

On the basis of the first recommendation compiled by the Telecommunications Council concerning the pro-competition policy in the telecommunications industry to promote the IT revolution (published on Dec. 21, 2000), the three-year deregulation plan approved by the Cabinet on March 31, 2001, and others, the government submitted revision bills of the Telecommunications Business Law and other related laws to the 151 Regular Diet session. The bills were legislated on June 15, 2001 and most of them were put into force on Nov. 30 of the same year.

# Outline of partial revisions of the Telecommunications Law and related laws

Establishment of rules for fair competition	Further deregulation	Promotion of establishment of an IT infrastructure
<p><b>Establishment of asymmetric regulations</b></p> <p>(Objective) To create a typical pattern of telecommunications carriers that dominate the market (both in the regional fixed telephony service sector and the mobile communications sector), and to ensure proper operation of their business.</p> <p>(Outline) i) To create typical patterns of anti-competition acts which should be forbidden, and to formulate measures to promptly eliminate such acts ii) Measures to enhance transparency and fairness of interconnections (Measures to make it compulsory for carriers to formulate and publish their general contractual agreements).</p>	<p><b>Drastic deregulation for the carriers who are not dominant in the market</b></p> <p>(Objective) Implementation of dramatic deregulation of existing restrictions to the extent where it does not damage the interest of users</p> <p>(Outline) To abolish all official approval systems involving general contractual conditions, interconnection agreements, and joint-use agreements of non-dominant carriers, and to introduce a notification system in the same manner as the tariff system.</p>	<p><b>Smooth implementation of cable laying, etc.</b></p> <p>(Objective) To improve the flexibility of constructing networks by telecommunications carriers</p> <p>(Outline) To make it clear that procedures for resolving disputes over the use of electric poles, conduits, etc., stipulated in the Telecommunications Business Law, will involve officially-owned land. To establish procedures for mediation between a telecommunications carrier and person or office in charge of managing roads.</p>
<p><b>Establishment of a system concerning universal telephony service</b></p> <p>(Objective) Establishment of a system in which all carriers benefiting from the universal telephony service bear an appropriate amount of the costs (external assistance).</p> <p>(Outline) Establishment of a system in which qualified telecommunications carriers receive subsidies to cover part of the cost of providing universal telephony service, through a designated, neutral and fair corporation.</p>	<p><b>Expansion of the business of NTT East and West</b></p> <p>(Objective) To enhance free management of business operations by NTT East and West, a new system will be established in which the two companies are allowed to enter new sectors, such as Internet-related services.</p> <p>(Outline) To enable NTT East and West to launch new telecommunications businesses using its facilities, technology or personnel after obtaining the approval of the Minister of Public Management, Home Affairs, Posts and Telecommunications. The two firms will be allowed to do so as long as the new business does not obstruct the smooth operation of their mainstay businesses, and does not hamper fair competition in the telecommunications market.</p>	<p><b>Introduction of the wholesale telecommunications services system</b></p> <p>(Objective) To promote effective use of fiber-optic networks by local governments, public utilities, etc. and to enhance the flexibility of network construction by telecommunications carriers</p> <p>(Outline) i) To introduce a system which enables provision of flexible wholesale telecommunications services based on individual contracts between telecommunications carriers (what is called the "carrier's carrier contract"). ii) To abolish the traditionally provided services not included in the general contractual agreement (subject to the official approval system), and to introduce a notification system in which all wholesale services will be reported to the authorities.</p>
<p><b>Establishment of a committee to settle disputes involving the telecommunications carriers business</b></p> <p>(Objective) Establishment of a system to settle promptly and effectively disputes involving interconnections and other problems between telecommunications carriers</p> <p>(Outline) i) Establishment of a dispute-settlement committee (an organization to be set up in accordance with Article 8), which is organizationally independent of the division in charge of granting official approvals and permissions. ii) Introduction of simpler and speedier dispute-settlement procedures (mediation, arbitration) iii) Establishment of a system in which personnel changes of the committee are made after approval by the Diet, and another system in which new members are recommended to the Minister of Public Management, Home Affairs, Posts and Telecommunications.</p>	<p><b>Relaxation of NTT shares restrictions</b></p> <p>(Objective) To support the expansion of NTT-Group businesses globally</p> <p>(Outline) i) Relaxation of restrictions on foreign investment in the holding company (from less than 20 percent to one third of the total capital) ii) Establishment of exceptional measures for the issuance of new shares by the holding company iii) Abolition of a system requiring the NTT Group to obtain official approval when its holding company sells shares in NTT Communications Corp.</p>	<p><b>Objective of the revision</b></p> <p>(Outline) "Promotion of fair competition" should be clearly stipulated in the purpose of the Telecommunications Business Law</p> <p><b>Establishment of regulations concerning reviews</b></p> <p>(Outline) Establishment of regulations concerning a comprehensive review of systems involving the telecommunications business, in the supplementary provisions of the revised law.</p>
<p>To promote the IT revolution, efforts should be made to encourage fair competition and to maximize the profit of users</p>		

### 3. Establishment of interconnection rules

November 1997:	A law to revise part of the Telecommunications Business Law was enforced 《Formulation of basic rules on interconnection》
September 2000:	Establishment of rules concerning unbundling of subscriber lines
October 2000:	Establishment of rules concerning collocation
December 2000:	The first recommendation from the Telecommunications Council on the “review of interconnection rules.”
April 2001:	Establishment of rules concerning unbundling of fiber optic networks.
July 2001:	The second recommendation from the Telecommunications Council concerning “interconnection rules in the age of information technology.”

#### (1) Unbundling of subscriber lines and fiber-optic networks

This means that telecommunications carriers divide network components and lease them to Internet connection providers

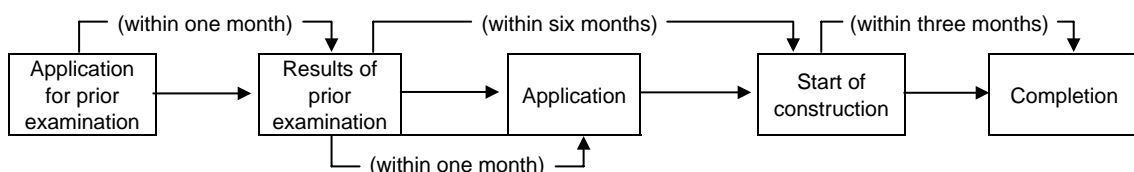
##### Typical examples

- Subscriber lines (not overlapped by telephone lines) 2,062 yen
- Subscriber lines (overlapped by telephone lines) 187 yen
- Subscriber fiber-optic lines 5,231 yen
- Relay carriers' fiber-optic networks 4.29 yen / meter + 157 yen

#### (2) Collocation

This means that Internet connection providers install the equipment necessary for connection, in the facilities of NTT East, NTT West, etc.

##### Procedures for collocation

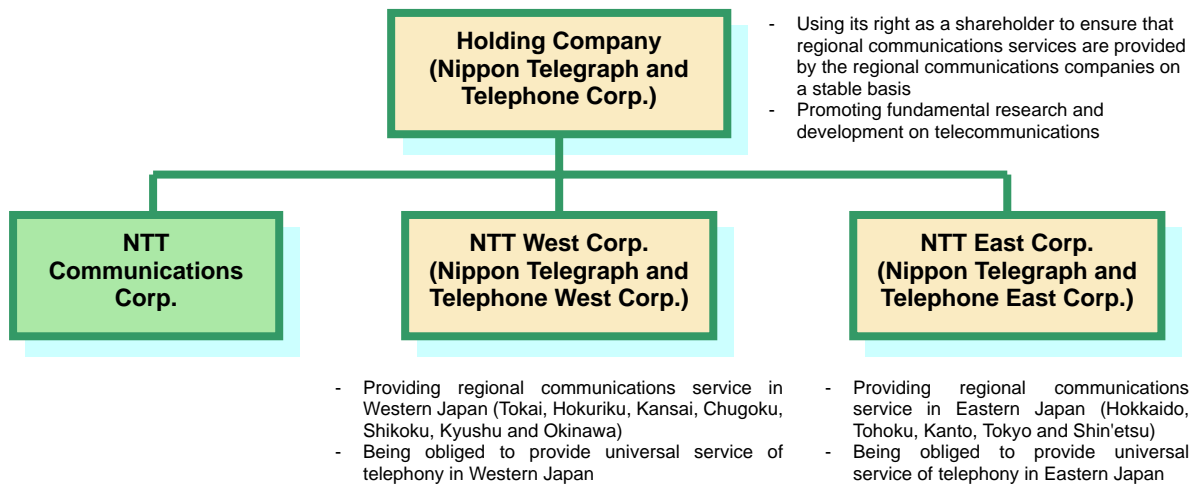


#### (3) Efforts made in response to the recommendation on “interconnection rules in the age of information technology”

- Ministry ordinance  
Further unbundling of fiber-optic networks and non-discriminatory treatment of domestic and foreign carriers in taking procedures for the use of fiber-optic networks (inquiry to a subcommittee on Sept. 21, 2001).
- Future efforts  
Resale of public networks, further unbundling of subscriber lines, etc.

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#### 4. Outline of NTT Reorganization Scheme



#### References

1.  special corporation,  private company
2. The holding company holds all shares of NTT East Corp. and NTT West Corp.



## II. Current situation surrounding the telecommunications business

### 1. Changes in the total number of telecommunications carriers

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Apr. 1 2001	Apr. 1 2002	Jun. 1 2002	Sept. 1 2002	Nov. 1 2002
Type I Telecommunications Carriers	7	13	37	45	62	68	70	80	86	111	126	138	153	178	249	342	384	387	392	395
NTT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	3	3	3	3	3
KDD	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-
NTT DoCoMo, Inc. and its group companies	-	-	-	-	-	-	-	1	9	9	9	9	9	9	9	9	9	9	9	9
New Type I Telecommunications Carriers	5	11	35	43	60	66	68	77	75	100	115	127	142	167	236	330	372	375	380	383
Long-distance/International Carriers	3	3	5	5	5	5	5	5	5	5	5	5	6	12	21	32	35	34	33	34
Regional Carriers	-	3	4	4	7	7	7	8	10	11	16	28	47	77	159	274	319	323	329	330
Satellite Carriers	2	2	2	2	2	2	3	3	2	2	4	4	5	6	5	5	5	5	5	6
Mobile Communications	-	2	23	31	46	52	53	61	58	82	90	90	84	72	51	19	13	13	13	13
Cellular Phones	-	-	2	4	8	8	9	15	15	17	21	21	21	21	21	8	5	5	5	5
Radio Paging	-	2	20	26	33	36	36	36	31	31	31	31	31	31	19	3	2	2	2	2
PHS	-	-	-	-	-	-	-	-	-	23	28	28	28	18	9	5	2	2	2	2
Convenience Radio Phone (CRP)	-	-	-	-	2	4	4	7	7	7	6	6	-	-	-	-	-	-	-	-
Ship Telephone	-	-	1	1	2	3	3	2	2	1	-	-	-	-	-	-	-	-	-	-
Airport Radio Telephone	-	-	-	-	-	-	-	-	2	2	2	2	2	2	2	3	3	3	3	3
Data communications	-	-	-	-	1	1	1	1	1	1	2	2	2	-	-	-	-	-	-	-
Radio access system	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1
Others	-	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Type II Telecommunications Carriers	209	356	530	693	841	943	1,036	1,179	1,589	2,107	3,134	4,588	5,871	6,602	7,651	9,006	10,137	10,192	10,376	10,555
Special Type II Telecommunications Carriers	9	10	18	25	28	31	36	36	39	44	50	78	95	88	101	113	112	112	113	113
General Type II Telecommunications Carriers	200	346	512	668	813	912	1,000	1,143	1,550	2,063	3,084	4,510	5,776	6,514	7,550	8,893	10,025	10,080	10,263	10,442
Total	216	369	567	737	903	1,011	1,106	1,259	1,675	2,218	3,260	4,726	6,024	6,780	7,900	9,348	10,521	10,576	10,768	10,950

Notes:

- Type I carriers offer services by establishing their own telecommunications circuit facilities.
- Type II carriers offer services by leasing telecommunications circuit facilities.
- NTT was reorganized into two regional Type I carriers (NTT East Corp. and NTT West Corp.) and one long-distance/international carrier (NTT Communications Corp.) under one holding company (NTT) on July 1, 1999.
- On October 1, 2000, DDI Corp., KDD Corp. and IDO Corp. were merged into DDI Corp. (KDDI)

## 2. Current Status of Main Foreign Investment in Telecommunications Carriers

(As of Oct. 1, 2002)

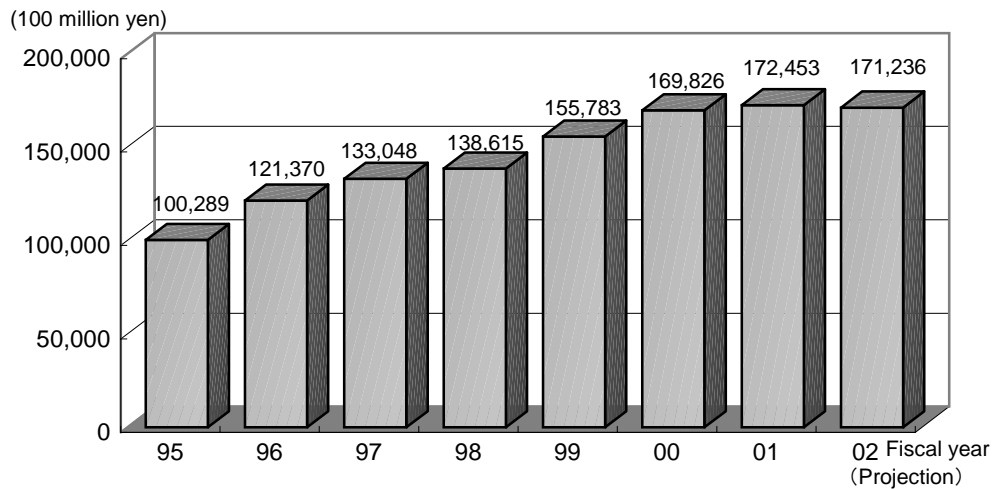
(1) Type I telecommunications carriers	(2) Special Type II telecommunications carriers
Cable & Wireless IDC Inc.	IBM Japan, Ltd.
J-COM Kanto Co., Ltd.	Information Service International-Dentsu, Ltd.
J-COM Kansai Co., Ltd.	Xpedite
KVH Telecom Co., Ltd.	Compaq Computer K.K.
PCCA Private Limited	Cable & Wireless Japan Ltd.
PanAmSat International Systems, Inc.	Concert Global Network Japan
MCI WorldCom Japan, Ltd.	Deutsche Telecom K.K.
Metromedia Fiber Network Japan K.K.	Reach Holdings Singapore Japan
Global One Communications Network, Inc.	Saiki-Tech Communications Japan Co., Ltd.
Primus Japan K.K.	TMI Telemedia International Hong Kong Ltd.
K.K. Teleglobe Japan	IXnet Japan Co., Ltd.
RSL COM Service Japan K.K.	UUNet Japan Co., Ltd.
Singapore Telecom Japan, Co., Ltd.	MCI International (Japan) Co., Ltd.
Reach Networks Japan K.K.	AT & T Communications Service Japan Ltd.
Reach Networks K.K.	MCI WorldCom Communications Japan Ltd.
EGN B.V.	Far East Data Ltd.
T Systems Japan K.K.	DoCoMo AOL, Inc.
Sony Corp.	PSINet Japan Inc.
FLAG Telecom Japan Limited	Coyote Network Systems, Inc.
Genuity Japan K.K.	Magde Web Japan Co., Ltd.
Asia Global Crossing Japan Corporation	Equant Co., Ltd.
World Exchange	Primus Telecommunications K.K.
Circle Asia Corporation	City Telecom (Japan) Co., Ltd.
J-COM Kitakyushu Co., Ltd.	Telegroup Japan, Inc.
J-COM Shonan Co., Ltd.	RSL COM Japan, K.K.
J-COM Sapporo Co., Ltd.	Teleglobe Services Japan, Inc.
Kisarazu Cable TV	Pacific Gateway Exchange Japan Inc.
J-COM Gunma Co., Ltd.	GINGA Communications International, Inc.
GTE Far East (Services) Ltd.	Singapore Telecom Japan Co., Ltd.
AT&T Communications Service Japan Ltd.	Nippon WorldxChange Ltd.
Williams Communications, Inc.	Genuity International Inc. (Japan)
Sprint International Japan Co., Ltd.	AIC Telecom (Japan) Ltd.
Tyco Networks Japan Co., Ltd.	i-Tel Corp.
C2C Japan Co., Ltd.	AT & T Global Network Services Japan LLC
Qwest Communications Japan Co., Ltd.	Verizon Global Solutions Holdings Limited
Japan Telecom Co., Ltd.	Signal Telecommunications Japan K.K.
J-phone Co., Ltd.	Korea Telecom Japan K.K.
ORBCOMM Japan Limited	REUTERS Japan Ltd.
Horizons satellite limited liability Co. Ltd.	Telecom New Zealand Japan K.K.
	Wherever Japan K.K.
	At Home Japan Ltd.
	KPN Japan, Ltd.
	Nittan Telecom (Japan) Ltd.
	Global Crossing Japan Corp.
	M3Com (Japan) K.K.
	AboveNet Japan KK
	Savvis Japan Ltd.
	Bazillion Inc.
	WAMINET Holding Japan KK
	Hewlett-Packard Japan, Ltd.
	At Network Japan KK
	Streamscape
	Enron Broadband Services Network
	QoS Network Services Japan
	Sprint International Holding, Inc.
	Angstrom Network Japan
	iBasis Japan Co., Ltd.
	XA Alliance Co., Ltd.
	Infoserve Technology Co., Ltd
	BELGACOM Japan Co., Ltd
	PCCW Communications Japan Co., Ltd
	SK Cyberpass Co., Ltd.
	Chinalink Networks Co., Ltd.
	Japan run xun Communications Co., Ltd.
	France Telecom Long Distance Japan Co., Ltd.

### 3. Changes in market size / investment in facilities and equipment

#### (1) Changes in market size of type-1 carriers

The market size (combined sales) of type 1 carriers in fiscal 2001 was 17,245.3 billion yen (up 9.8 percent from the previous year)

Supported by the growth of the mobile communications business, the combined sales surged from the previous year.

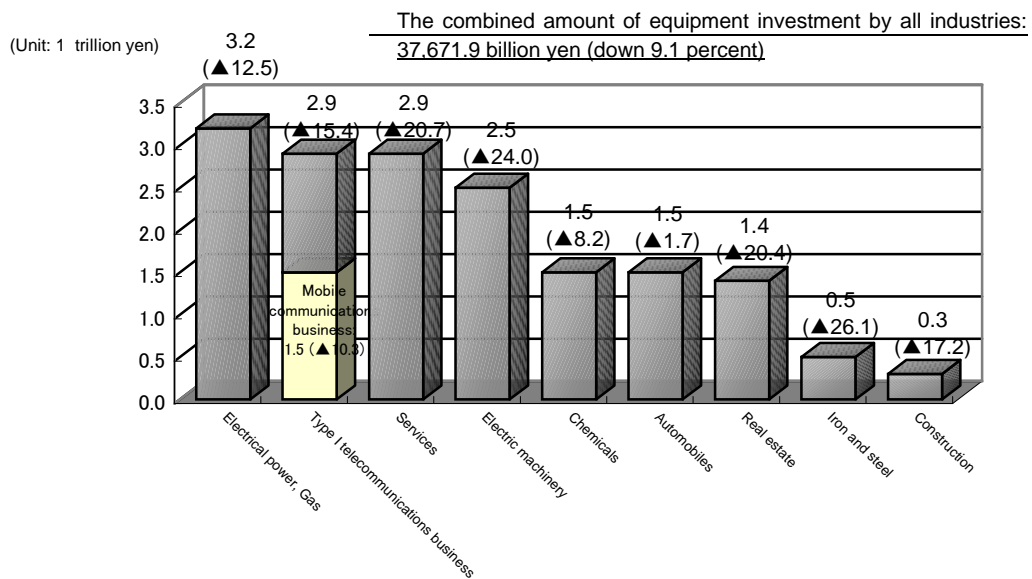


#### (2) Equipment investment by type-1 carriers (Plans for fiscal 2002)

The total amount of equipment investment projected for fiscal 2002 is 2,882.3 billion yen (down 3.8 percent from the previous year's total)

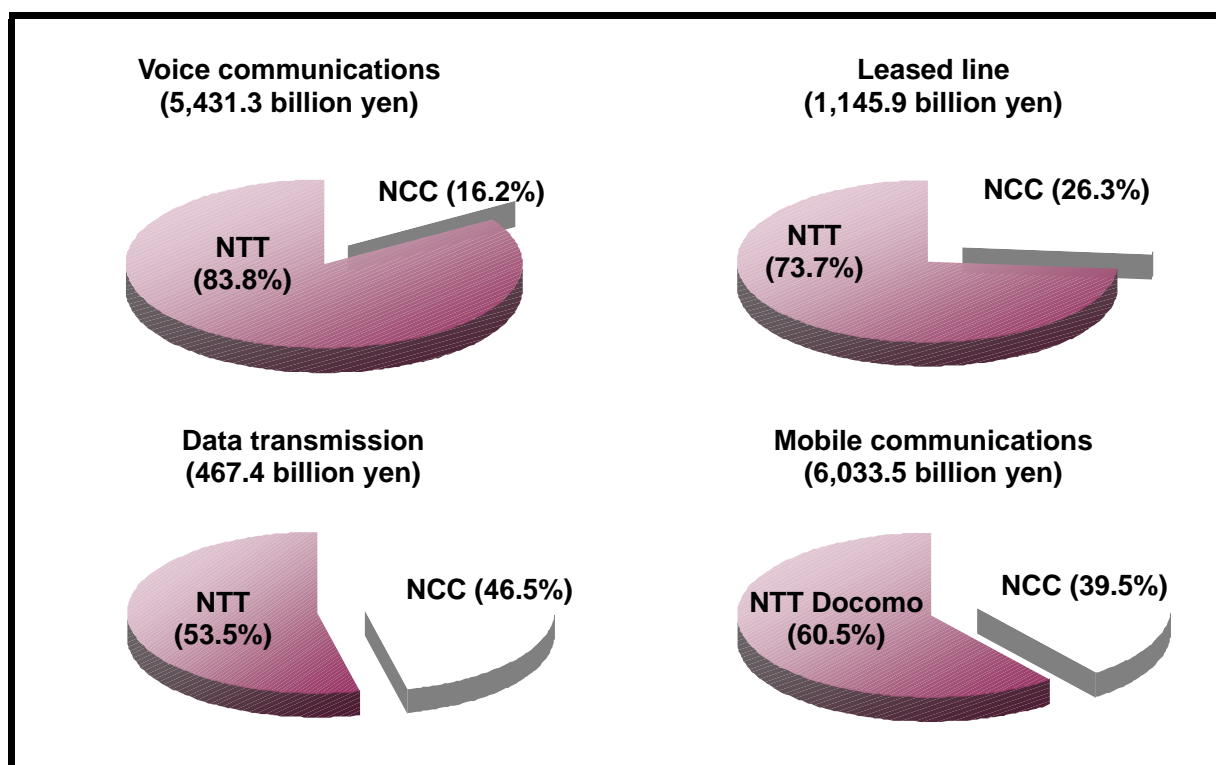
This represents the second-highest amount in equipment investment projected by all industries (37,671.9 billion yen).

Equipment investment by type-1 carriers is the second largest, next to that of the electrical power and gas industries.



#### 4. Shares of NTT and NCC

##### (1) Sales of NTT-Group companies in each type of service (FY2001)

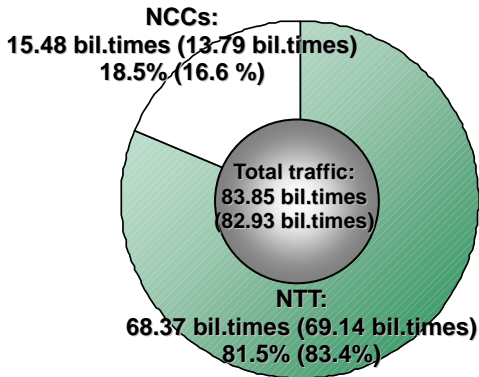


Note:

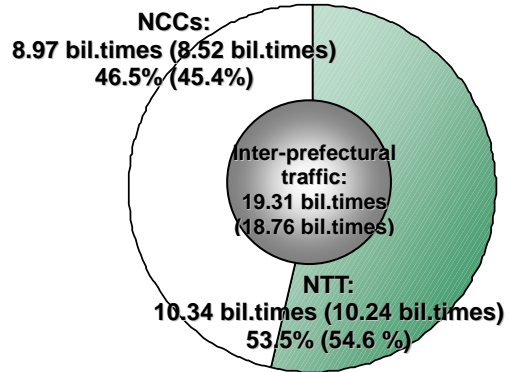
1. "NTT" indicates the combined sales of NTT East, NTT West, and NTT Communications.
2. The figures in the charts of voice communications, leased line, and data transmission services are those of the fixed telephone service providers.
3. The figure for mobile communication indicates the combined sales of all mobile communications service providers.

**(2) Telephone (Subscriber Telephone + ISDN) Market Share of NTT and NCCs**  
(Share of traffic in FY2000)

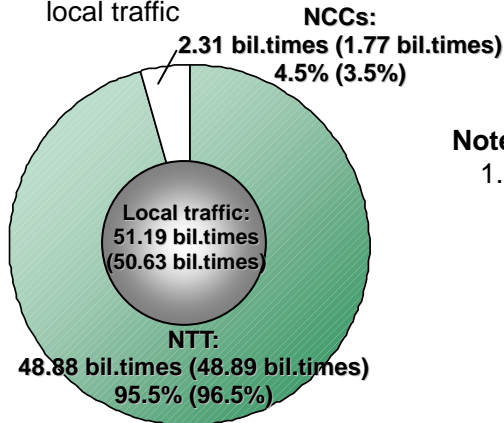
(1) Share of NTT and NCCs in all traffic



(2) Share of inter-prefectural traffic NTT and NCCs in all traffic



(3) Share of NTT and NCCs in local traffic

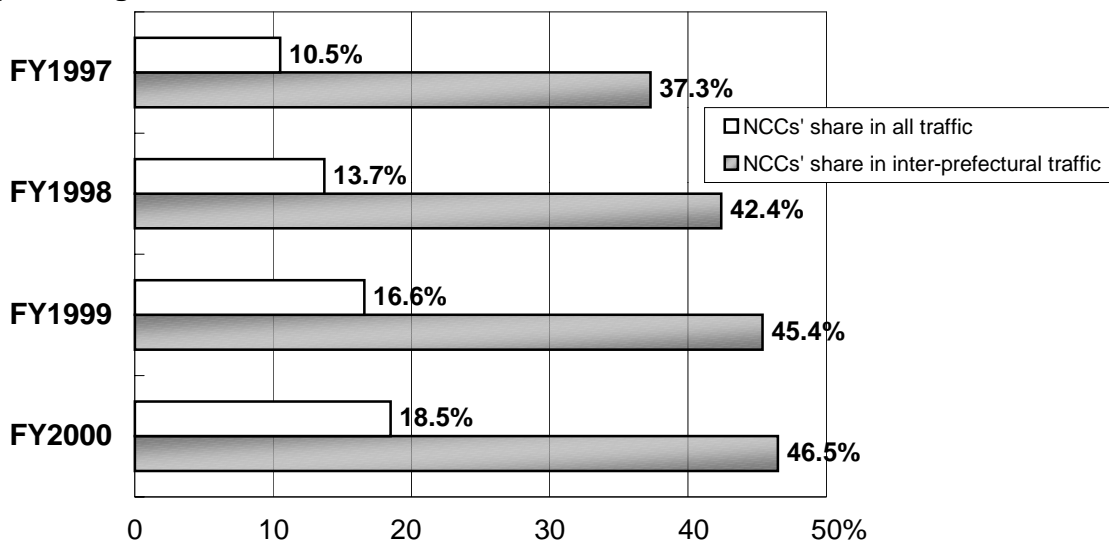


Figures in parenthesis represent the share of traffic in FY 1999.

**Notes:**

1. Figures for NCCs include those of KDDI Corp., Japan Telecom Co., Ltd., J-COM Tokyo, JCOM East Communications, Corp., MCIWC, C&W IDC and 8 power-utility-company-based NCCs (HOTnet, TOHKnet, HTnet, CTC, OMP, CTNet, STNet and QTNet).

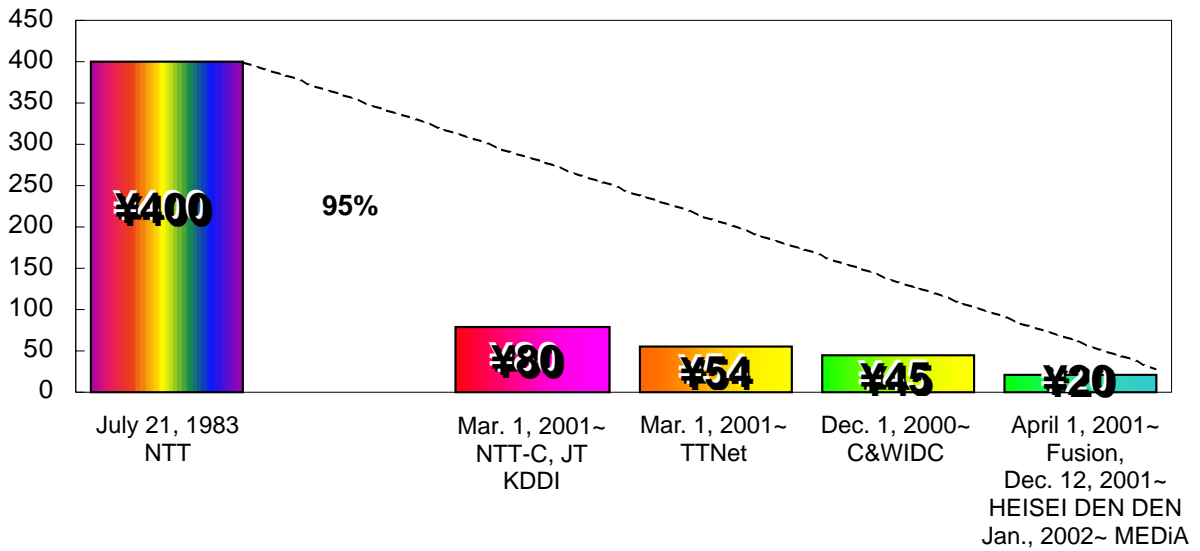
**(3) Changes of NCCs' share in all traffic**



## 5. Current Status of Rate Reductions

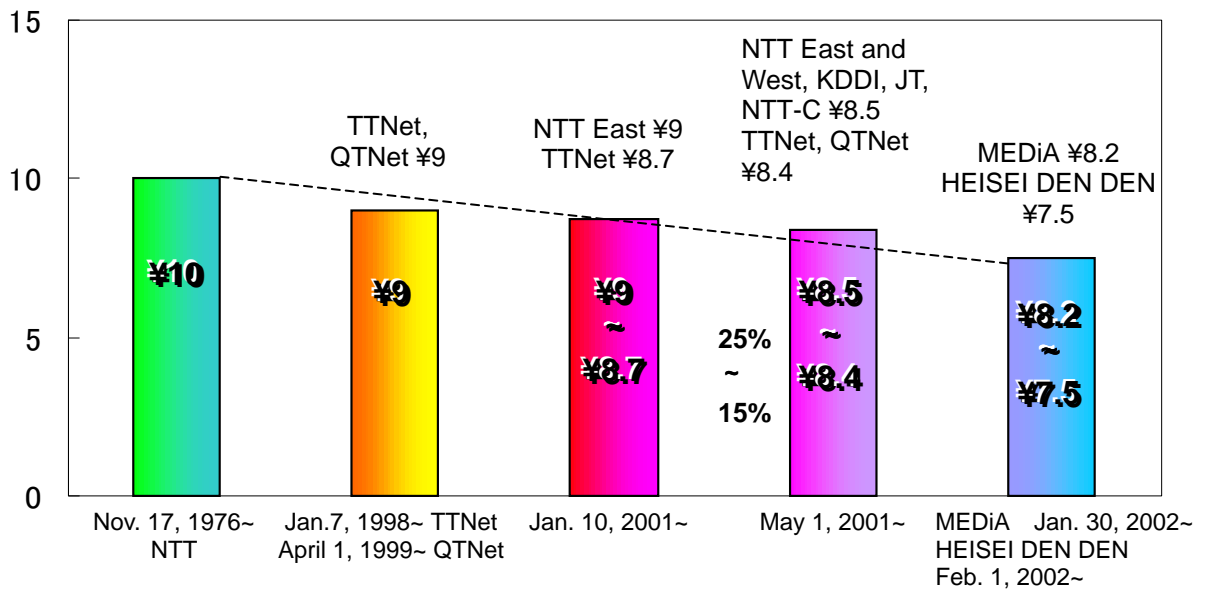
### (1) Long-distance call (Tokyo-Osaka)

3 minutes, daytime, weekdays



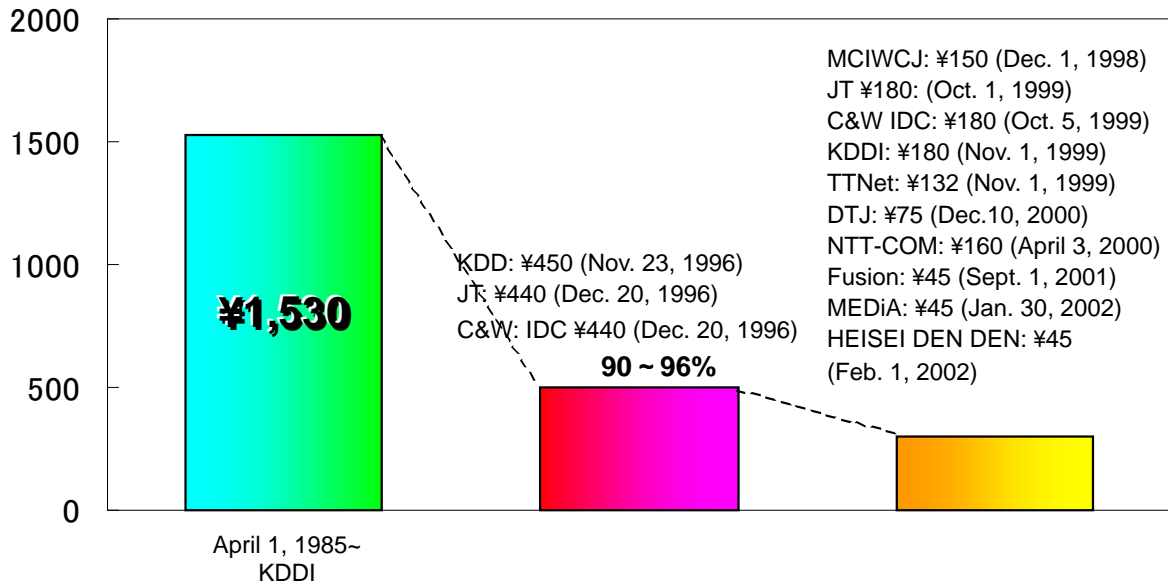
### (2) Local call

3 minutes, daytime, weekdays



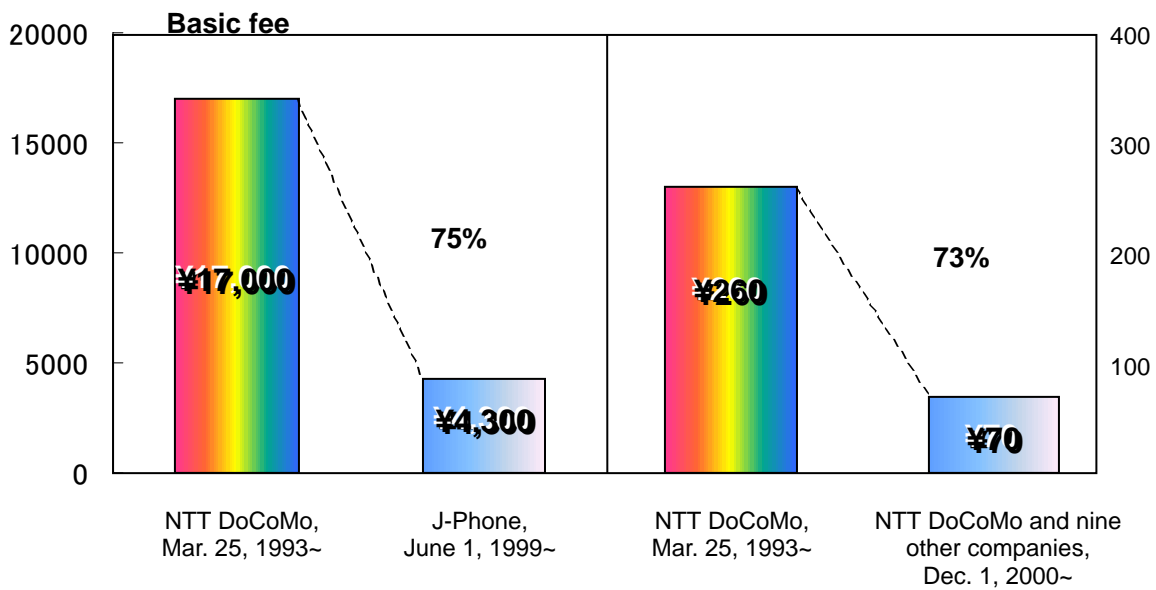
**(3) International call (Japan-U.S.A)**

3 minutes, daytime, weekdays



**(4) Cellular phone (800MHz digital system)**

Call rate (cellular phone      fixed phone, intra-prefectural)

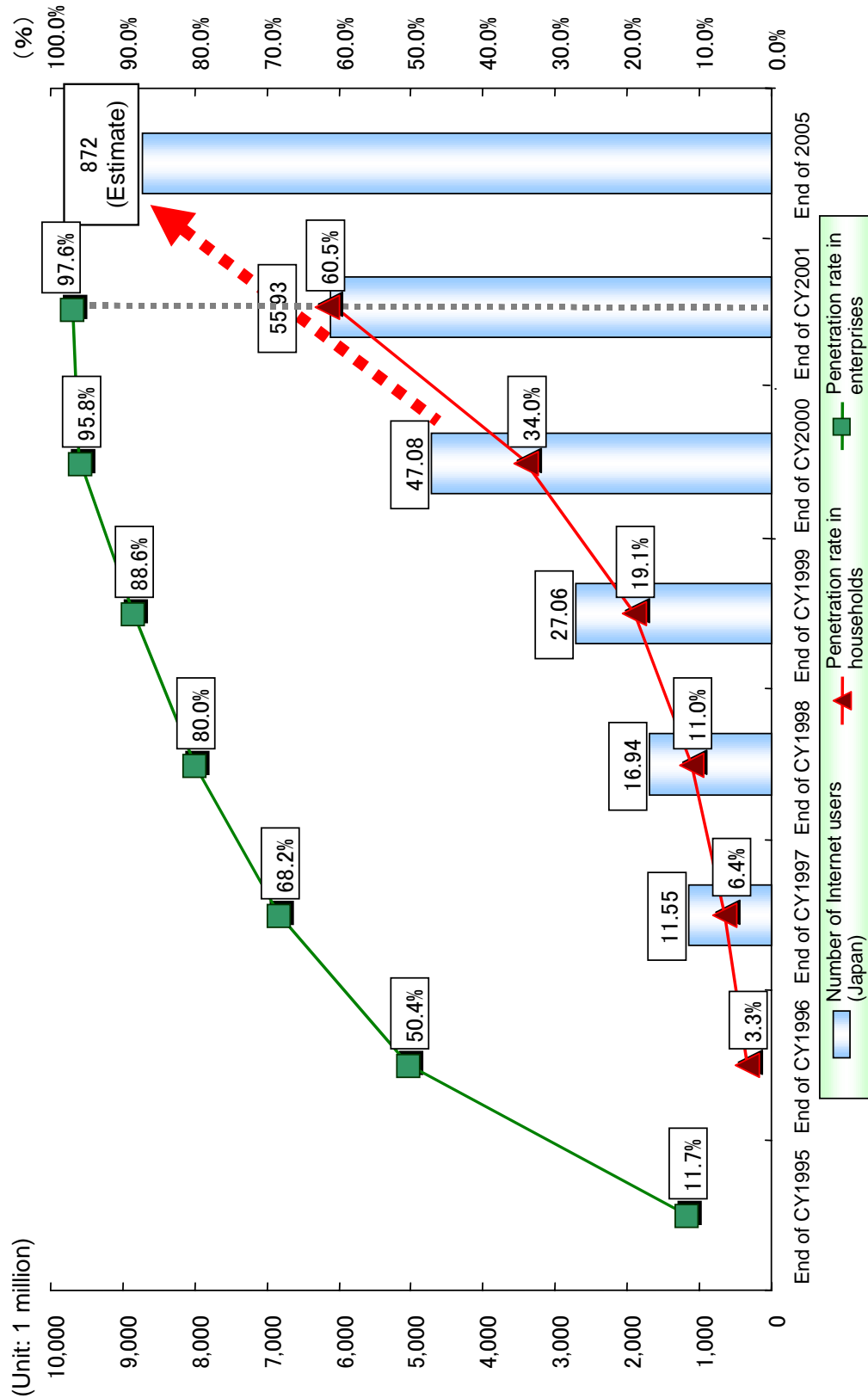


Note: On March 25, 1993, the "800MHz digital cellular phone service" started.  
 NTT DoCoMo reduced the basic charge to 4,500 yen (including a free call allowance worth 200) in June 2000.

### III. Internet

#### 1. Total Internet user population and Internet diffusion rate

##### (1) Environment surrounding telecommunications business



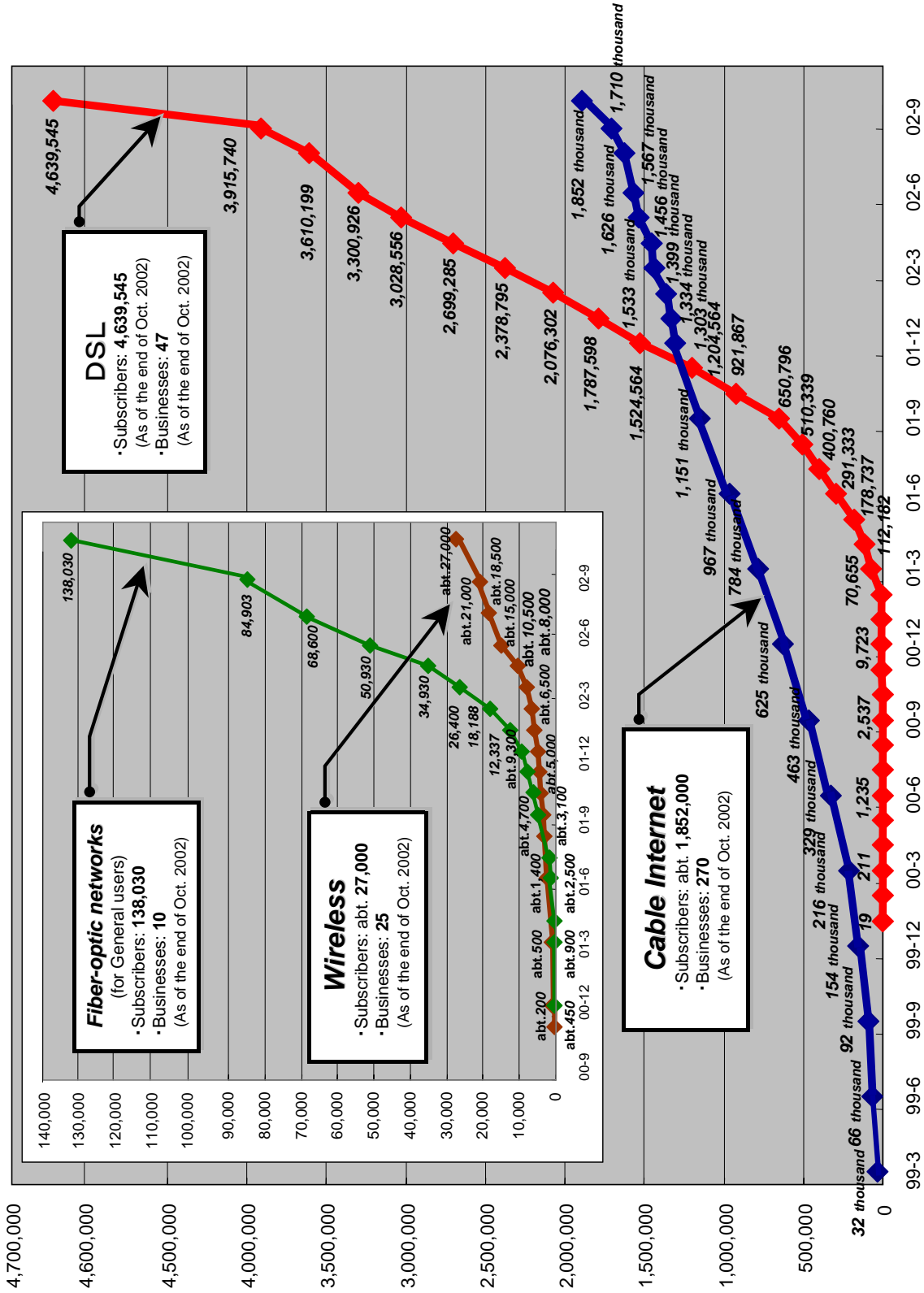
Businesses are those having more than 300 workers on their payrolls, and are located in Japan (excluding businesses in the agriculture, forestry, fisheries and mining industries).

Source: WHITEPAPER Information and Communications in Japan 2001, etc.

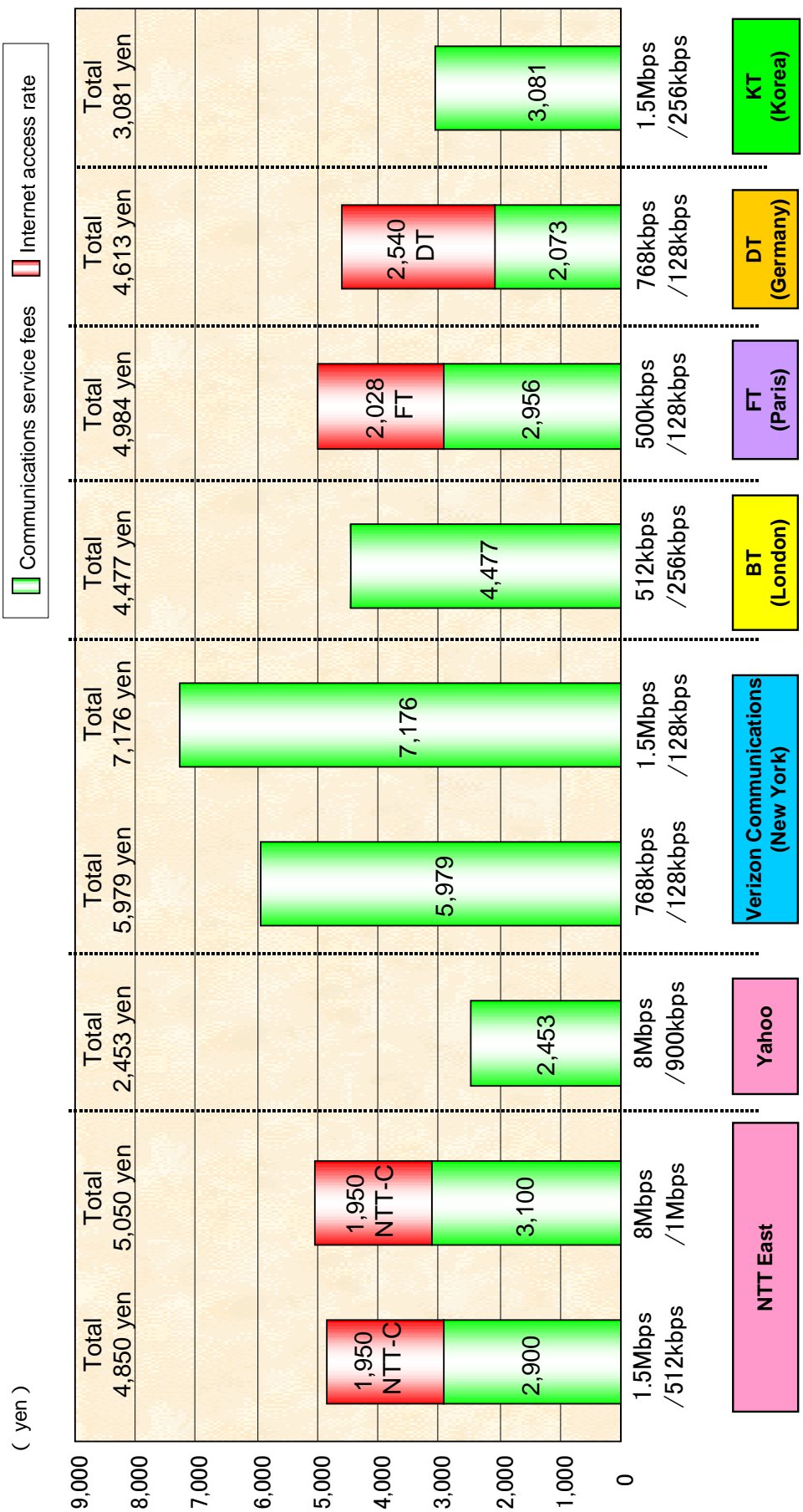


(2) Changes in the total number of subscribers to high-speed and ultra-high-speed Internet services

Current Status of Broadband Penetration - Number of Subscribers



## 2. Current Conditions in Electronic Communications (International comparison of full-time Internet connection fees (ADSL))



- Note:
- The rates indicated are those of July 2002.
  - Exchange rates of September 2, 2002 were used to convert rates in each country (US\$1 = ¥119.70; £1 = ¥187.89; 1 euro = ¥117.87; 1 won = 0.1027 yen)
  - Taxes were not included for all rates.

### 3. Deployment of fiber-optic networks

#### (1) Current status in terms of cable length used

(As of the end of FY2001; unit: 1,000km)

Item	Cable length	Fiber-optic cable
Backbone networks	283	257
Access networks	1,400	291
<b>Total</b>	<b>1,683</b>	<b>548</b>

#### (2) Changes in ratio of fiber-optic cables to all cables (cable length)

(Unit: %)

End of Fiscal Year	FY91	FY92	FY93	FY94	FY95	FY96	FY97	FY98	FY99	FY00	FY01
Backbone networks	36.4	42.1	48.0	55.4	60.3	65.8	70.9	78.1	86.0	89.4	90.6
Access networks	2.3	2.9	3.8	4.7	6.4	9.7	13.2	15.2	17.7	18.9	20.7
<b>Total</b>	<b>8.6</b>	<b>10.1</b>	<b>12.4</b>	<b>15.1</b>	<b>17.3</b>	<b>21.4</b>	<b>25.1</b>	<b>27.7</b>	<b>32.6</b>	<b>31.4</b>	<b>32.5</b>

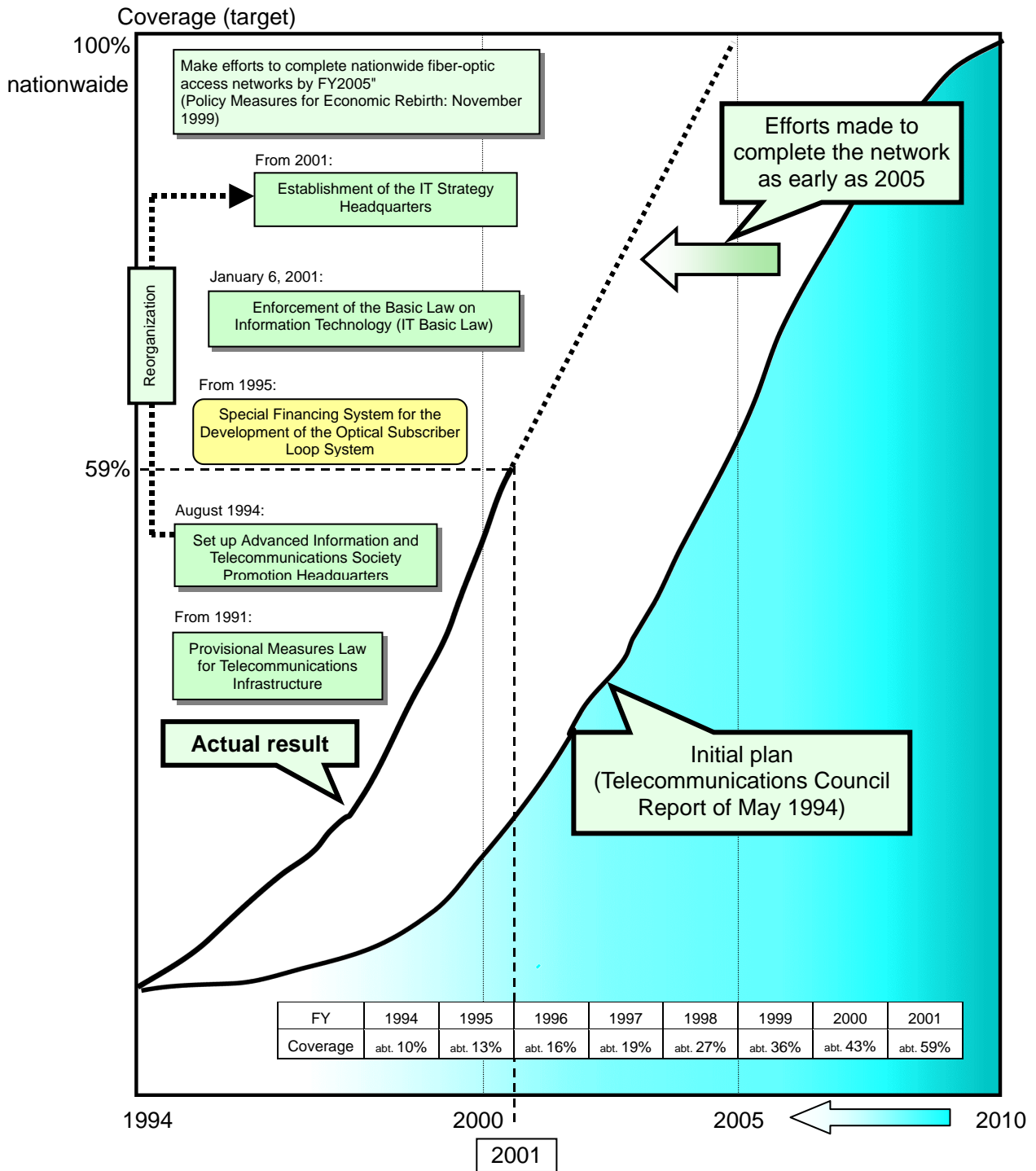
Note: Since the end of FY2000, the total length of the International cables has been deducted from the total length of the relay carriers' cables.

#### (3) Trends in actual investment in fiber-optic networks

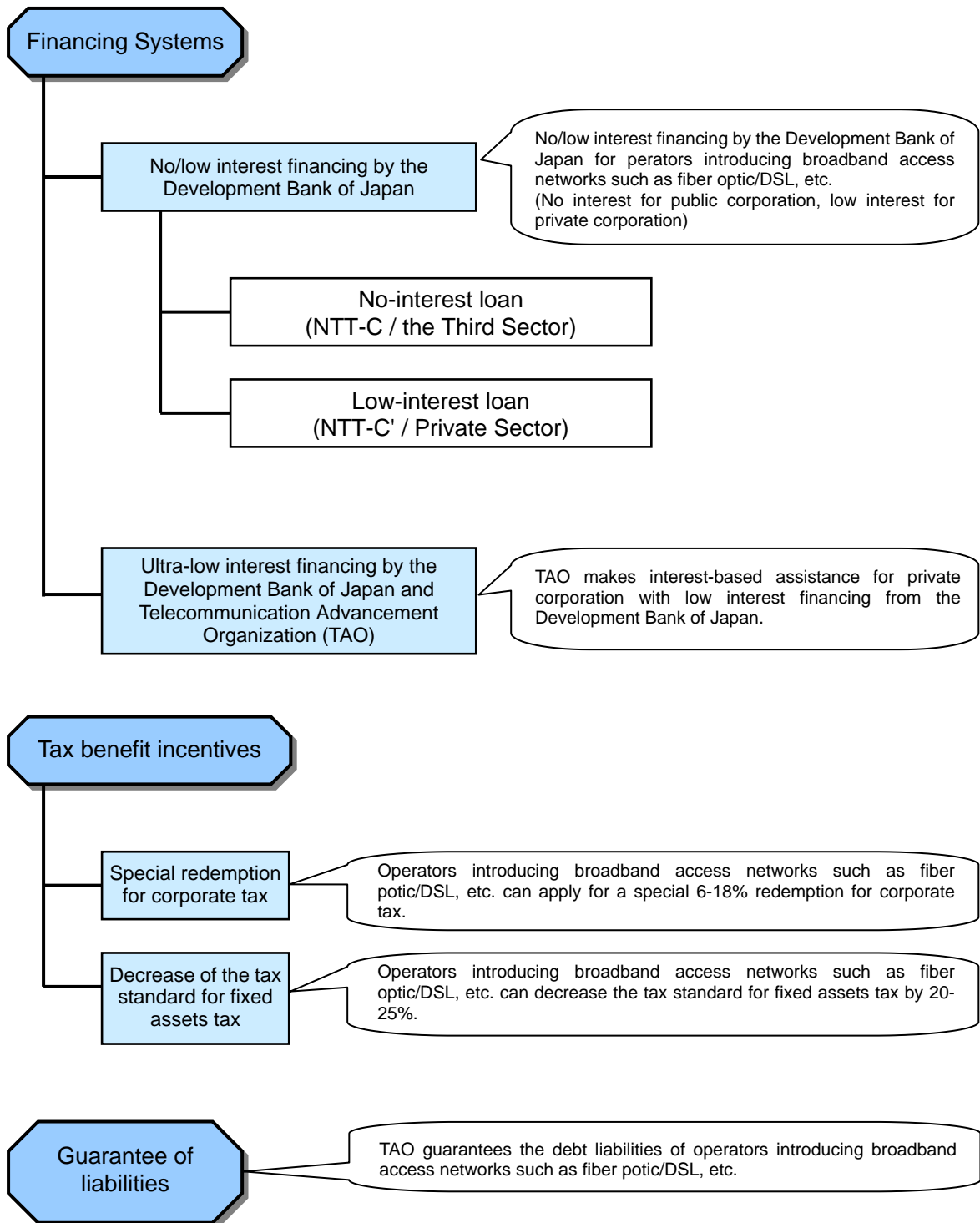
(Unit: ¥1 billion)

End of Fiscal Year	FY94	FY95	FY96	FY97	FY98	FY99	FY00	FY01
Backbone networks	3,414	2,972	3,387	3,446	2,247	2,859	2,037	1,957
Access networks	1,299	2,447	3,315	3,033	2,415	2,774	2,052	2,153
<b>Total</b>	<b>4,713</b>	<b>5,419</b>	<b>6,702</b>	<b>6,479</b>	<b>4,662</b>	<b>5,633</b>	<b>4,089</b>	<b>4,110</b>

#### (4) Target of fiber optic Infrastructure



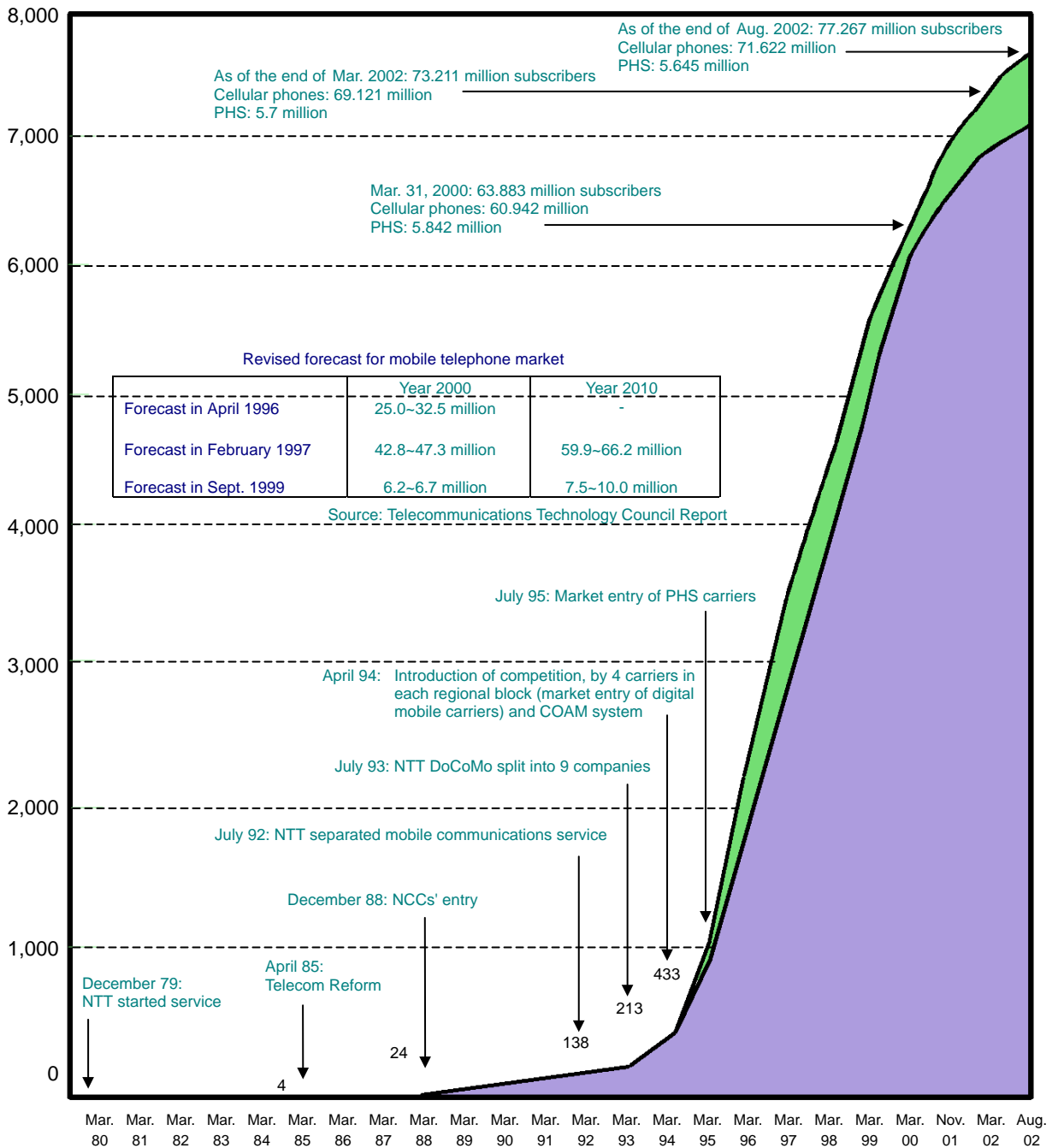
#### 4. Major support systems for fiber-optic networks and broadband access networks



To receive the following support, applicants should obtain authorization of deployment plans from MPHPT in line with the Provisional Measures Law for Telecommunications Infrastructure Improvement.

## IV. Mobile communications

### 1. Status of diffusion of mobile phones



<b>Deposit</b>	¥200,000 → ¥100,000 → Abolished
<b>Subscription fee</b>	¥80,000 → ¥72,000 → ¥45,800 → ¥21,000 → ¥9,000 → ¥6,000 → Free
<b>Monthly basic charge</b>	¥30,000 (Analog) → ¥18,000 → ¥15,000 → ¥9,500 → ¥8,400 → ¥6,600 → Abolished (800MHz, digital) ¥8,800 → ¥6,800 → ¥4,900 → ¥4,500
<b>Call charge (3 minutes)</b>	¥280 (Analog) → ¥260 → ¥230 → ¥200 → ¥150 → Abolished (800MHz, digital) ¥260 → ¥200 → ¥180 → ¥110 → ¥80 → ¥70 (Dec. 2000)

Note: Figures are cellular phone rates of NTT DoCoMo (standard plan rate for 3 minutes during daytime hours on weekdays [when the person receiving the call is using a standard telephone within the central business zone of NTT DoCoMo]).

## 2. Growth Factors in the Mobile Phone Market

Mobile phone market is growing with an annual increase of 10 million subscribers each year.

26.91 million (FY96)      38.25 million (FY97)      47.31 million (FY98)  
 56.85 million (FY99)      66.78 million (FY2000) (Cellular phone: 60.94 million, PHS: 5.84 million)      74.817 million (As of the end of Mar.) (Cellular phone: 69.12 million, PHS: 5.697 million)

High growth is fostered by pro-competition policy and technological innovation which accelerate rate reduction and diversification

### Pro-competition policy

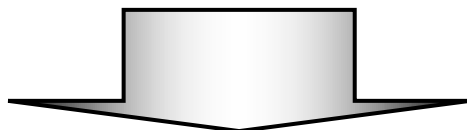
- Realization of fair and competitive markets containing six carriers in each market

- (1) July 1992: Separation of mobile business unit from NTT  
 July 1993: Division of the mobile business carrier separated from NTT into 9 companies
- (2) 1994: Introduction of competition by 3 or 4 carriers in each market block  
 This became the most pro-competitive policy in the world
- (3) Permission for 3 PHS carriers in each market block
- (4) April 1994: Introduction of COAM (Customer Owned and Maintained) system
- (5) Dec. 1998: Nine NTT Personal Group companies transferred their PHS business to NTT DoCoMo Group companies in each region. (5 or 6 cellular and PHS carriers in each regional block)

### Technological innovation

- Digitalization and drastic technological innovation in terminal equipment

- (1) 1993: Digital mobile phone services launched - Higher quality, privacy function, etc.
- (2) Down-sizing and weight-reduction of terminals, longer battery life, low-priced terminals



	1997	2002
New subscription fees	0	0
Basic fees	6800	4500
Communication fees	130	70

### Rate reduction and diversification

- Rapid reduction and diversification of rates

- (1) With the implementation of the above-mentioned pro-competition policy and the progress of technological innovation, we succeeded in cutting our rates sharply. The new subscription fee was reduced to zero starting December 1996. The basic charge was cut by about 34% and the telephone call rate, by about 46% during the past five years, said NTT DoCoMo, Inc.
- (2) April 1994: Introduction of "Low-volume call rate" tariff opened market to personal users.
- (3) April 1995: NTT DoCoMo introduced "Area-by-area call rate" tariff (3 min. ¥70: 800MHz, digital).

## V. Introduction of new wireless systems

### 1. The third generation mobile communications system (IMT-2000)

IMT-2000: International Mobile Telecommunications - 2000

#### Characteristics

- Realization of an internationally unified system      Global service that can be used worldwide
- High transmission speed about 200 times faster than that of existing mobile telephones (capable of transmitting simple, moving images)
- Capable of providing a voice-communications service whose quality is as good as that of the fixed telephone network.

#### Schedule for launching services

- NTT DoCoMo Group ..... In May 2001, this group launched the third-generation mobile communications service on an experimental basis. (Japanese/European system)  
In October 2001, this group launched the full-fledged service.
- J-Phone ..... This group launched the experimental service in June 2002. (Japan/European System)  
It will start the full-fledged service in December 2002.
- KDDI Group ..... This group launched the service in April 2002. (North American system)

The 2 GHz service will be launched in April 2003 on an experimental basis, and the full-fledged service, in October, 2003.

#### ~ Changes in the mobile communications system ~

##### The first-generation mobile telephone (analogue system)

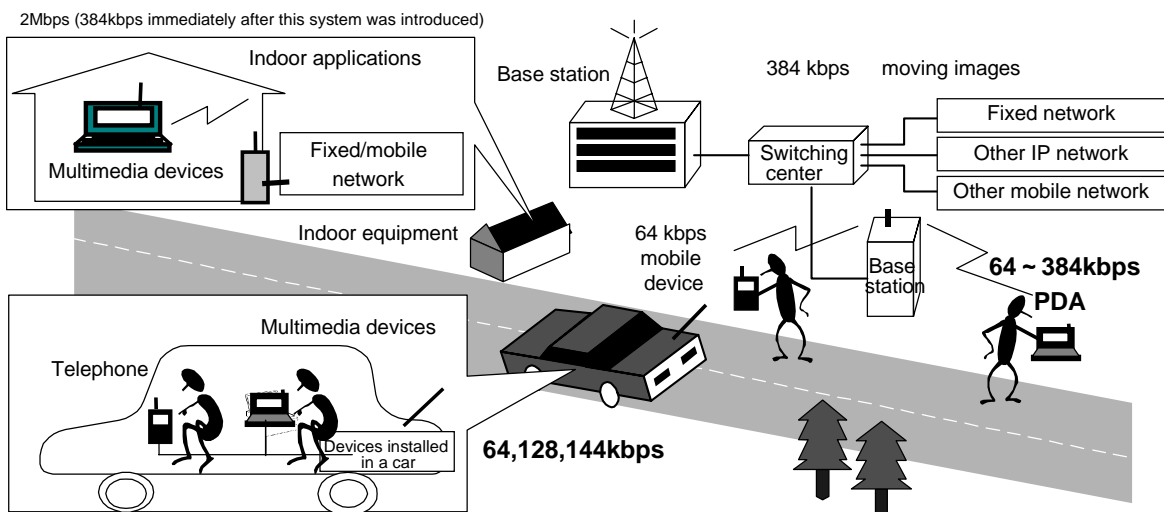
This system was launched in 1979, using the frequency band of 800MHz. Voice communications service only.

##### The second-generation mobile telephone (digital system)

This system was launched in 1993, using the frequency bands of 800MHz and 1.5GHz. Voice-communications and low-speed data transmission services (transmission speed of 9.6 – 64 kbps)

##### PHS (Personal Handy Phone System)

This system was launched in 1995, using the frequency band of 1.9 GHz. Voice-communications and low-speed data transmission services (transmission speed of 32 – 128 kbps)





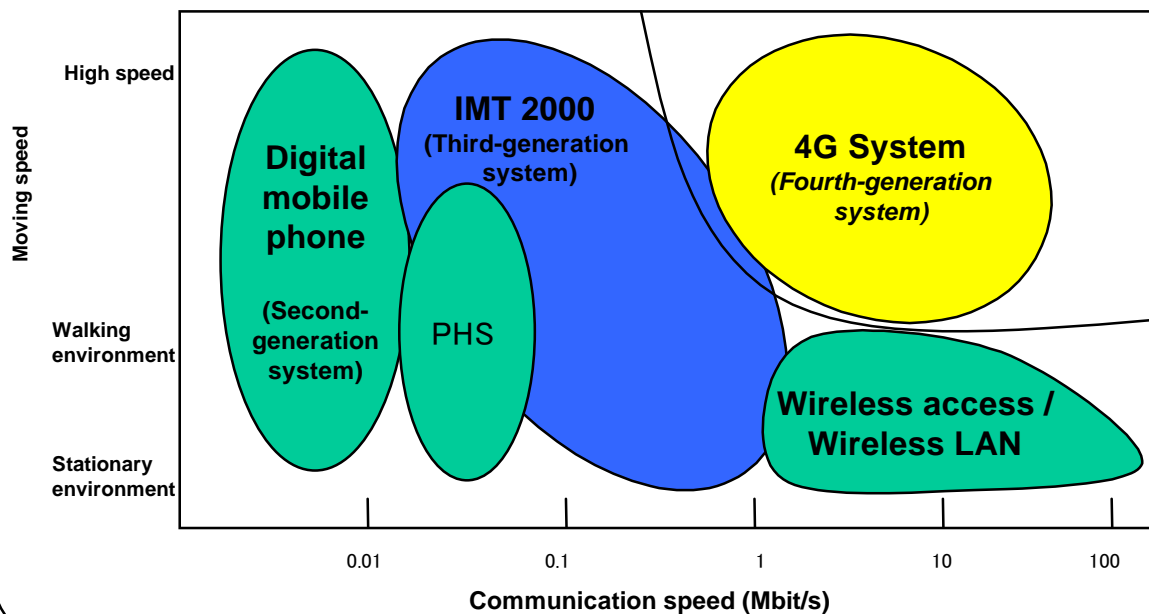
## 2. The fourth-generation mobile communications system

### Image of the system

The next-generation mobile communications system will come after IMT-2000. The following high technology will be achieved.

- The downstream (from the base station to terminal devices) transmission speed will be increased to 50-100 Mbps. (In the case of IMT-2000, the maximum speed of both the downstream and upstream transmission is 2Mbps.)
- Multimedia mobile communications, including the transmission of high-definition, moving images.
- Increased compliance with the Internet protocol, and is compatible with IPv6.
- Introduction of the next-generation mobile communications technology, including wireless technology software (the technology that makes it possible to flexibly change the frequency, communications system, etc. via software)

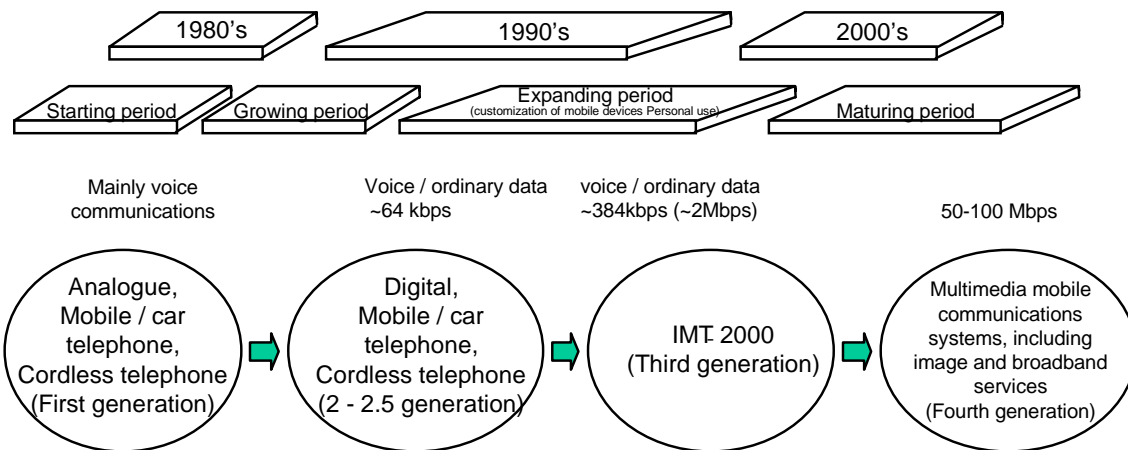
### Classification of mobile communications systems



## Application Schedule

- 2001: Recommendation from the Telecommunications Council (June)  
(Basic concept, plans involving technological development / standardization, methods of achieving such plans, etc.)  
Proposal to ITU
- 2002: Formulation of the policy on the frequency bands for future mobile communications, such as the fourth-generation mobile communications (Alteration of the frequency allocation plan)
- 2005 : Improvements and sophistication of the existing systems  
Establishment of the technology required for the fourth-generation mobile communication system
- Around 2007: International allocation of the frequency bands for the fourth- generation mobile communications system (WRC-2007)
- Around 2010: To put the fourth-generation mobile communications system into practical use

## Trends of mobile communications



### 3. Wireless access system

#### E-Japan Priority Policy Program (Decided by the IT Strategy Headquarters on March 29, 2001)

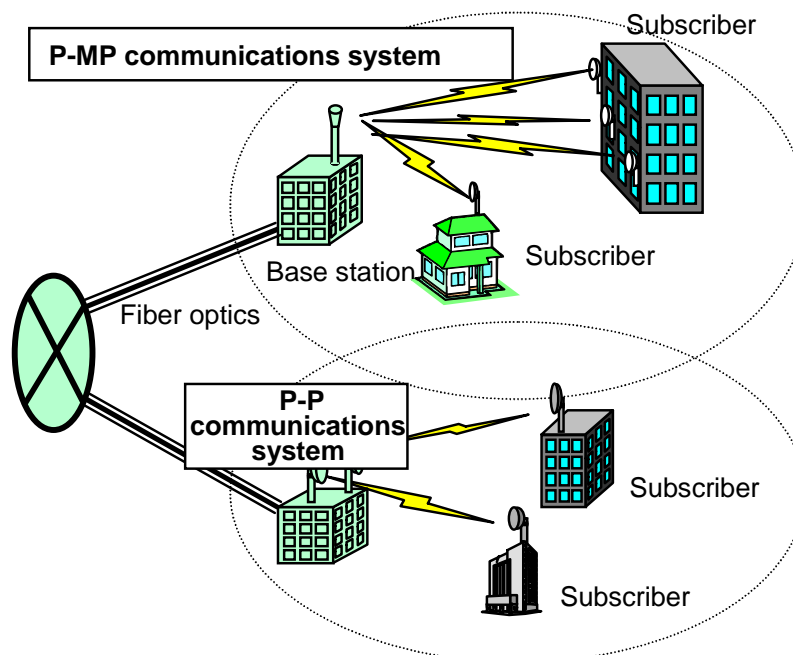
**Extracts**

Before the end of the year 2001, the frequency band available for high-speed wireless Internet access will be expanded. At the same time, the allocation of frequency will be reviewed and the re-allocation will be carried out by FY2002, to secure the frequency for fourth-generation mobile communications systems, etc.

Frequency bands	System	Maximum transmission speed	Transmission distance	Institutionalization	Number of companies entered
2.4 GHz band	Point-to-Point (P-P) <sup>1</sup>	Around 10Mbps <sup>2</sup>	Around 5km <sup>3</sup>	1999.10 (Expansion of the frequency-usable areas)	12
	Point-to-multipoint (P-MP) <sup>1</sup>	Around 2 Mbps	Around 400m <sup>3</sup>		
22/26/38 GHz band	Point-to-Point (P-P)	Around 156 Mbps	Around 4km	1998.12	11 <sup>4</sup>
26/38 GHz band	Point-to-multipoint (P-MP)	Around 10 Mbps	Around (radius) 1km		10 <sup>4</sup>
25 GHz band	Point-to-Point Point-to-multipoint	Around 100 Mbps	Around 100m	2002.2	

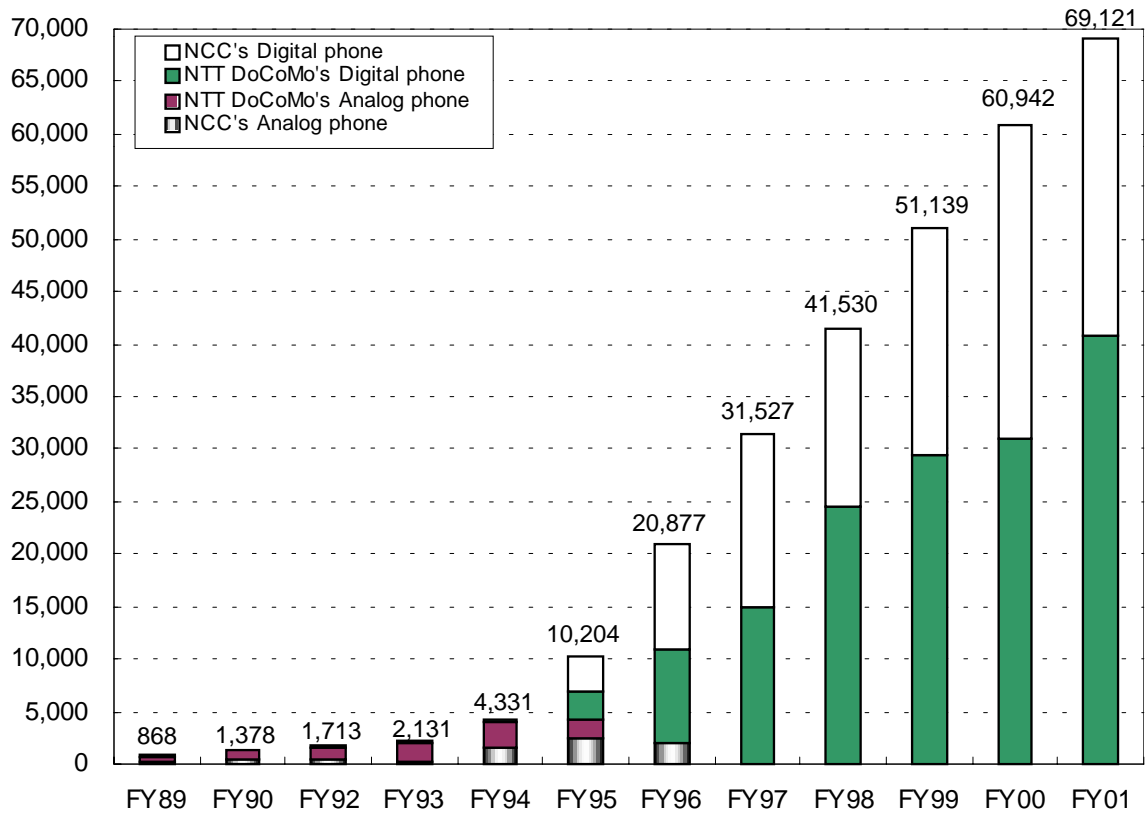
**Notes:**

1. P-P: A system used when one radio station communicates with another radio subscriber station.  
P-MP: A system used when one base station communicates with more than one subscriber station.
2. The most widely-used system (IEEE 802.11b)  
The revision of the current regulation in February 2002 enabled higher-speed telecommunications of more than 20 Mbps.
3. Because this frequency band is used for other purposes as well, the transmission distance is greatly affected by the surrounding environment. (High-directional antenna capable of extending transmission distance three-fold will be introduced around the spring of 2002.)
4. Some companies use both systems. As a result, the number of the companies in this market totaled 15.



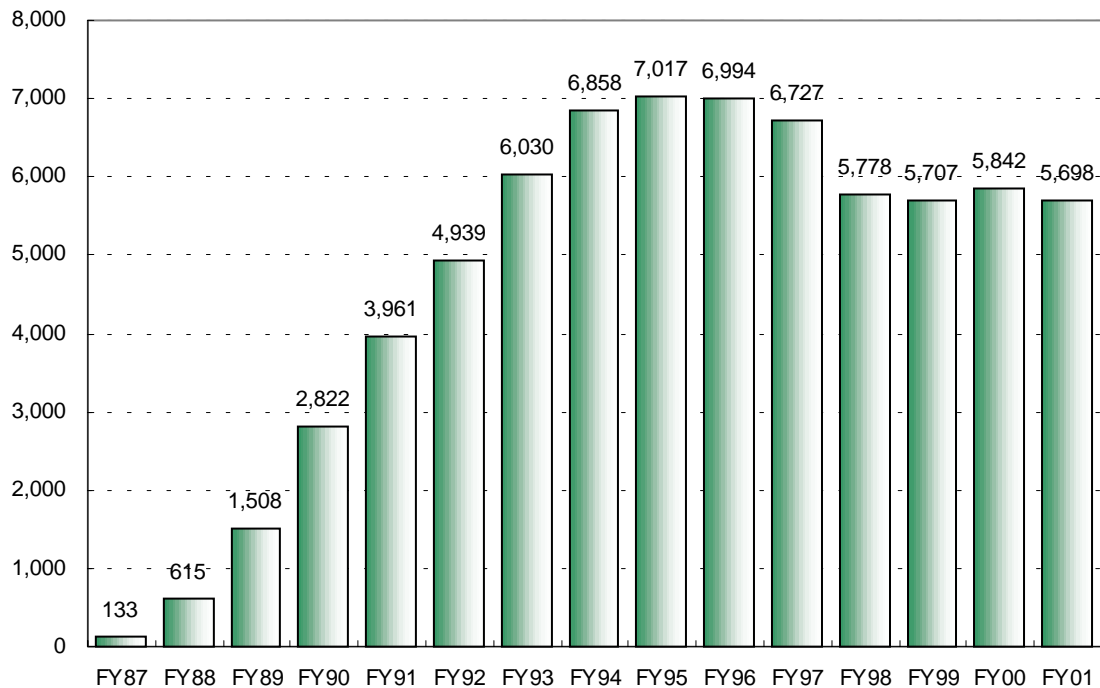
## VI. Diffusion of major radio stations

### 1. Transition in the Number of Cellular Phones

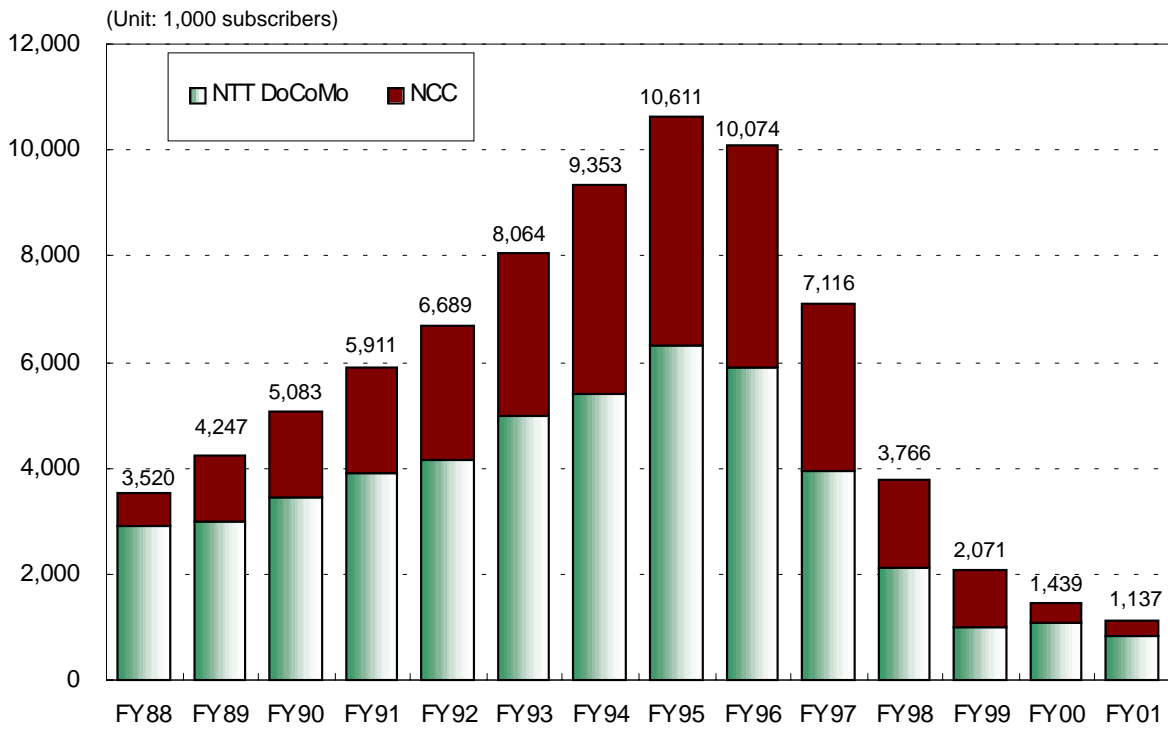


### 2. Transition in the Number of PHS Subscribers

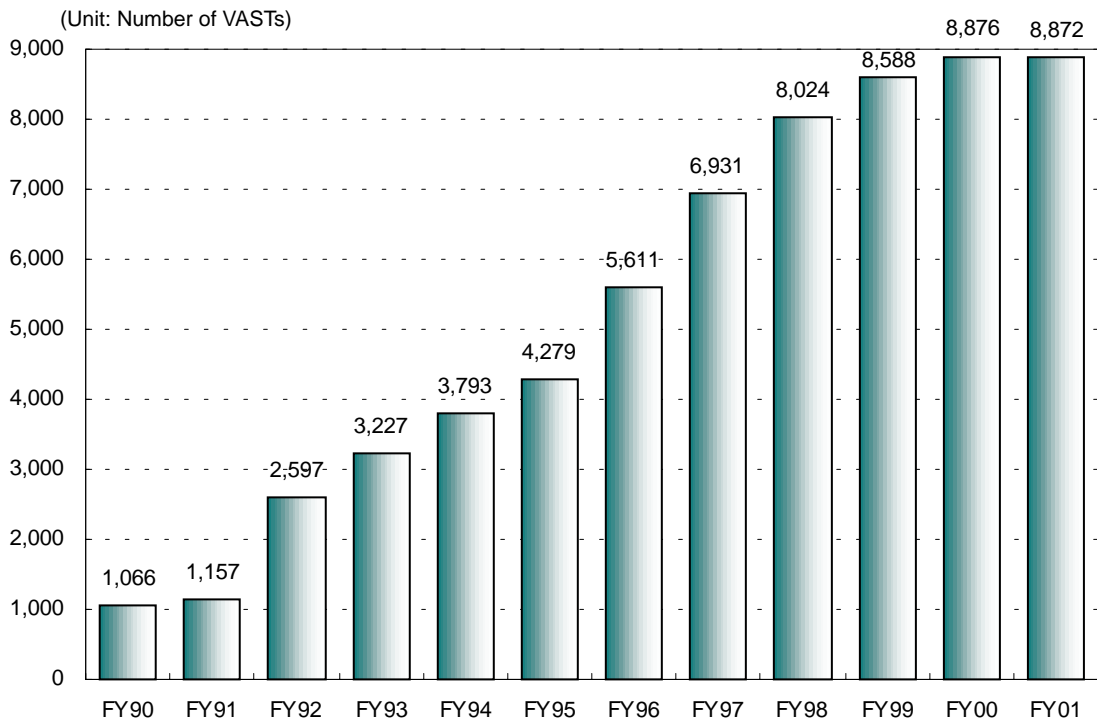
(Unit: 1,000 terminals)



### 3. Transition in the Number of Radio Pagers



### 4. Transition in the Number of SA Earth Stations



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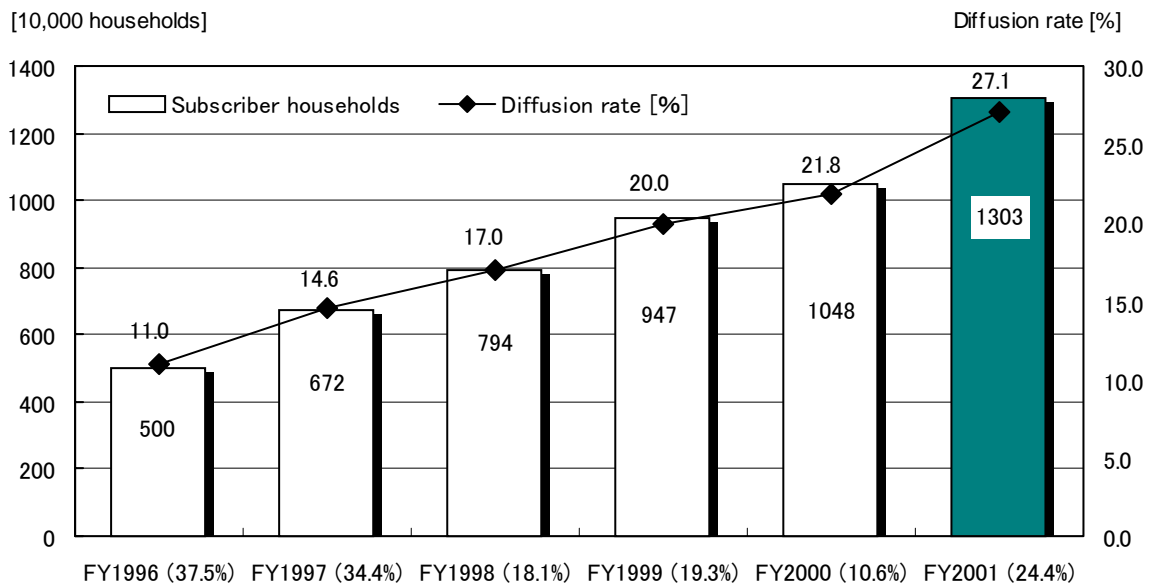
## References

**Reference I.** Status of diffusion of cable television

**Reference II.** Current Status of Broadcasting Business  
in Japan

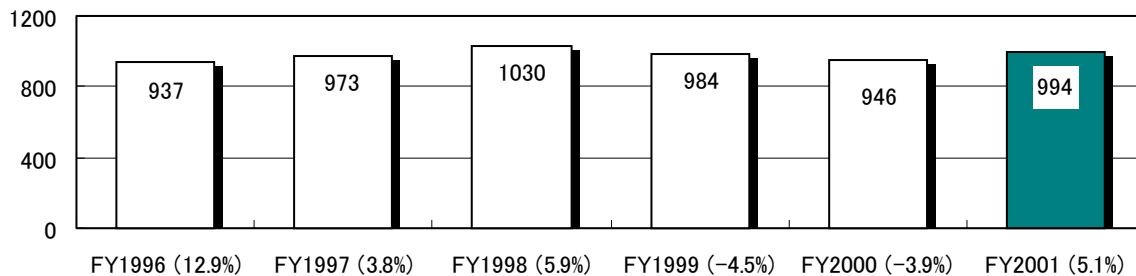
## Reference I. Status of diffusion of cable television

### 1. Changes in the total number of subscriber households, diffusion rate



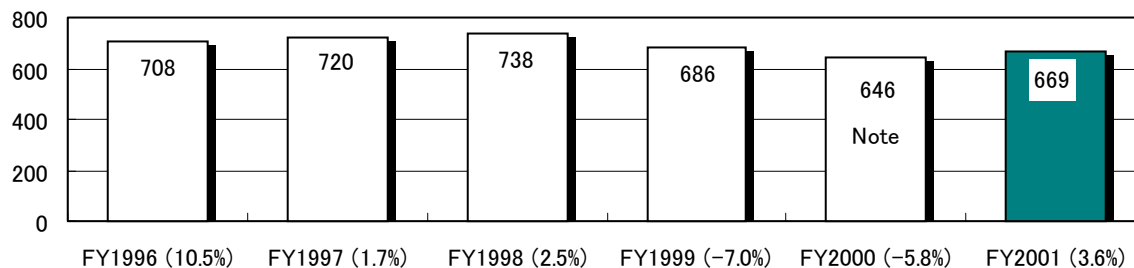
The data are as of the end of each fiscal year. The figures in the parenthesis are the rate of year-to-year increase in the total number of subscriber households. The diffusion rate was calculated using official family register data as of the end of each fiscal year.

### 2. Changes in the total number of cable television facilities



The data are as of the end of each fiscal year. The figures in the parenthesis are the rate of year-to-year increase in the total number of cable television facilities.

### 3. Changes in the total number of cable television service providers



The data are as of the end of each fiscal year. The figures in the parenthesis are the rate of year-to-year increase in the total number of cable television service providers.

Note: The data, up to FY1999, are the total of the figures collected by each Telecommunications Bureau (including overlapped figures). (The data for FY2000 including the overlapped figure is 660.)

## Reference II. Current Status of Broadcasting Business in Japan

### 1. Operating Status of Broadcasters

	FY93	FY94	FY95	FY96	FY97	FY98	FY99	FY00	Aug. 2001	Oct. 2001	Dec. 2001	Feb. 2002	Mar. 2002	Apr. 2002	Jun. 2002	Aug. 2002	Oct. 2002
<b>AM broadcasters</b>	48	48	48	48	48	48	48	48	48	48	48	48	48	-	-	-	-
Shortwave broadcasters	2	2	2	2	2	2	2	2	-	-	-	-	2	-	-	-	-
<b>FM broadcasters</b>	46	46	49	51	51	52	53	55	-	-	-	-	55	-	-	-	-
FM sound multiplex broadcasters	1	1	1					0	-	-	-	-	0	-	-	-	-
FM teletext multiplex broadcasters			37	40	40	40	41	44	-	-	-	-	44	-	-	-	-
Community broadcasters	6	16	30	68	93	118	128	139	-	-	150	152	-	152	152	156	159
FM teletext multiplex broadcasts by community broadcasters						3	3	1	-	-	1	1	-	1	1	1	1
<b>TV broadcasters</b>	122	123	125	128	128	129	129	129	-	-	-	-	129	-	-	-	-
TV sound multiplex broadcasters	116	119	122	126	68	28	28	28	-	-	-	-	26	-	-	-	-
TV teletext multiplex broadcasters	25	25	24	25	24	23	21	19	-	-	-	-	16	-	-	-	-
TV data multiplex broadcasters				2	13	16	17	18	-	-	-	-	18	-	-	-	-
TV teletext multiplex and TV data multiplex broadcasters					16	16	15	15	-	-	-	-	15	-	-	-	-
<b>BS analog TV broadcasters</b>	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
BS analog sound multiplex broadcasters	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2
BS analog data multiplex broadcasters		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
<b>BS digital TV broadcasters</b>								1(8)	1(8)	1(8)	1(8)	1(8)	1(8)	1(8)	1(8)	1(8)	1(8)
BS digital radio broadcasters								1(10)	1(10)	1(10)	1(10)	1(10)	1(10)	1(10)	1(10)	1(10)	1(10)
BS digital data broadcasters								1(9)	1(9)	1(9)	1(9)	1(9)	1(9)	1(9)	1(9)	1(9)	1(9)
CS digital TV broadcasters (using a satellite that does not orbit above 110 degrees of east longitude)				1(56)	2(71)	2(115)	2(120)	1(113)	1(112)	1(112)	1(111)	1(111)	-	1(110)	1(108)	1(106)	1(104)
CS digital radio broadcasters				1(6)	2(8)	2(11)	2(11)	2(8)	2(8)	2(6)	2(6)	2(6)	2(6)	2(6)	2(6)	2(6)	2(6)
CS digital data broadcasters				1(1)	2(2)	2(4)	2(4)	2(2)	2(2)	2(3)	2(3)	2(3)	2(3)	2(3)	2(3)	2(3)	2(3)
CS digital TV broadcasters using a satellite that orbits above 110 degrees of east longitude								2(15)	2(15)	2(15)	2(15)	2(15)	2(15)	2(15)	2(15)	2(15)	2(15)
CS digital FM broadcasters using a satellite that orbits above 110 degrees of east longitude								1(1)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)
CS digital data broadcasters using a satellite that orbits above 110 degrees of east longitude								2(8)	2(8)	2(8)	2(8)	2(8)	2(8)	2(8)	2(8)	2(8)	2(8)
CS analog TV broadcasters	2(9)	2(10)	2(13)	2(13)	2(13)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)
<b>CS-PCM sound multiplex broadcasters</b>	1(4)	1(3)	1(2)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)	1(1)

Notes :

1. Numbers of broadcasters include NHK, the University of the Air and other broadcasters.
2. Figures in parenthesis are the numbers of program supplying broadcasters who entrust broadcasting to facility supplying broadcasters (broadcast station licensees) and broadcasters on telecommunications services.



## 2. Diffusion of Terrestrial Broadcasting

	Commercial broadcasters	NHK
<b>TV Broadcasting</b>	Available nationwide. Four to six broadcast channels are viewable in approx. 90% of total household.	One general and one education channel are broadcast nationwide.
<b>AM Broadcasting</b>	Available nationwide. In major areas, two to four channels are broadcast.	Radio 1 and Radio 2 are broadcast nationwide.
<b>FM Broadcasting</b>	Available almost nationwide. In major areas, two channels are broadcast. In addition, foreign language broadcasting and community broadcasting are conducted.	One channel is broadcast nationwide.
<b>Short Wave Broadcasting</b>	One channel is broadcast nationwide.	(Overseas broadcasting is conducted.)

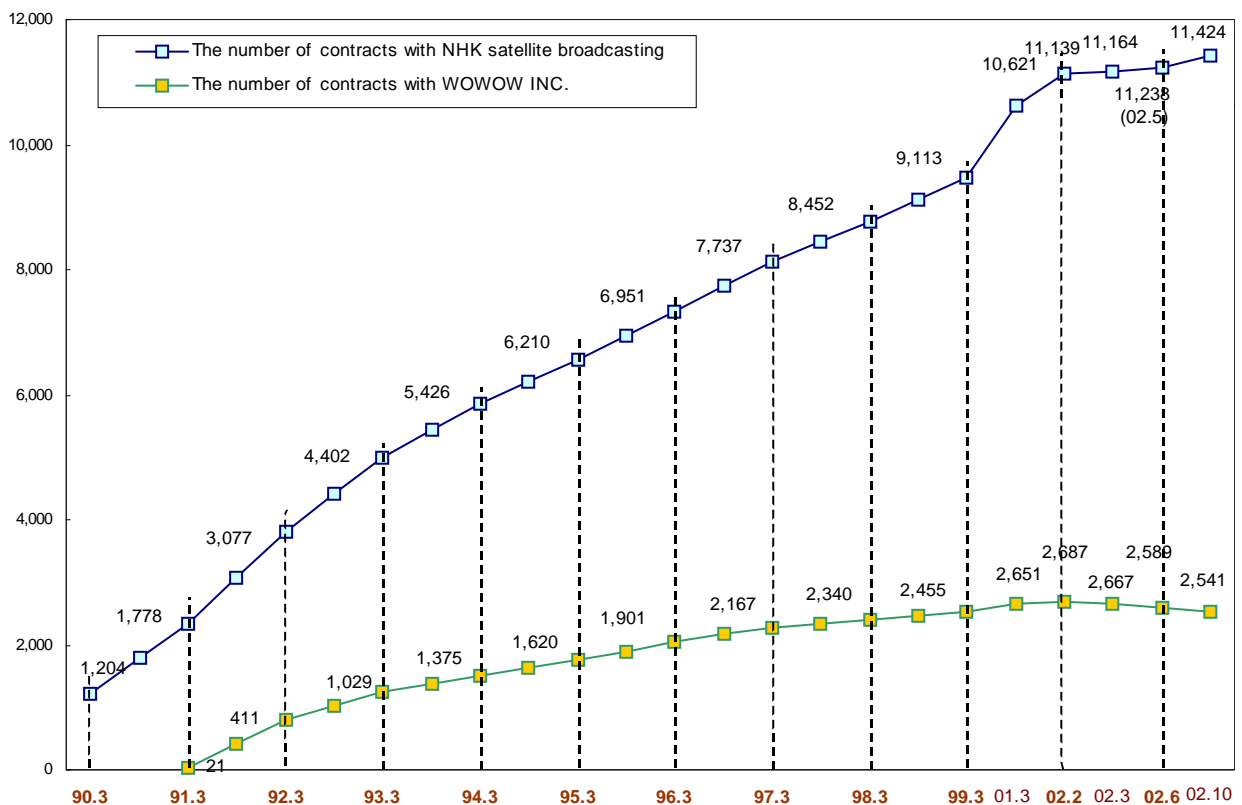
Note: In addition to the above, the University of the Air Foundation broadcasts one TV and one FM channel, targeting a major part of the Kanto Region as its coverage area.

## 3. Current Status of DBS in Japan

### (1) DBS via broadcasting satellite (Transition of the number of household receivers)

Transition of the number of household receivers

Unit: 1,000 households



## (2) DBS via Communication Satellites

### 1) Transition of receiver's contract

(Unit: 1000 cases)

	FY96	FY97	FY98	FY99	FY00	Jul., 2001	Feb., 2002	Apr., 2002	Aug., 2002	Oct., 2002
CS TV (Digital)	236	631	1,373	2,248	2,618	2,761	3,011	3,086	3,260	3,294

### 2) Numbers of licensees and channels by type of broadcasting

#### (i) BS analog broadcasting

Satellite	Type of broadcasting	Licensees	Number of channels
BSAT (BSAT-1a)	- High-definition TV broadcasting	- NHK	1
	- Standard definition TV broadcasting	- NHK and 1 commercial broadcaster	3
	- Standard definition TV sound multiplex broadcasting	- Commercial broadcasters	2
	- Standard definition TV data broadcasting	- 1 commercial broadcaster	1

#### (ii) BS digital broadcasting

Satellite	Type of broadcasting	Licensees	Number of channels
BSAT (BSAT-2a)	- High-definition TV broadcasting	- NHK and 6 commercial broadcasters	7
	- Standard definition TV broadcasting	- NHK (simulcast) and 7 commercial broadcasters	21
	- FM broadcasting	- 10 commercial broadcasters (including 1 simul-broadcaster)	23
	- Data broadcasting	- 9 commercial broadcasters (including 1 simul-broadcaster)	9

#### (iii) Analog broadcasting

Satellite	Type of broadcasting	Number of licensees	Number of channels
JSAT (JCSAT-2)	PCM sound broadcasting	1	17
	Data broadcasting	1	2

Notes: One broadcaster of JCSAT-2 data broadcasting also operates PCM sound broadcasting.

(iv) CS digital broadcasting (using a satellite that does not orbit above 110 degrees of east longitude)

Broadcasting Satellite	Type of broadcasting	Number of licensees	Number of channels
JSAT (JCSAT-3)	Standard definition TV broadcasting	54	106
	FM broadcasting	5 <sup>*1</sup>	105
	Data broadcasting	2 <sup>*2</sup>	24
JSAT (JCSAT-4)	Standard definition TV broadcasting	57	71
	Data broadcasting	1 <sup>*2</sup>	16
SCC (SUPERBIRD-C)	FM broadcasting	1	402
	Data broadcasting	1 <sup>*3</sup>	2

Notes:

1. Three broadcasters of JCSAT-3 radio broadcasting also operate standard definition TV broadcasting.
2. All data broadcasters also operate standard definition TV broadcasting.
3. All data broadcasters also operate FM broadcasting.

(v) CS digital broadcasting using a satellite that orbits above 110 degrees of east longitude

Broadcasting Satellite	Type of broadcasting	Number of licensees	Number of channels
SCC (N-SAT-110)	- High-definition TV broadcasting	1 <sup>*1</sup>	2
	- Standard TV broadcasting	7	23
	- FM broadcasting	1 <sup>*2</sup>	20
	- Data broadcasting	6 <sup>*3</sup>	8
JSAT (N-SAT-110)	- Standard TV broadcasting	8	38
	- Data broadcasting	2 <sup>*4</sup>	2

Notes:

1. High-definition TV broadcasting is operated only when the standard TV broadcasting is not operated. The high-definition TV broadcaster is also one of the standard TV broadcasters.
2. The FM broadcaster is also one of the standard TV broadcasters.
3. Three of the data broadcasters are also among the standard TV broadcasters.
4. Two of the data broadcasters are also among the standard TV broadcasters.