MIC
Ministry of Internal Affairs and Communications

Measuring the Impact of ICTs on Climate Change

4 December, 2008

Ministry of Internal Affairs and Communications
Japan

Basic Idea for the Impact of ICTs on Climate Change

- ICT itself produces CO_2 emissions through consumption of electric power to operate equipment / systems.
- On the other hand, ICT usage can contribute to a reduction in CO_2 emissions through:
  - Improvement of energy efficiency
  - Improved efficiency in production and consumption of products
  - Reduction of movement of people and products
- Environment measurement and predictions using ICT are also possible.

Examples

Energy efficiency
- ITS(Intensive control of ETC, VICS, and traffic lights)
- BEMS(Building energy management system)
- HEMS(Household energy management system)

Reduction of movement of people and products
- Online shopping, online trading
- Telework, TV conferencing
- Music, video, and software distribution
- e-application (tax declaration, online receipt)

Efficiency in production and consumption of products
- Supply chain management
- e-publication and distribution
- Paperless office

Measurement and predictions of environment
- Radar for measuring CO_2
- Sensing network
- Global simulator

We can contribute to tackling global warming issues by promoting spread of ICT use

Study group on ICT policies to tackle global warming issues

As global warming issues become ever more serious, the MIC has set up a **"Study group on ICT policies to tackle global warming issues".**
The group's purpose is to investigate how ICTs can have a positive impact in global warming issues.

Subjects

(1) Estimation of possible effects of ICTs on CO_2 emissions and power consumption in the near future

(2) Deliberation on ways to realize further CO_2 emissions reduction through ICTs

(3) ICT research and development that contribute to CO_2 emissions reduction.

(4) International contributions in the ICT field, as a response to global warming.

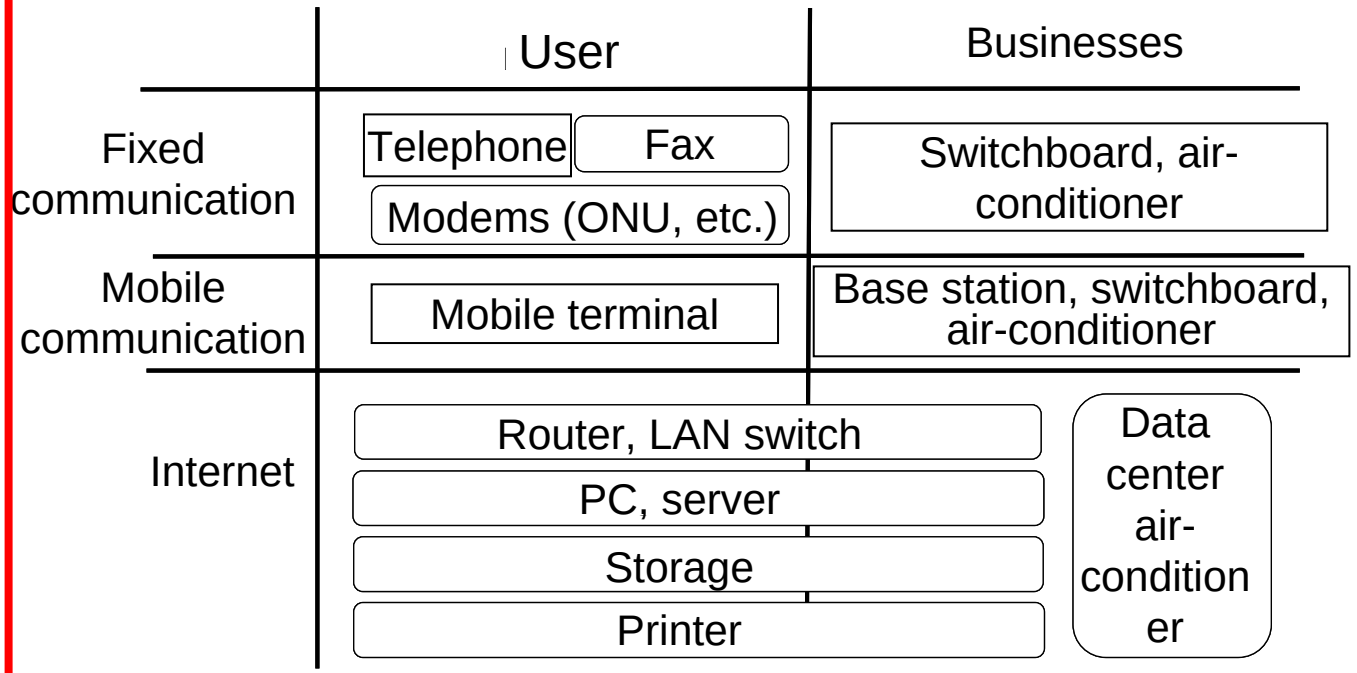
Estimation of total reductions in CO_2 Emissions by utilizing ICT
□□□Method of Evaluation

Total reduction in CO_2 emissions by utilizing ICT = **Effects of reductions in CO_2 emissions by utilization ICT** − **CO_2 emissions by ICT**

Effects of reductions in CO_2 emission by utilization of ICT

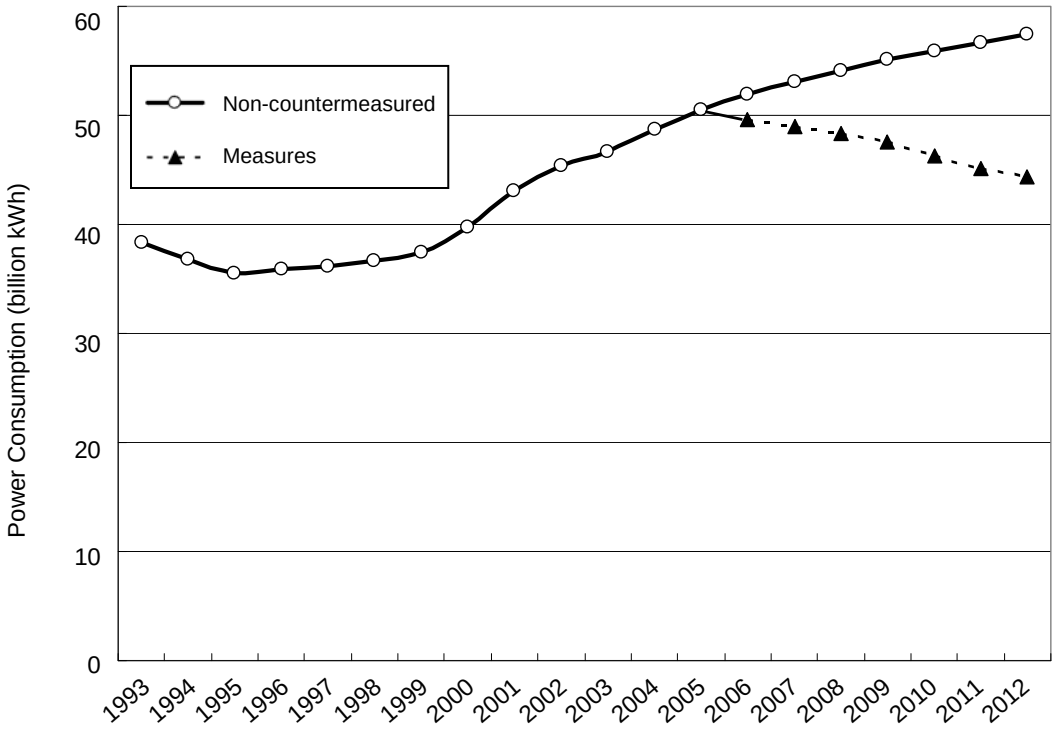
Effect
(1)Consumption of products
(2)Power consumption/energy consumption
(3)Movement of people
(4)Movement of goods
(5)Improved efficiency of office space
(6)Storage of goods
(7)Improved work efficiency
(8)Wastes

Subject of power Consumption calculation

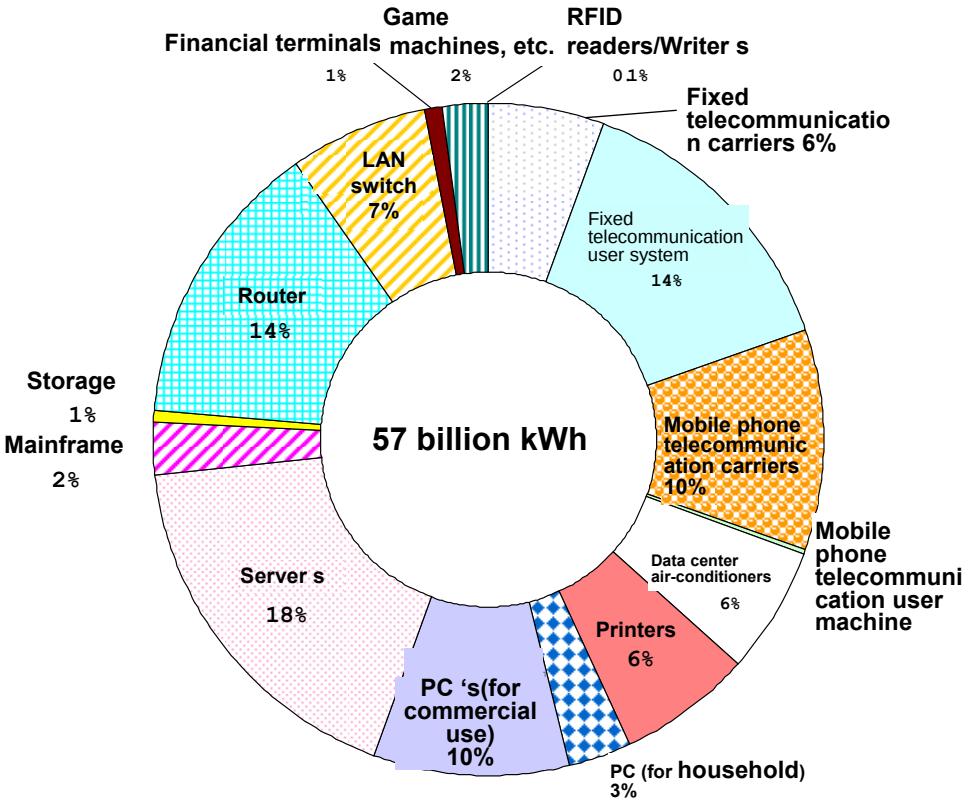


Estimation of total reductions in CO_2 Emissions by ICT

(2)-1 Power Consumption in ICT Field (Telecommunication)



<Power consumption in telecommunication field>



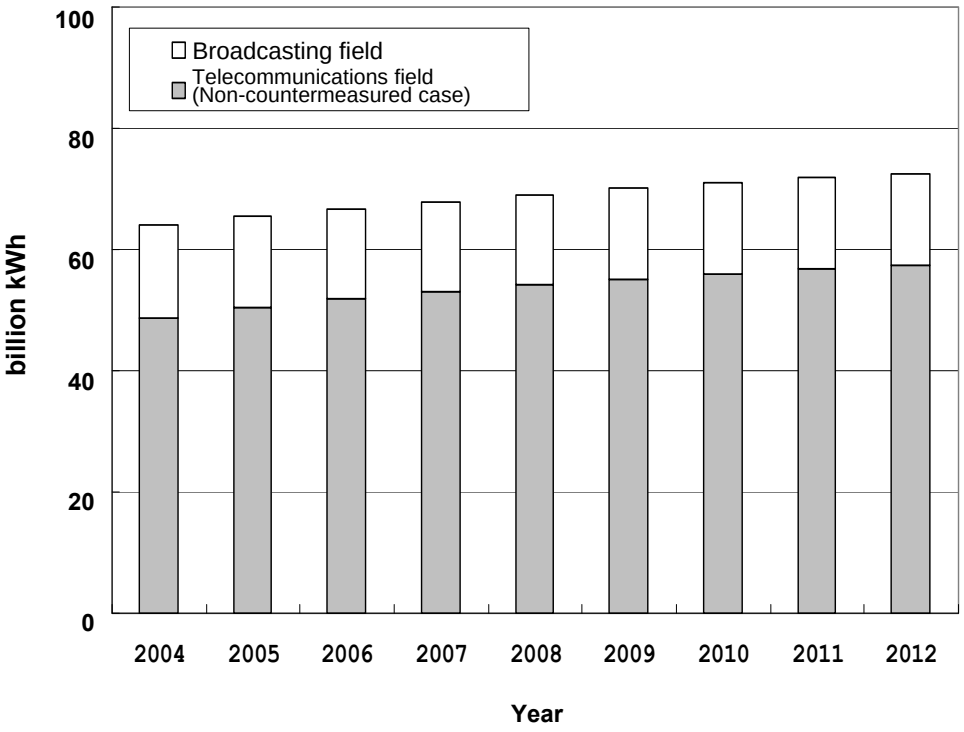
<Breakdown of power consumption in telecommunication field in 2012 (Non-countermeasured cases)>

Power consumption in the telecommunications field in 2012 is estimated to be 57 billion kWh (However, estimated at 44 billion kWh when energy saving measures are implemented)

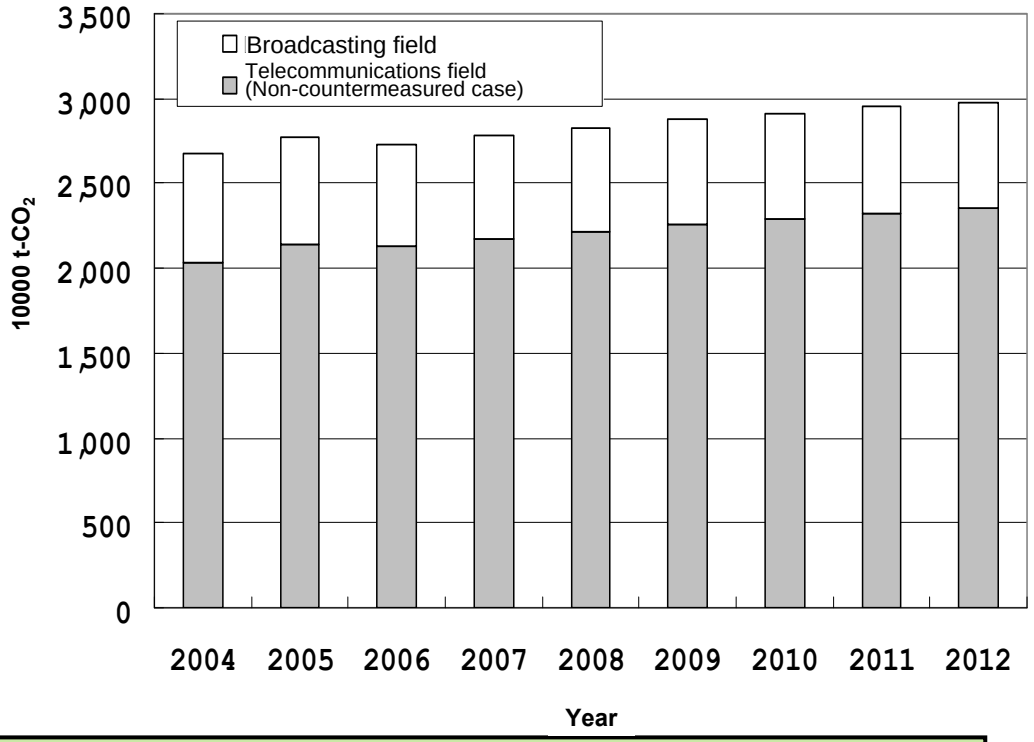
Estimation of total reductions in CO_2 Emissions by ICT

(2)-2 Power Consumption and CO_2 Emissions in ICT Field

<Power consumption of overall ICT field>



<CO2 emissions of overall ICT field>



It is estimated that in 2012, 73 billion kWh power will be consumed and 300 million tons of CO_2 will be emitted in the whole ICT field combining telecommunication field as well as broadcasting field. (Equivalent to 2.4% of CO_2 emissions in Japan in 1990)

* For the conversion from power consumed to CO_2 emitted, the CO_2 emissions basic unit values announced by the Federation of Electric Power Companies of Japan each year are used. Between 2007 and 2012, the 2006 value of 0.410 kg–CO_2/kWh is used.

Estimation of total reductions in CO_2 Emissions by ICT

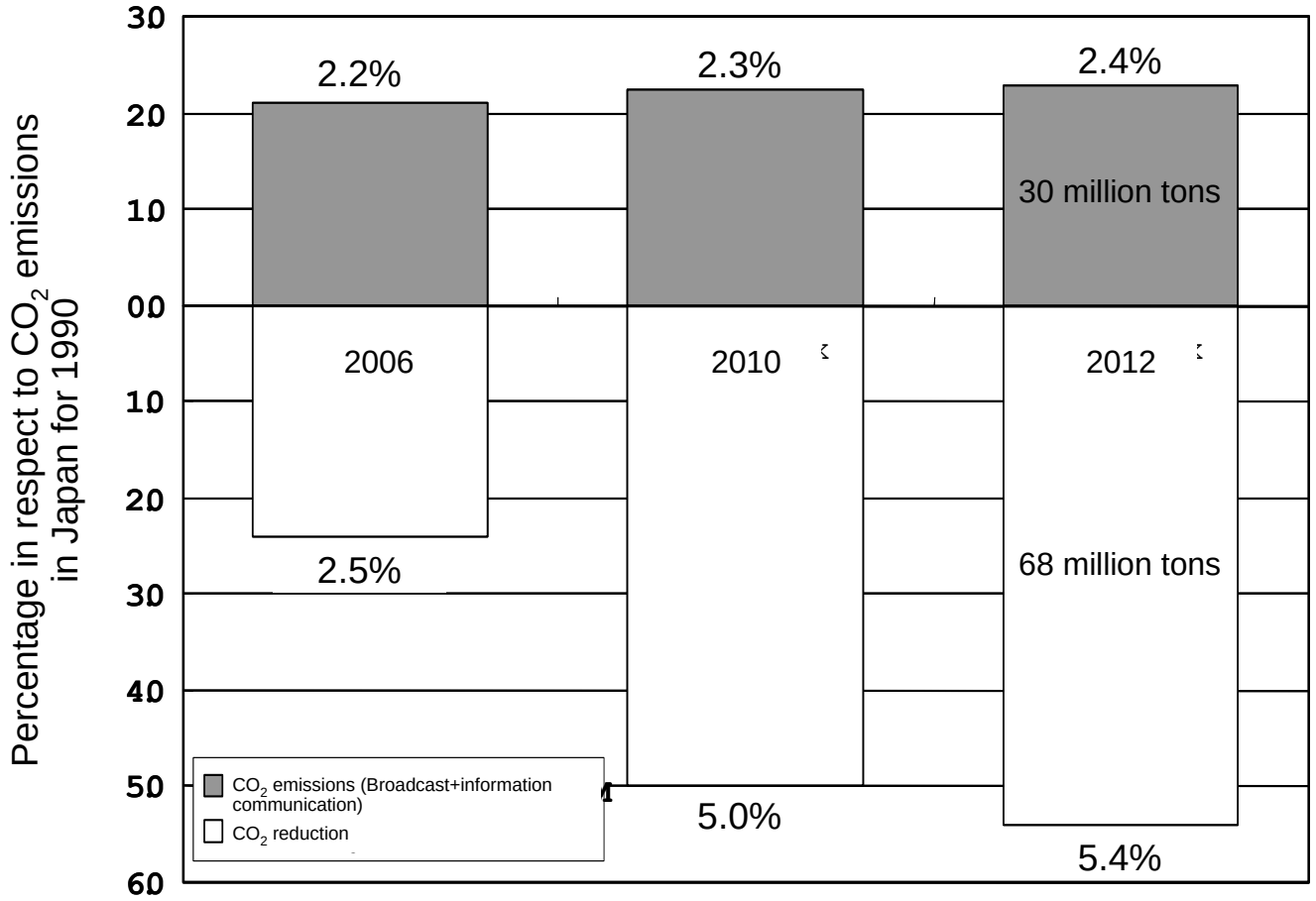
(3) Reduction in CO2 Emissions by utilizing ICT

ICT areas and examples of ICT exploitation that we selected for calculating CO_2 emissions reduction

Areas	Examples of ICT exploitation
e-trade for individuals	Online shopping / Issuance of online air tickets / Purchase of tickets at convenience store / Installation of automatic Cash Dispensers
e-trade for corporate business	Online transactions / Supply chain management / Reuse market
e-digitization of substances	Music content / Visual content / PC software / Newspapers and books
Movement of people	Telework / TV conferences / Remote control
Advanced road traffic system	ITS
e-government and e-municipality	e-tenders / e-applications (tax filing) / e-applications (online receipt)
Energy control	BEMS, HEMS

Estimation of reductions in CO_2 Emissions by utilization of ICT

(8) Results



Subtract Contributes to CO_2 emissions reduction of 38 million tons (3.0%)

In 2012, 30 million tons of CO_2 are expected to be emitted in the ICT field, but the use of ICT will produce CO_2 reduction effects of 68 million tons, contributing to CO_2 emissions reduction of 38 million tons (Equivalent to 3.0% of 1990 CO_2 emissions in Japan)

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

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Thank you.