

Virtual International Symposium on ICTs and Climate Change

"The power of ICTs to save the Planet" 23 September 2009

Session 2 – Clean Technologies, Smart Applications

Environmental Protection Activities in NTT Group

***- Environmental impact reduction in other non-ICT
sectors using ICT -***

NTT Energy and Environment Systems Laboratories

Nippon Telegraph and Telephone Corporation

Yasuyuki Sugiyama

23 September 2009

Outlines

■ *NTT Group Overview*

- ◆ Broadband Service Rollout in Japan
- ◆ NGN Service Rollout in NTT

■ *NTT Group Environmental Protection Policy*

- ◆ CSR Charter
- ◆ Environmental Impact of ICT and impact reduction by ICT

■ *Environmental impact reduction effects in other non-ICT sectors by using ICT*

■ *Discussions*

Overview of NTT (Nippon Telegraph and Telephone Corporation)

NTT

Holding Company

R&D Divisions

NTT group: 476 companies

NTT East

Local telephone company

NTT West

Local telephone company

NTT Communications

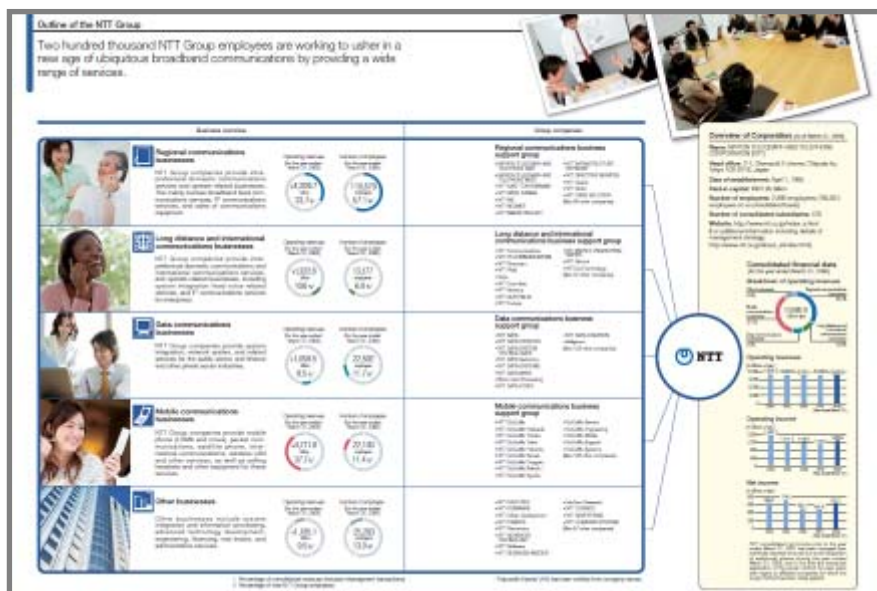
Long distance & International telephone company

NTT Data

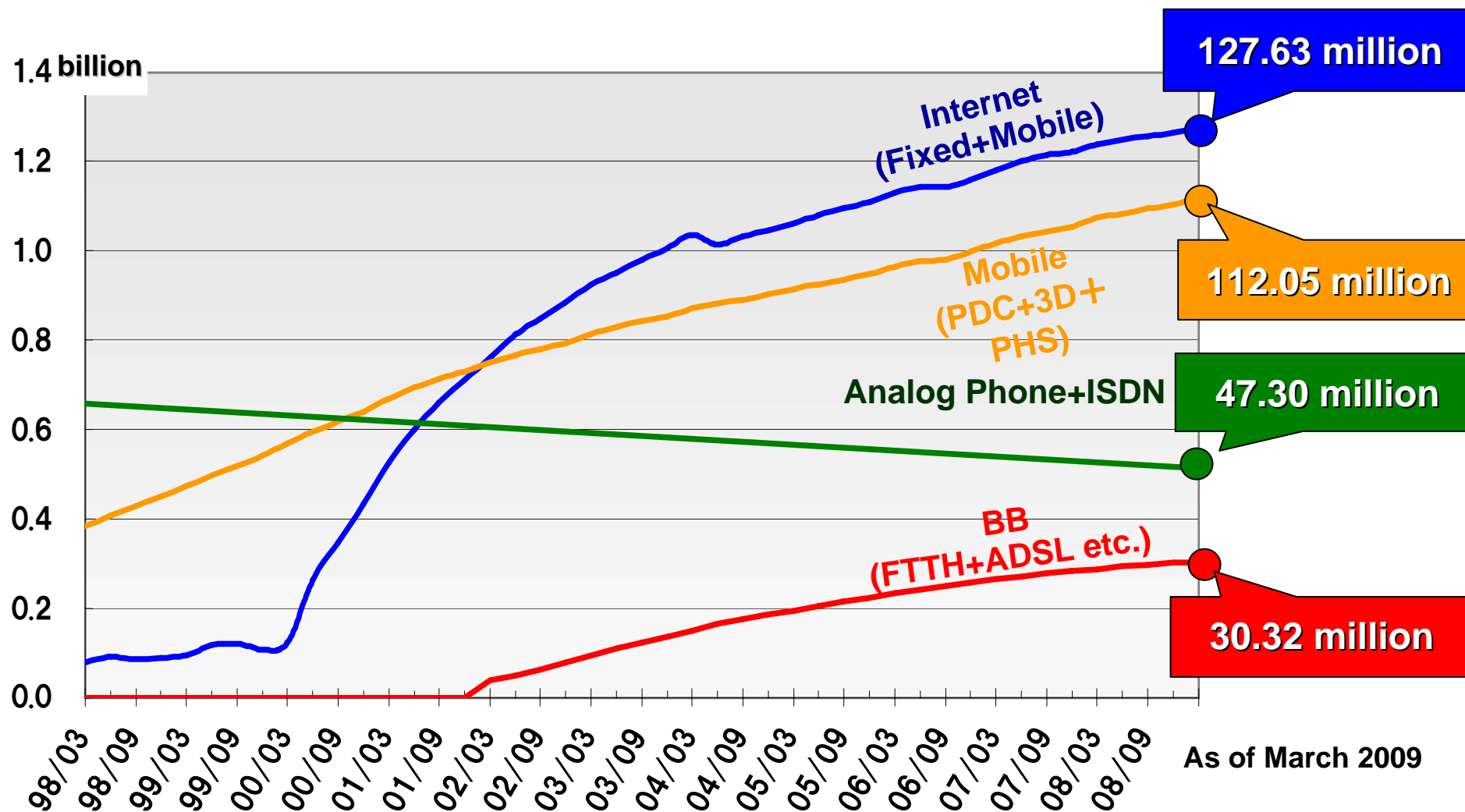
Data management system company

NTT docomo

Mobile telephone company



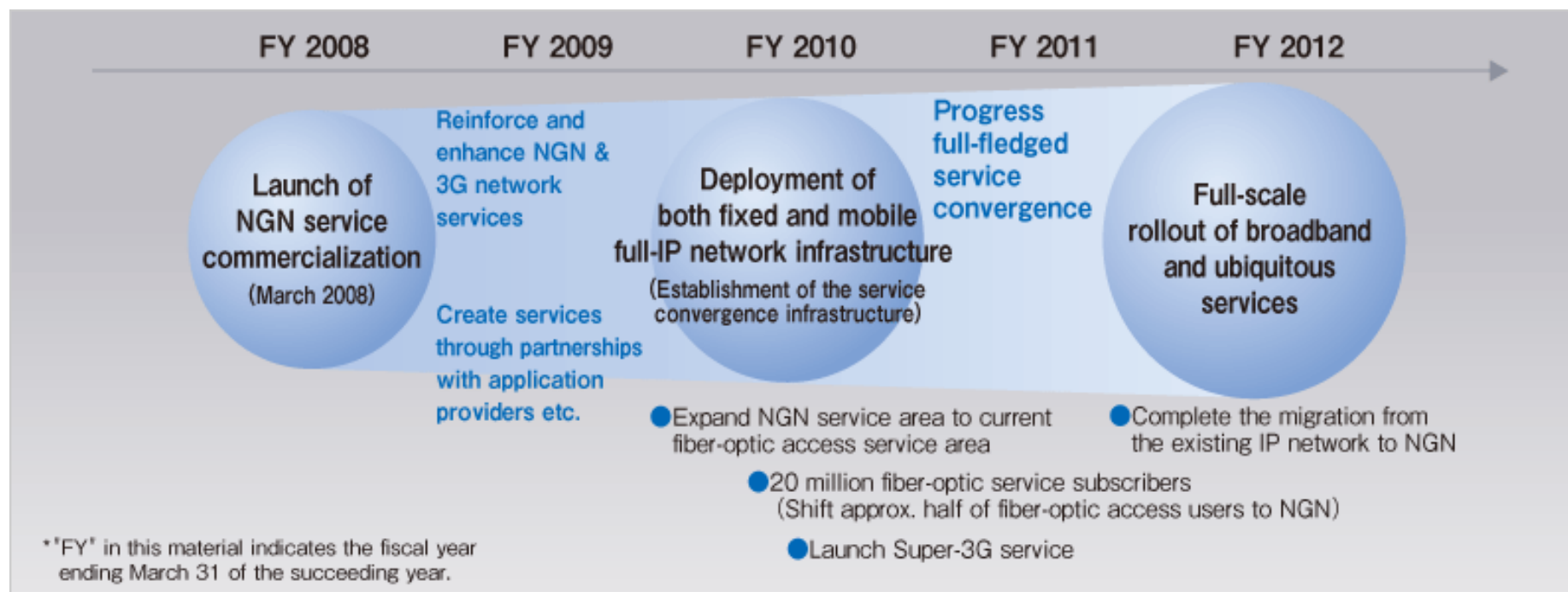
Broadband Service Subscriber Rollout in Japan



Source: Ministry of Internal Affairs and Communications (MIC)

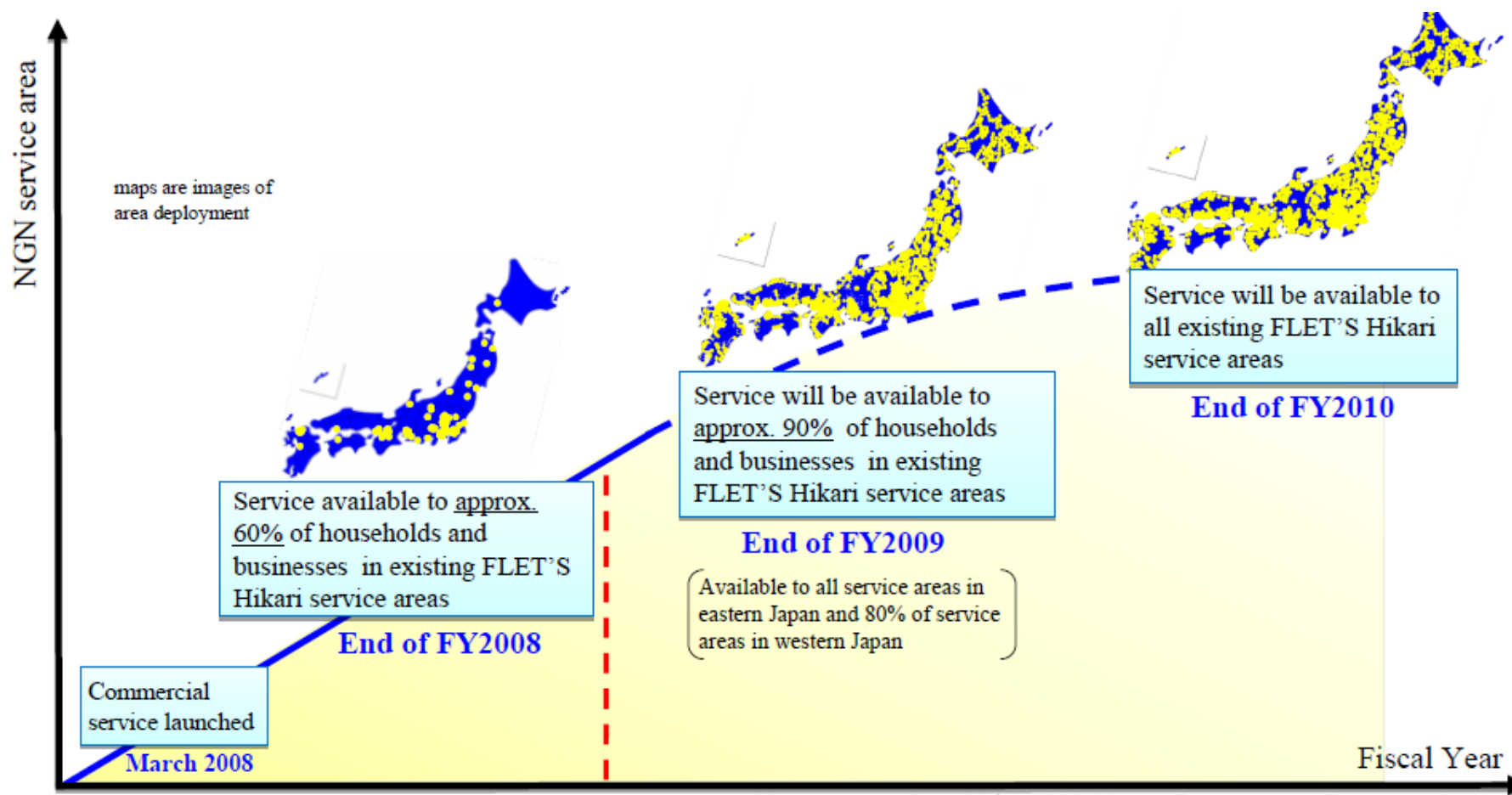
Broadband and ubiquitous services rollout strategy in NTT

- Creating and rolling out broadband and ubiquitous services in accordance with customer needs, leveraging full-IP network infrastructure
- Driving the transformation of business portfolio centering on IP and solution businesses
- Promoting reforms to the business operations of group companies in conjunction with the transformation of business portfolio



Hikari with NGN Service Rollout in NTT

- Expansion of NGN Service Area



http://www.ntt.co.jp/ir/events_e/results/2009/090513e.pdf

NTT's Basic Policies - NTT Group CSR Charter -

Our Commitment

As a leader of the information and telecommunications industry, the NTT Group is committed to providing reliable, high-quality services that contribute to the creation of a safe, secure and prosperous society through communications that serve people, communities and the global environment.



Our CSR Goals

(1) Communication between people and their communities

(2) Communication between people and the global environment

We shall strive both to reduce our own environmental impact and build environment-friendly forms of communications, and to provide information and communications services that help to reduce the impact of society as a whole on the global environment.

(3) Safe and secure communication

(4) Team NTT communication

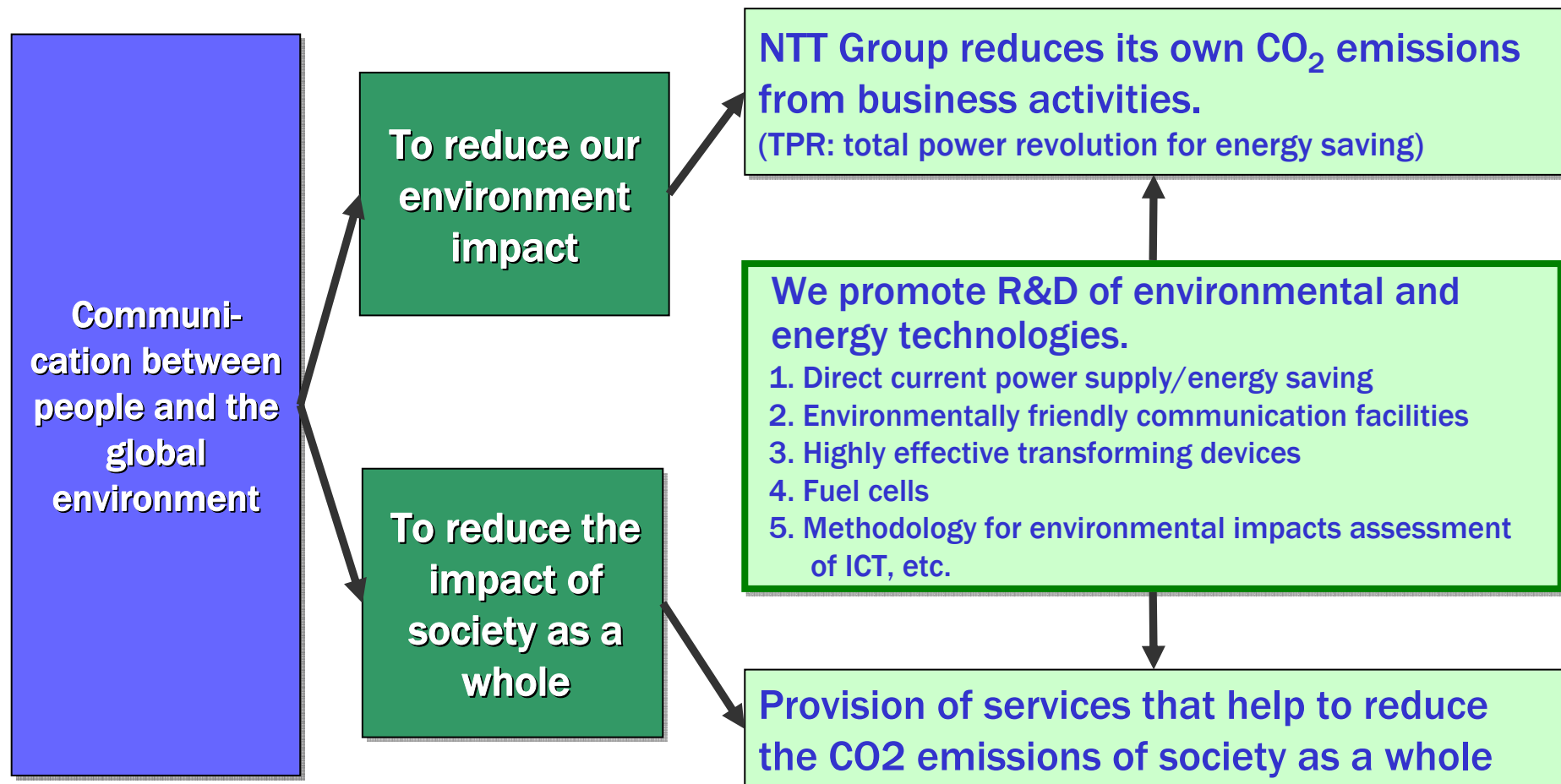
To reduce our own environmental impacts

To provide information and communications services that help to reduce the impact of society

-Team NTT comprises all NTT Group employees, including temporary employees, contract employees, employees of our corporate partners, and also former employees who endorse the NTT Group's CSR activities.

NTT Group's activities towards prevention of global warming

- NTT Group uses 1% (approx. 8.5 billion kWh) of all electricity purchased nationally.
- Two strategies of reducing CO₂ emissions generated by our business operations, and providing services that help to reduce the CO₂ emissions from society as a whole.



NTT Group Vision for Environmental Contribution

Our Vision for Environmental Contribution clarifies our basic concept for providing ICT services that will enable our customers as well as society as a whole to reduce environmental impact. It also defines our CO₂ reduction target for 2010 and the activities we intend to undertake to achieve that target.

NTT Group Vision for Environmental Contribution

The NTT Group is helping to reduce the environmental impacts of its customers and society as a whole by developing and disseminating ubiquitous broadband-based ICT services that promote positive changes in lifestyles and business models.

[Reduction target for 2010]

Reductions in CO₂ emissions
as a result of ICT services

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CO₂ emissions from providing
ICT services

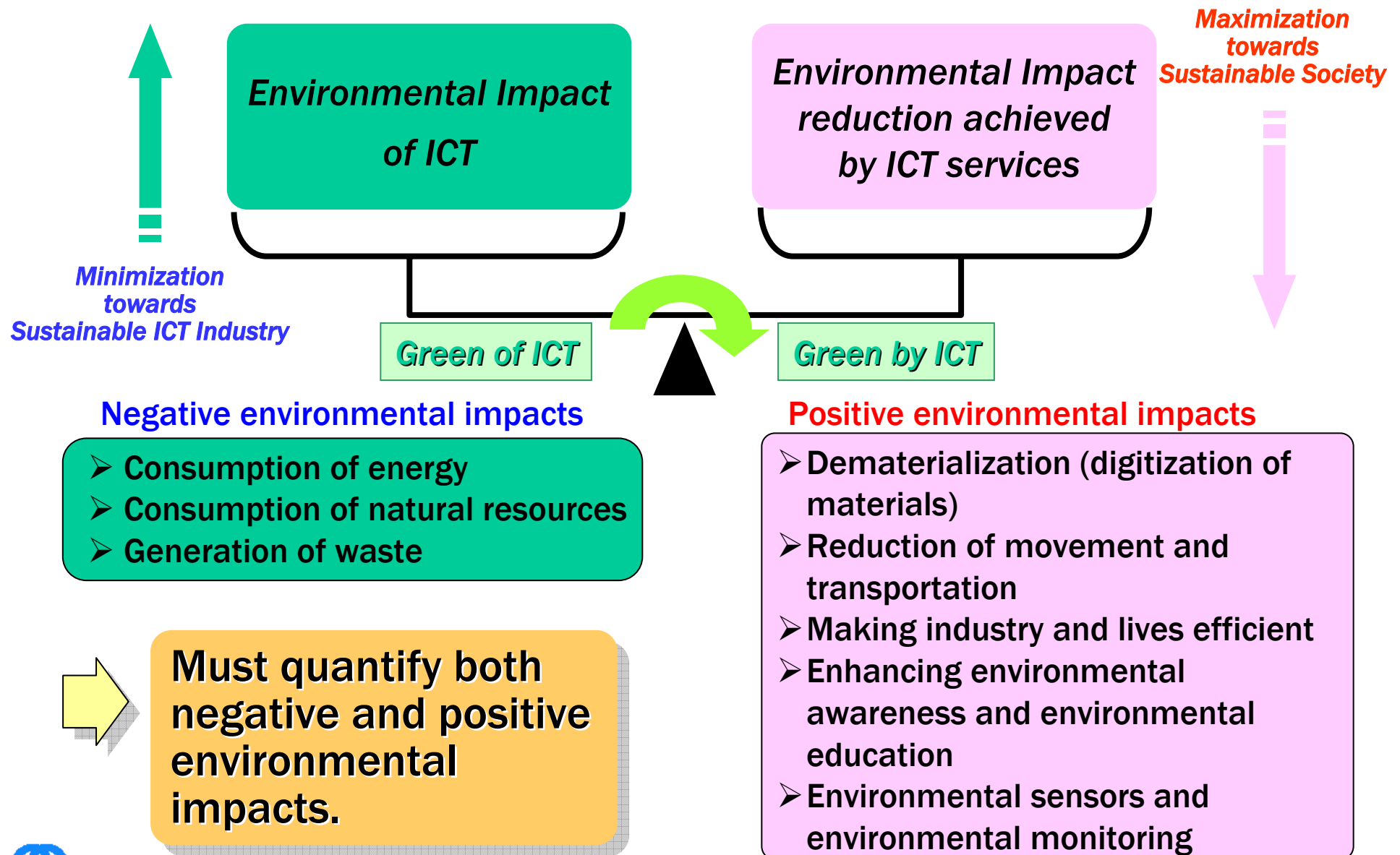
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**10-million-ton reduction
in CO₂ emissions**

Activities for achieving our targets for 2010

- ① Increase subscriber base for optical fiber services that enable lower impact lifestyles and business models
- ② Expand ubiquitous broadband services
- ③ Reduce the environmental impacts of our business activities
- ④ Reduce the electrical power required by customers' communications equipment

Relationship between ICT and Environment



Environmentally Friendly Data Centers in NTT Group

Green of ICT

Solar power systems

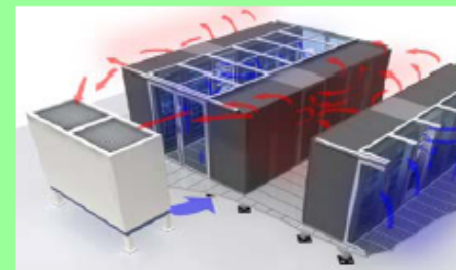


Utilize clean energy to minimize environmental impact of data centers

Data center business featuring the latest energy saving technology

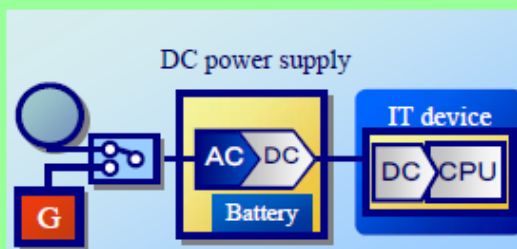
Environmentally friendly data centers

High efficiency air cooling technology



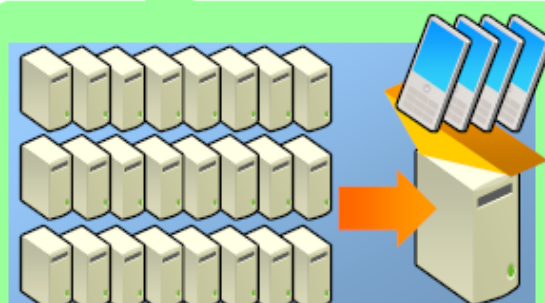
Deploy air cooling technology offering optimal efficiency through analysis

High-voltage DC power supply



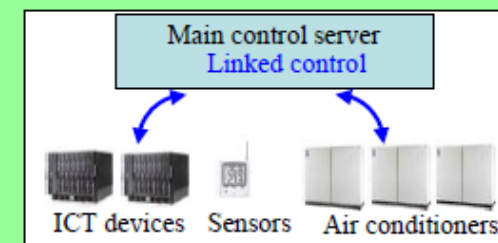
Develop and deploy high-voltage DC power supply system with low conversion loss

Virtual technology



Utilize virtual technology to share IT device resources, reducing number of devices

Linked control of ICT devices and air conditioning

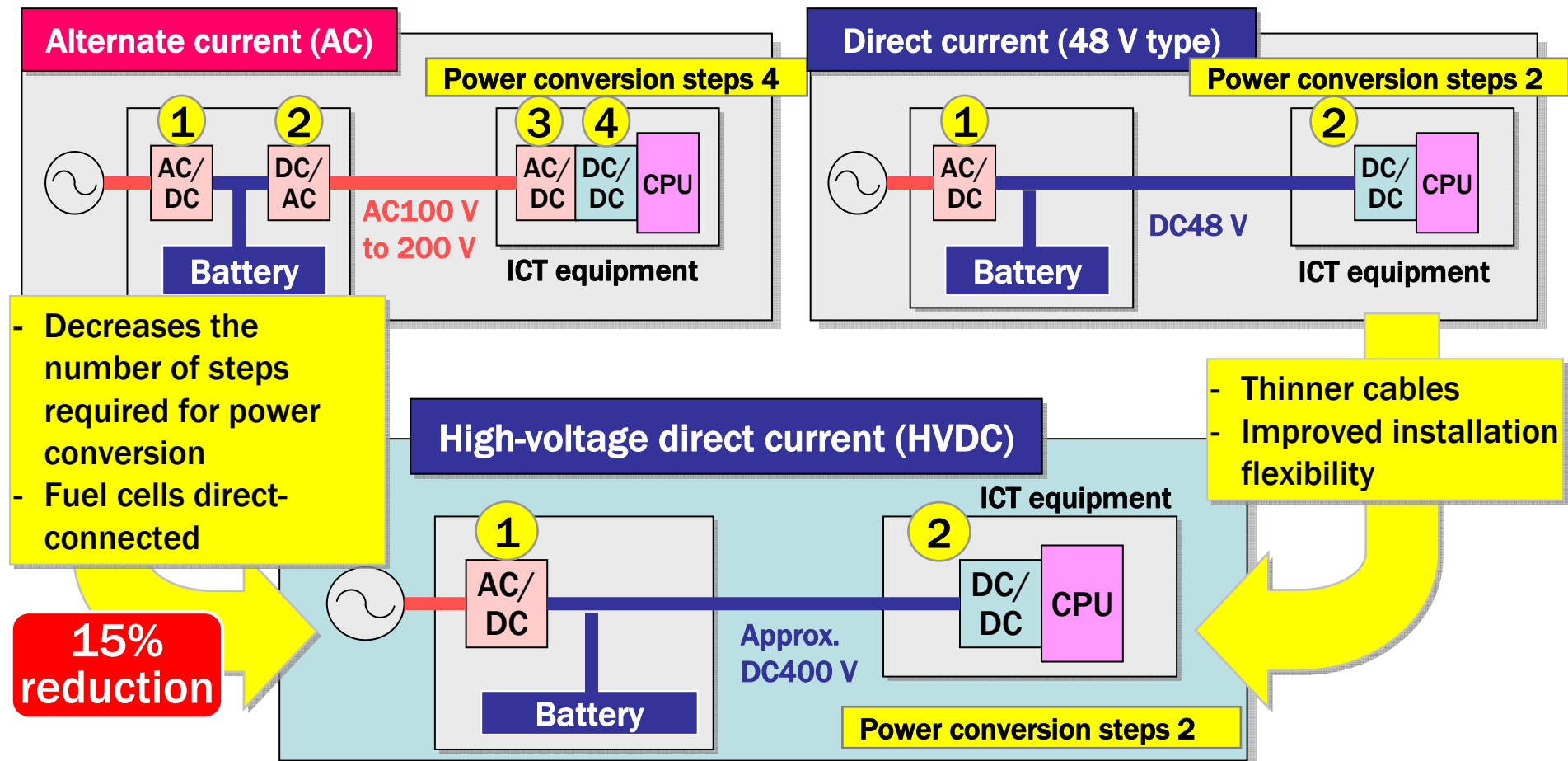


Linked control for standardization of workloads among ICT devices and temperature settings of air conditioners

High-voltage direct current (HVDC) power supply system

- HVDC does not require as many power conversion steps with high system effectiveness.
- HVDC can lower drain and reduce facility cost.

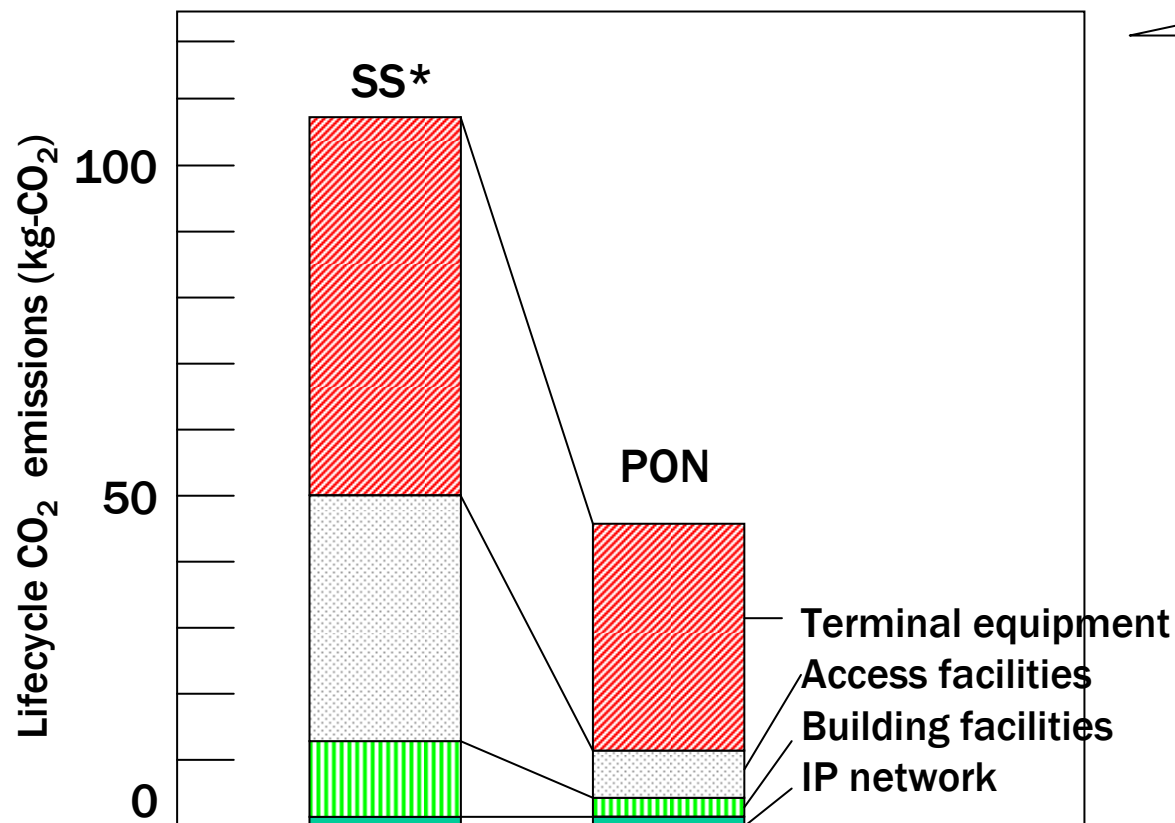
Green of ICT



Effect of Internet connection service with passive optical network (PON) system on CO₂ reduction

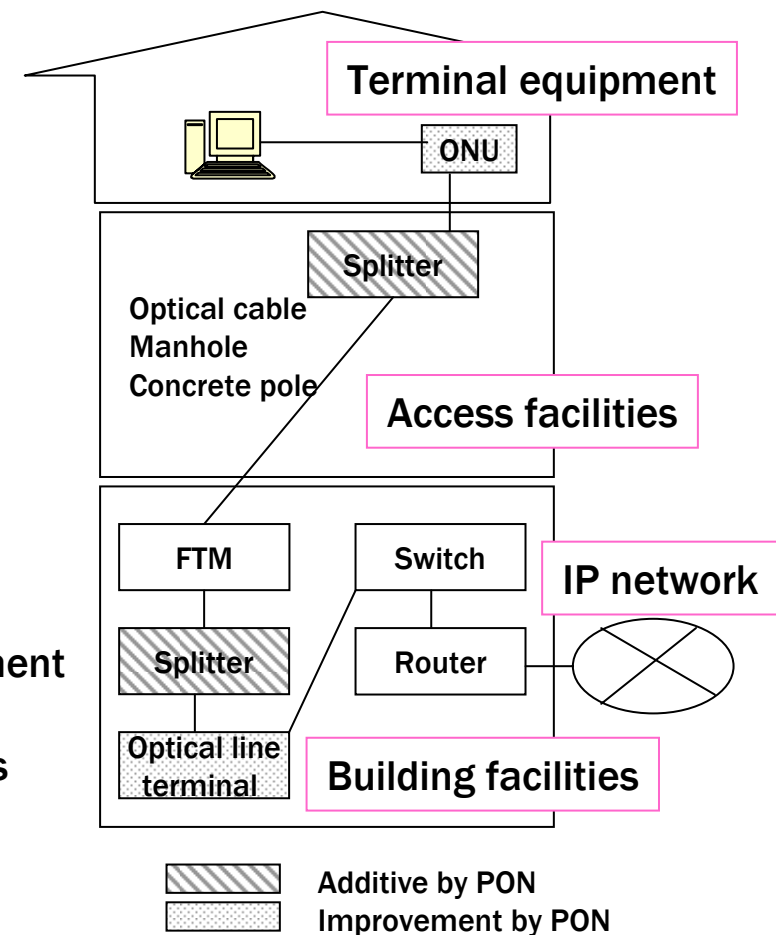
Green of ICT

CO₂ reduction of 57% by sharing an optical fiber



Conditions: PC used for 1 h and one ONU used for 24 h in a day
CO₂ emissions of a subscriber in metropolitan area during a year

*: Single Star



Environmental impact reduction using ICT

Eliminates unnecessary movement of people and materials

Green by ICT

There use to be a need to take the trouble to go somewhere, but ...



Now you can always be together



More efficient usage of space

You used to struggle with order and return processing, but ...



Now product management can be processed from one terminal.



Digitization of materials

You used to be buried under a mountain of CDs, but ...



Now you can download any song you want anytime.



Estimate of reductions in CO₂ Emissions by using ICT in Japan (1/2)

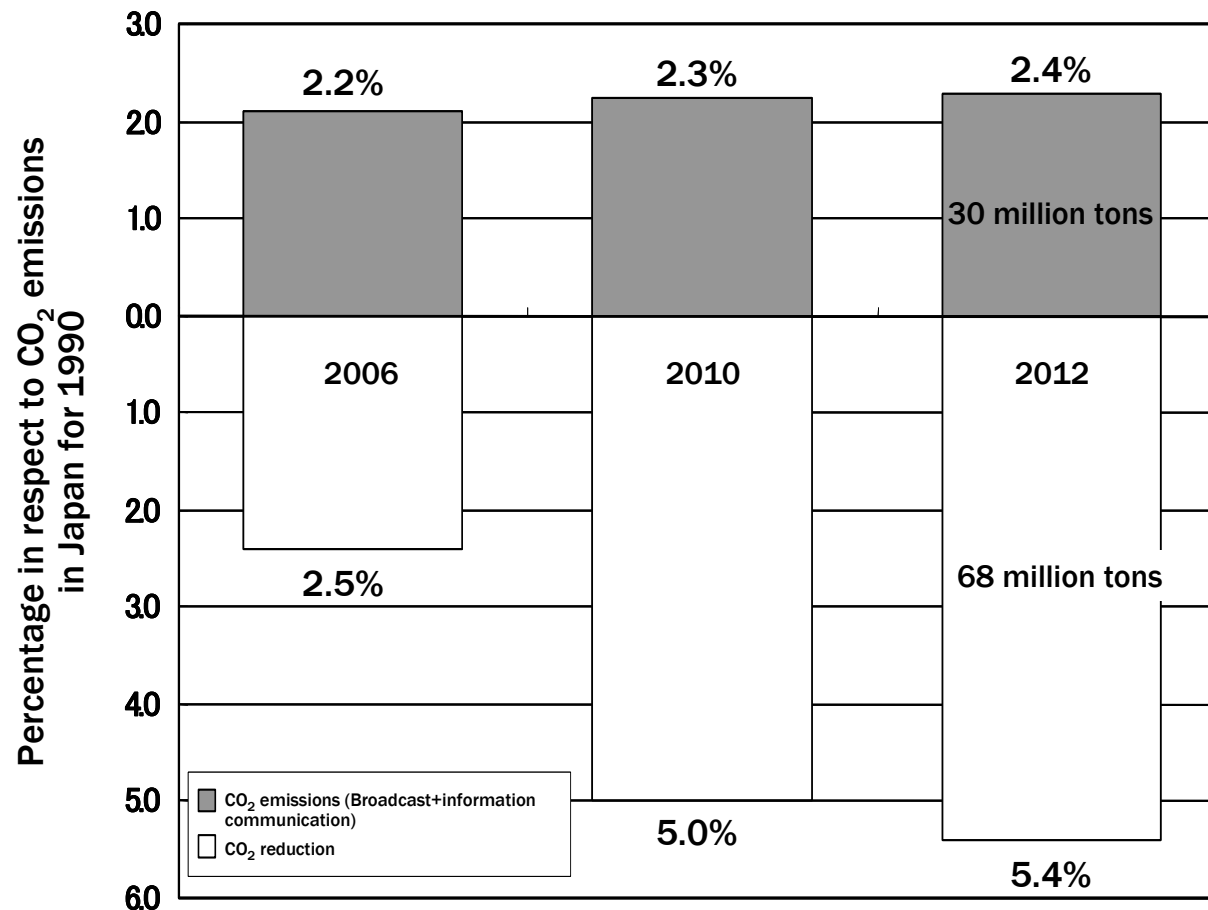
Source: Ministry of Internal Affairs and Communications (MIC)

Green by ICT: Macro

Evaluated field	Cited Areas of use	2006		2010		2012	
		10000t-CO ₂	Percentage (%)	10000t-CO ₂	Percentage (%)	10000t-CO ₂	Percentage (%)
e-trade for individuals	Online shopping	198	0.1%	542	0.4%	712	0.5%
	Online air ticket issuing	2	0.0%	5	0.0%	6	0.0%
	Purchase of ticket at convenience stores	31	0.0%	60	0.0%	64	0.0%
	Installation of automatic Cash Dispensers	261	0.2%	291	0.2%	319	0.2%
e-trade for corporate business	Online transaction	527	0.4%	767	0.6%	836	0.6%
	Supply chain management	532	0.4%	1,839	1.4%	1,839	1.4%
	Reuse market	577	0.4%	1,154	0.8%	1,197	0.9%
e-digitization of substances	Music content	35	0.0%	114	0.1%	133	0.1%
	Visual content	15	0.0%	21	0.0%	25	0.0%
	PC software	11	0.0%	53	0.0%	61	0.0%
	Newspapers and books	4	0.0%	91	0.1%	95	0.1%
Movement of people	Telework	30	0.0%	50	0.0%	63	0.0%
	TV conferences	105	0.1%	194	0.1%	305	0.2%
	Remote control	5	0.0%	5	0.0%	5	0.0%
Advanced road traffic system	ITS	308	0.2%	370	0.3%	401	0.3%
e-government and e-municipality	e-tender	0	0.0%	2	0.0%	2	0.0%
	e-application (tax filing)	0	0.0%	8	0.0%	8	0.0%
	e-application (online receipt)	0	0.0%	1	0.0%	1	0.0%
Energy control	BEMS, HEMS	468	0.3%	730	0.5%	730	0.5%
Total		3,110	2.3%	6,297	4.6%	6,802	5.0%

Estimate of reductions in CO₂ Emissions by using ICT in Japan (2/2)

Source: Ministry of Internal Affairs and Communications (MIC)



Green by ICT: Macro



**This subtraction
Contributes to CO₂
emissions reduction of
38 million tons (3.0%)**



In **2012**, 30 million tons of CO₂ are expected to be emitted by the ICT field, but the use of ICT will reduce CO₂ emissions by 68 million tons, **contributing to CO₂ emissions reduction of 38 million tons (Equivalent to 3.0% of 1990 CO₂ emissions in Japan)**

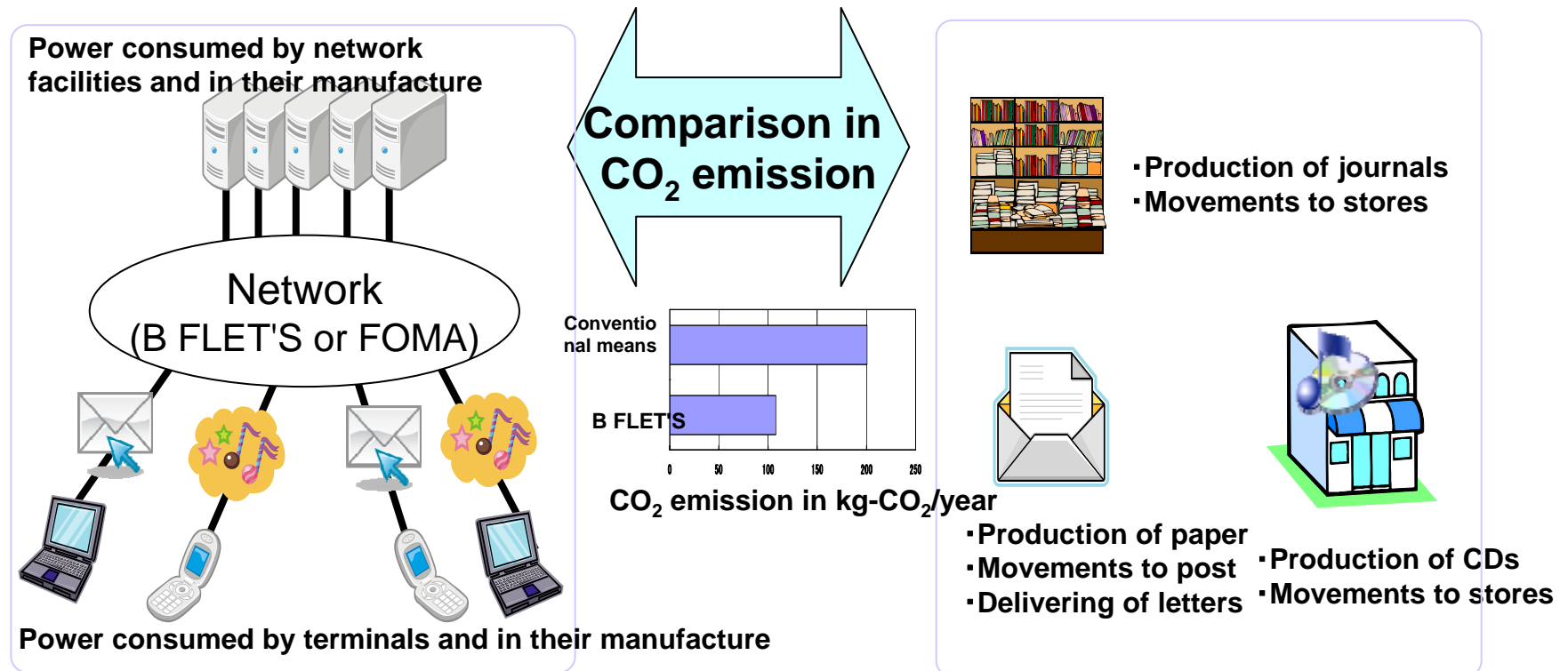
* This calculation includes “reduction potentials” which do not appear immediately, and efforts are required to realize these potentials.

Effect of ubiquitous broadband services on reducing environmental impact

Green by ICT: LCA

19 services by B FLET'S(FTTH) and FOMA(3G)
e.g., Web browsing, music download, e-mail

Conventional means, such as purchase of journals and CDs, and posting of letters



ICT services/actions using broadband and conventional services

Green by ICT: LCA

B FLET'S, FLET'S ADSL, and FOMA (16 services)

ICT services/actions	Conventional services/actions
Email	Mail letters
Receive information by e-magazines and e-newsletters	Subscribe to newspapers
Web pages, bulletin boards, chatting, blogging	Purchase magazines at store
Quizzes, prizes, questionnaire replies	Mail postcards
Internet auction	Exchange goods in person
Internet shopping	Mail-order

⋮

⋮

B FLET'S and FLET'S ADSL only (3 services)

ICT services/actions	Conventional services/actions
Download music	Purchase CDs at store
Download movies	Purchase DVDs at store

⋮

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FOMA only (3 services)

ICT services/actions	Conventional services/actions
Download ring tones	Purchase CDs at store
Retrieve maps and location information	Purchase maps at store

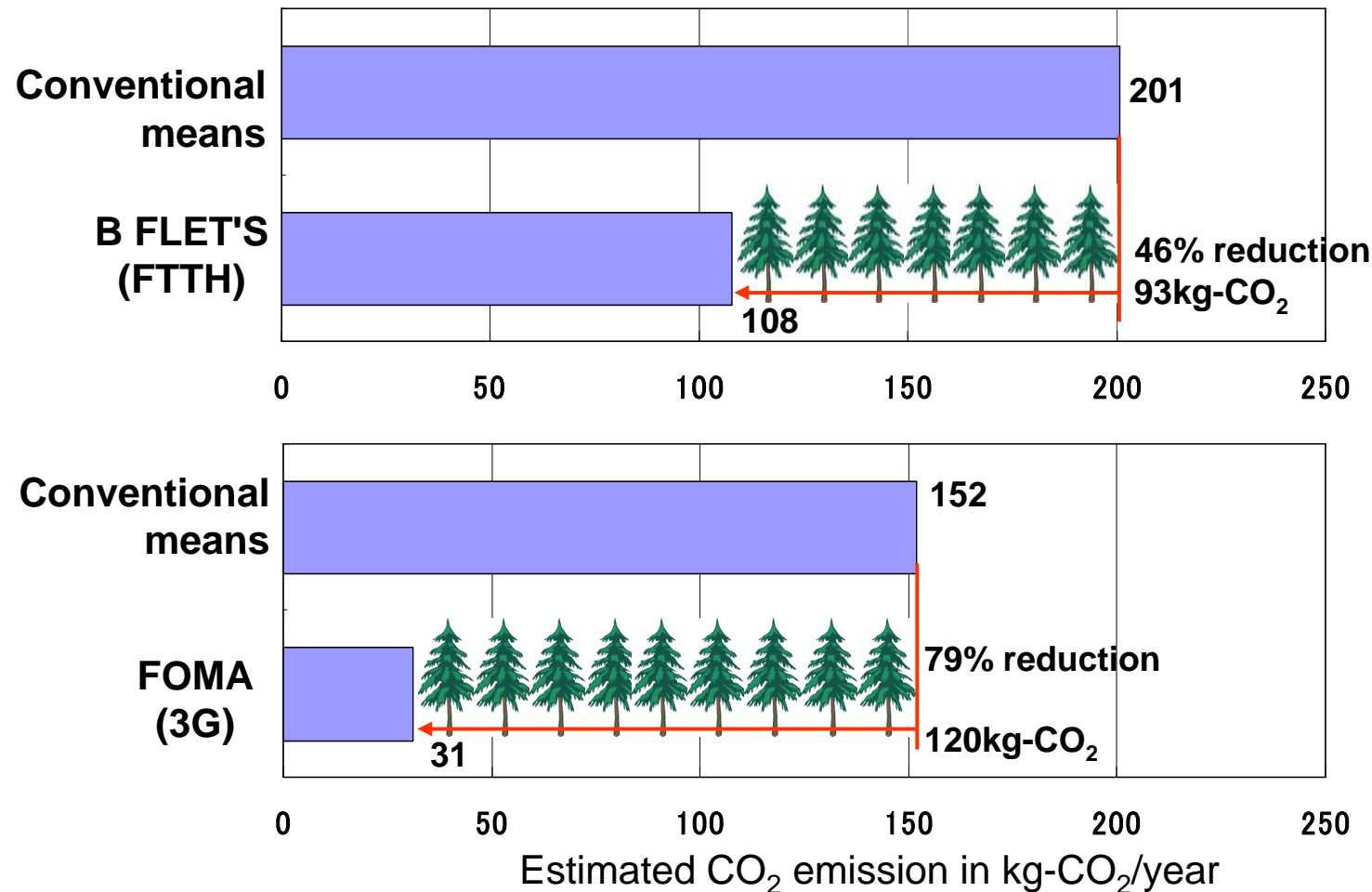
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Effect of ubiquitous broadband services on reducing environmental impact

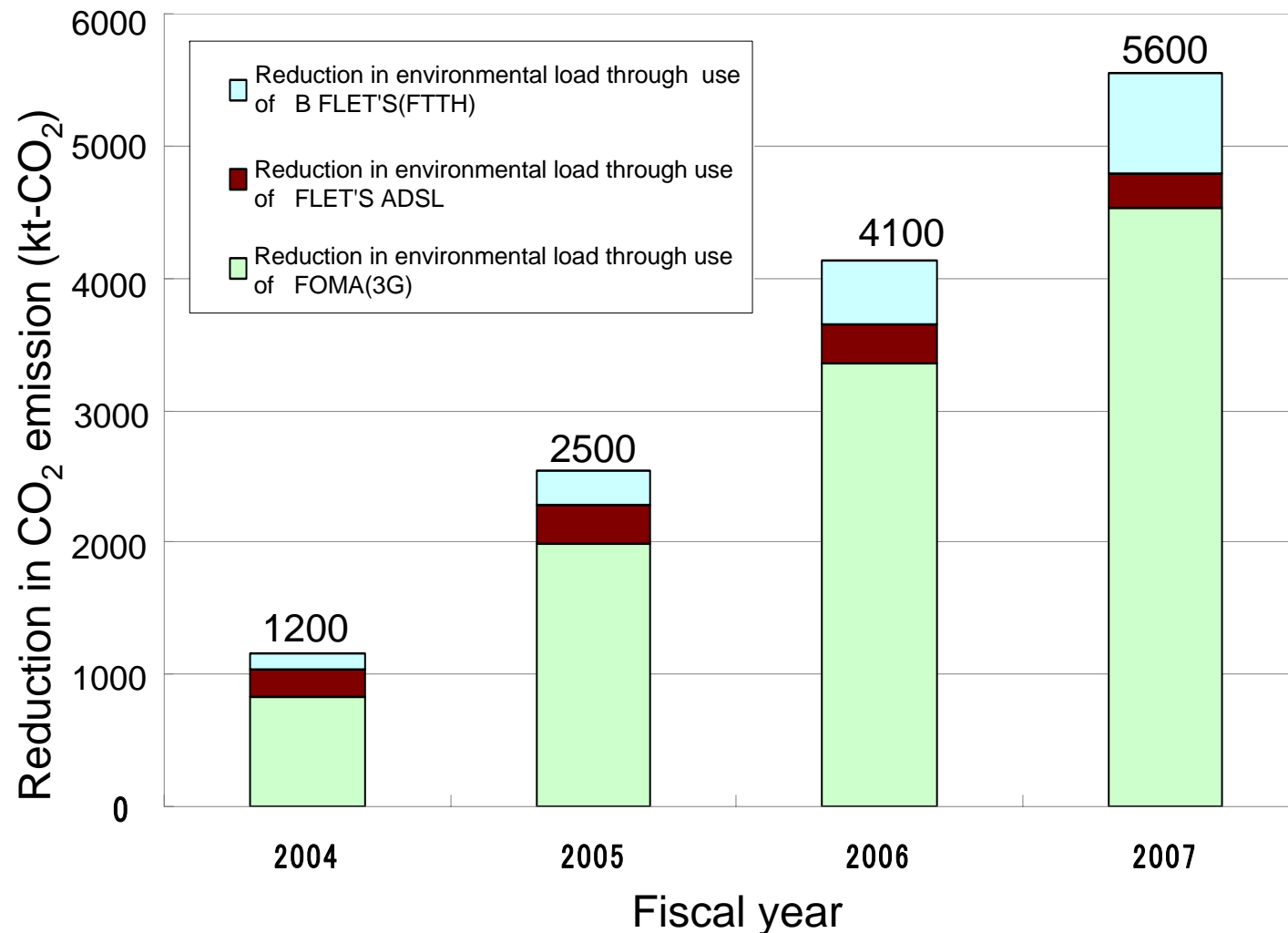
Green by ICT: LCA

Estimated annual CO₂ emission per subscriber line
when B FLET'S(FTTH) and FOMA(3G) are used



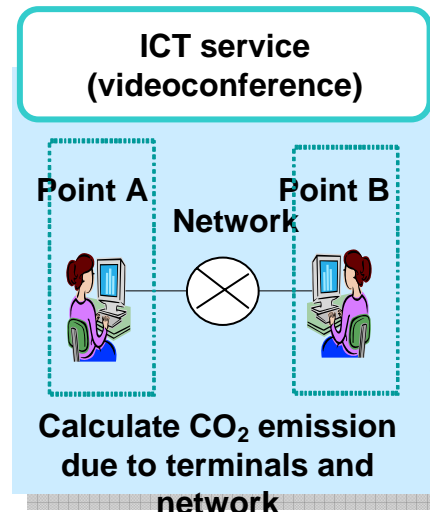
Reduction in environmental load (CO₂) through the use of NTT Group's services

Green by ICT



Environmental Impact Assessment System for ICT Services

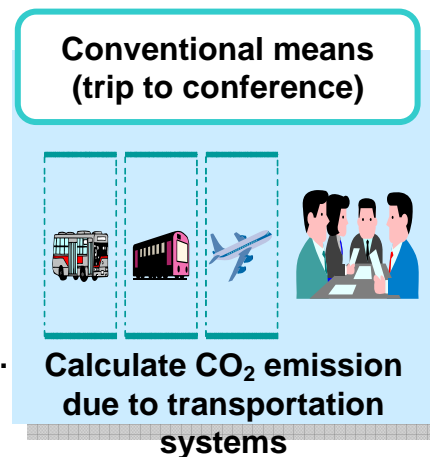
- Assesses environmental load in terms of CO₂ emission
- Estimates CO₂ emission for entire lifecycle from production, to use and disposal
- Can be used to publicize how ICT services can reduce environmental impact.



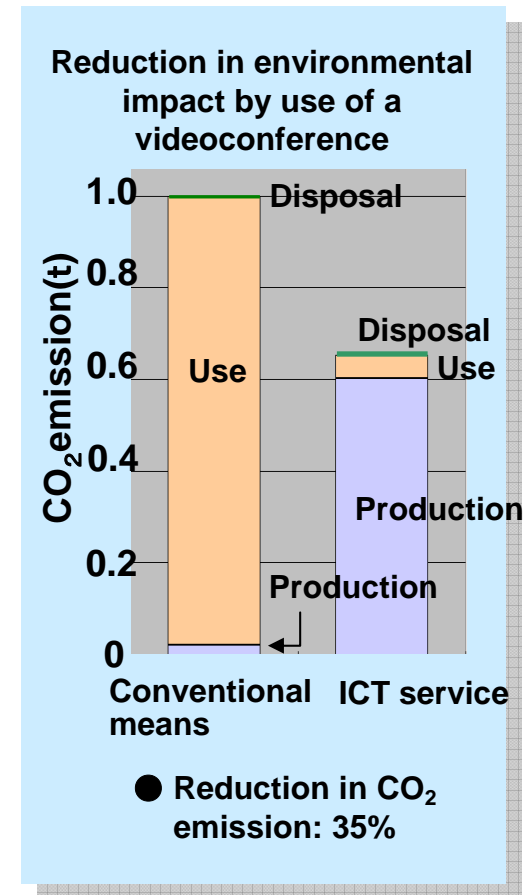
Input network used and conference duration

Calculation results

This system



Input travel distance



Assumptions:

12 conferences are held between Tokyo and Osaka a year.
The transport used for face-to-face conference is by "Shinkansen", bullet train.

Number of persons traveling: 2 Conference duration: 2hours

Discussions (1/2)

How can a telecom carrier like NTT help, along with society and businesses, to create a sustainable future ?

- Despite higher electricity consumption due to the spread of ICT devices, ICT services can reduce overall CO2 emissions by boosting the efficiency of production processes, reducing demand for transportation and delivery, and reducing the need for production of physical media such as books, CDs, and DVDs by enabling the downloading or streaming of content.
- The use of ICT services in Japan during fiscal 2013 will result in reducing CO2 emissions of 38 million tons, which is equivalent to 3.0% of Japan's fiscal 1991 CO2 emissions.
- We believe that new services on NGN, such as high definition TV video conferencing services and Software as a Service (SaaS)-based applications will enable environmentally conscious customers to reduce the environmental impact of their businesses.

Discussions (2/2)

- In order to reduce CO2 emissions in the future, it is essential to evolve our lifestyles through the comprehensive utilization of ICT.
- To estimate the effectiveness of these behaviors, CO2 reduction by using ICT will have to be made visible. This requires a common methodology for evaluating the effects of CO2 emissions reduction on a global basis.
- We are hoping that the necessary recommendations on the methodology will be developed as quickly as possible.

Thank you for your attention.