

Consideration concerning the standardization of estimating method for environment impacts through ICTs

Kick-off presentation concerning Methodology
for Focus Group on
"ICTs and Climate Change"

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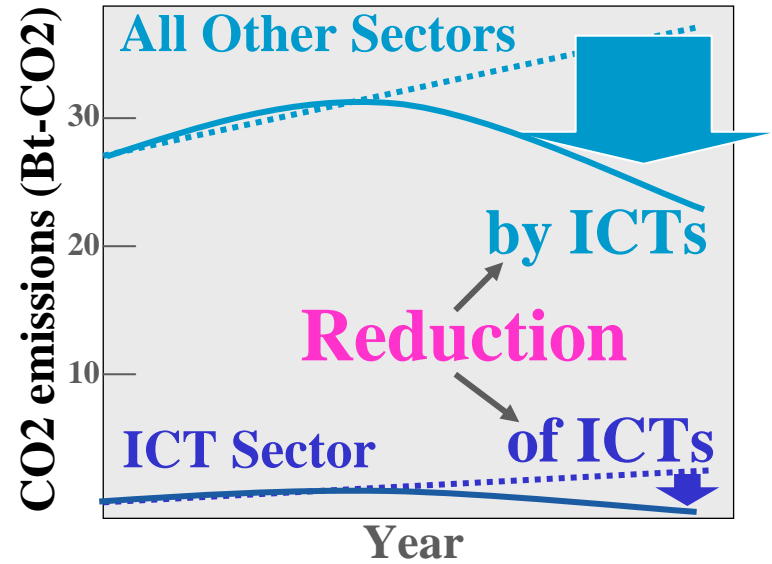
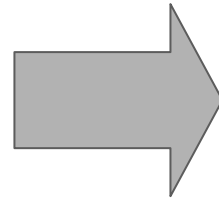
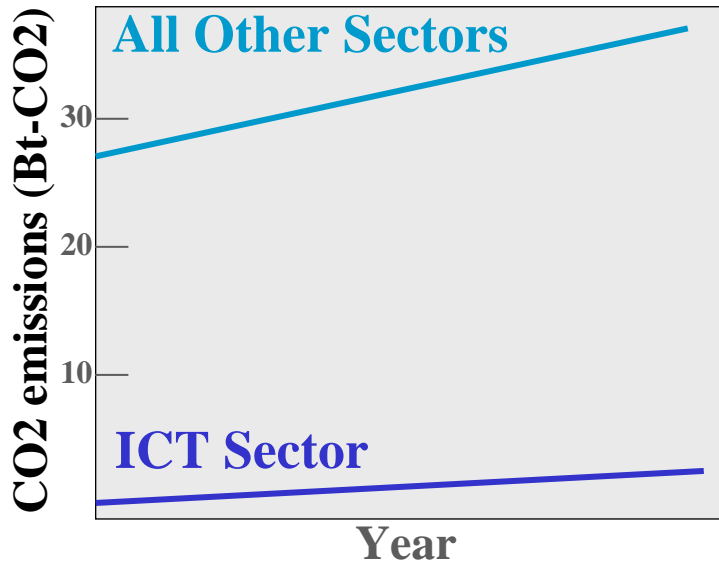
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Purpose of Standardizing the Calculation Method

- For standardizing to quantitatively calculate the energy reduction through the use of ICTs.
- To enable ICT users to quantitatively show their contribution when they use ICTs so that they can include the contribution in their CO2 reduction activities.
- To clarify the contribution of the ICT sector in other sectors. This will make it possible to study
 - (1) specific measures using ICTs to combat global warming
 - (2) the use of ICTs as a CO2 reduction measure in CDM

Basic Concept



CO2 reduction of All Other Sectors by ICTs

The energy consumption reduction through the use of ICTs is defined as the following.

Energy consumption
reduction

=

Reduction effect of energy
consumption by utilizing ICTs

-

Energy consumption
through the use of ICTs

Energy Consumption Reduction Effect by Utilizing ICTs

Category	Effects
Consumption of goods	By reducing goods consumption (consumption of paper etc.), energy consumption related to goods production and disposal as well as waste generation can be reduced.
Power consumption/energy consumption	By enhancing the efficiency of power and energy use to reduce consumption, energy consumption related to power generation, power transmission, etc. can be reduced.
Movement of people	By reducing the movement of people, energy consumption required for transportation means can be reduced.
Movement of goods	By reducing the movement of goods, energy consumption required for transportation means can be reduced.
Improved efficiency of office space	By using office space efficiently, power consumption for lighting, air conditioning, etc. can be reduced, thus reducing energy consumption.
Storage of goods	By reducing storage space of goods, power consumption for lighting, air conditioning, etc. can be reduced, thus reducing energy consumption.
Improved work efficiency	By enhancing work efficiency, resource and energy consumption can be reduced.
Waste	By reducing waste emissions, energy consumption required for environmental preservation as well as for waste disposal etc. can be reduced.

Energy Consumption through the Use of ICTs

■ Today, energy consumption is increasing through the use of ICT systems, and it includes resources and energy consumed in the process, such as the production and installation of ICT devices and networks, electric power consumed in their use stage, and energy consumed in the process of their disposal and recycling.

Issues of CO2 Emissions Calculation Aiming to Realize International Standardization

Q: How much CO2 is emitted by the power consumption of 1 kWh?

- (1) 100 g
- (2) 400 g
- (3) 900g

All are correct answers

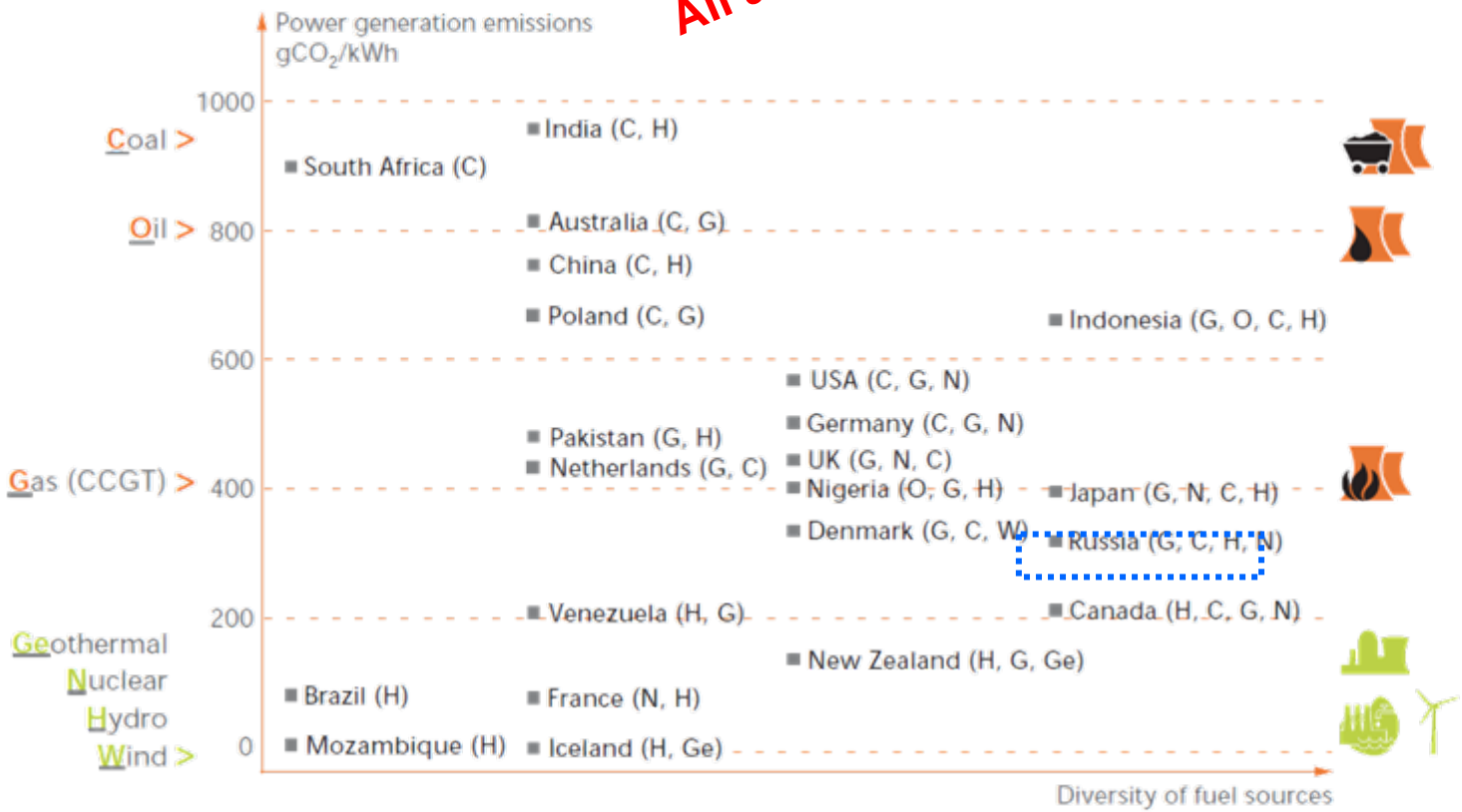
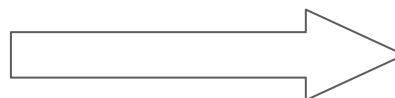


Figure 4: CO₂ intensity of various types of power generation and the current intensity in a range of countries (year 2000 data, electricity and heat generation including auto producers). Fuel sources for each country are ranked in order of importance, with those contributing less than 10% not identified.

Source: WBCSD adaptation of IEA 2003 and CIA 2004

Procedure for Calculating CO2 Emissions Reduction

**(1) Calculate energy
consumption reduction
through the use of ICTs**



**(2) Convert into CO2
emissions reduction**

**Use CO2 emission intensity
reflecting the situation in
each country.**

- Since CO2 emissions even by the same power consumption significantly vary depending on the method of power generation, energy (J) consumption reduction shall be calculated first, and then the energy consumption reduction is converted into CO2 emissions reduction reflecting the situation in each country.



Basic Policy for Calculating Energy Consumption Reduction (Common Usage)

- The functional unit:
Same before and after the introduction of ICT
- The evaluation period:
One year.
- The lifecycle for evaluation:
Include production, use, and disposal stages
- If equipment is shared among services, energy consumption shall be appropriately allocated if possible.
- Immediate energy consumption reduction effect, the energy consumption reduction effect shall include the reduction effect expected due to a change in the social structure in accordance with the progress of ICT.
→ Reduction potential effect (Refer to Next Slide)

Reduction Potential Effect

Video conference



Energy consumption through the use of ICTs

Conference on a trip

Reduction effect of energy consumption



Reduction Potential Effect



Basic Policy for Calculating Energy Consumption Reduction (Energy Consumption Reduction Effect by Utilizing ICT)

■ The energy consumption reduction effect by utilizing ICT can be generally calculated according to the following formula if the consumption of goods/services by utilizing ICT can be identified.

Energy consumption
reduction effect

=

Consumption of
goods/services provided
to the environment

×

Unit energy consumption
when one unit of goods/
services is consumed

Example of Calculation Formula for Energy Consumption Reduction Effect by Utilizing ICT

(1) Consumption of goods (Paper, CDs, DVDs, etc.)

(Energy reduction) = (Energy consumption to produce one unit
of the product) × (Amount reduced)

(Ex. Reduction of paper: (Energy to produce paper (A4 size, 1
sheet) (J)) × (Quantity reduced (Sheets))

Basic Policy for Calculating Energy Consumption Reduction (Energy Consumption through the Use of ICTs)

■ The energy consumption through the use of ICTs can be generally calculated according to the following formula if the amount used by the device/network (NW) can be identified.

Energy
consumption

=

Amount used by
the device/NW used

×

Unit energy consumption when one
unit of the device/NW is used

Calculation Formula for Energy Consumption through the Use of ICTs

ICT device

(Energy consumption)
= (Unit energy consumption for each type of device) × (Amount used)

[Ex.

Production of devices for Video conferences:

(Energy consumption to produce one device (J)) × (Number of units used)

Use of devices for Video conferences:

(Electric power to use one device (kW)) × (Time of use (h)) × (Number of units used)]

Network use

(Energy consumption)
= (Energy consumption per amount of use) × (Amount used)

[Ex. Use of networks:

(Allocated energy consumption per line (J)) × (Number of lines used)]

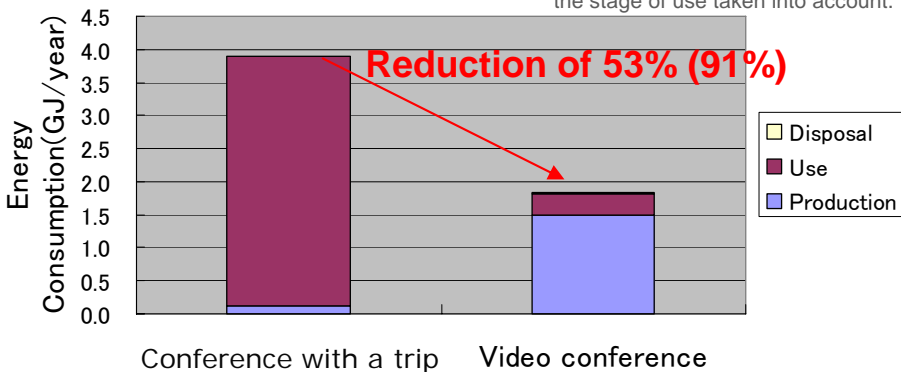
Example of Trial Calculation (Video Conference)

Case 1

Video conference held between Tokyo and Yokohama, **once a week (48 times / year), one hour each time**, participated in by two people from each office

Evaluation Result

The figure in () is based on only the stage of use taken into account.



Case 2

Video conference held between Tokyo and Yokohama, **every working day (240 times / year), eight hours each time**, participated in by two people from each office

Evaluation Result

The figure in () is based on only the stage of use taken into account.

