

Conversion Coefficient

● Calculation of CO₂ emissions

*Heat conversion coefficients

- in and before FY2005 Fuel: Coefficients are used from the "Table of heat generation by energy source" (revised on March 30, 2001) (Agency for Natural Resources and Energy).
Electricity: 9.83MJ/kWh is used from the "Enforcement ordinance of Law Concerning the Rational Use of Energy" (revised on December 27, 2002).
- from FY2006 to FY2009 Coefficients are used from the "Enforcement ordinance of Law Concerning the Rational Use of Energy" (revised on March 29, 2006).
- in FY2010 Coefficients are used from the "Enforcement ordinance of Law Concerning the Rational Use of Energy" (revised on March 31, 2009).

*Carbon dioxide emission coefficients

- in FY1991 It is calculated using the formula below.
Carbon dioxide equivalent (t-CO₂)=carbon equivalent (t-C)×3.664
And coefficients are used from the "Report on survey on carbon dioxide emissions (1992)" (Environment Agency).
- in FY2005 Coefficients are used from the "Guidelines for Calculating Greenhouse Gas Emissions from Businesses" (draft Ver.1.5) (July 2003, Ministry of the Environment).
- from FY2006 to FY2008 Fuel: Coefficients are used from the "Department regulation concerning calculation of greenhouse gas emissions from the business activities of the specified polluters" (March, 2006; the third department regulation of Ministry of Economy, Trade and Industry and Ministry of the Environment).
Electricity: Coefficients are used from the Department regulation above and emission coefficients by electricity supplier for domestic values.
For calculating overseas emissions, coefficients are used from the "Report on estimated survey on carbon dioxide emissions per unit electric generation in electric generation divisions in each country-Ver.3 (June 2006)" (The Japan Electrical Manufacturers' Association).
- in FY2009 Fuel: Utilizes the coefficients stipulated in the Manual for Calculation and Report of Greenhouse Gas Emissions Ver.2.4 (March 2009) (Ministry of the Environment and Ministry of Economy, Trade and Industry).
Electricity: Emission coefficients published by electricity suppliers are used for calculating domestic emissions.
For calculating overseas emissions, coefficients are used from the "Report on estimated survey on carbon dioxide emissions per unit electric generation in electric generation divisions in each country-Ver.3 (June 2006)" (The Japan Electrical Manufacturers' Association).
- in FY2010 Coefficients are used from the "List of calculation methods and emission coefficients for calculating, reporting, and disclosure systems" (revised in March 2010) (Ministry of the Environment and Ministry of Economy, Trade and Industry).
Electricity: The above emission coefficients and those published by electricity suppliers are used for calculating domestic emissions.
For calculating overseas emissions, emission coefficients of the respective countries published in the Greenhouse Gas Protocol Initiative are used.

*Targeted area of calculation of CO₂ emissions

- Only plants and factories of KUBOTA are targets in FY1991. Non-production sites and affiliates also become the targets in and after FY2005. The number of targeted business places is increasing.
- Beginning from the CSR Report 2008, CO₂ emissions from the Residential Housing Materials Division, which was spun off from the KUBOTA Group into a separate company in December 2003, are excluded from the KUBOTA Group's total CO₂ emissions. Accordingly, the amount of CO₂ emissions during FY1991 shown in this report is smaller than the amount disclosed in the past.
- Greenhouse gases other than energy-originated carbon dioxide are newly added to calculation in and after FY2007. But the values which were calculated in and before FY2006 are not recalculated.

*Beginning from 2007, emissions for the period from January to December are shown for HFC, PFC, and SF6.

● Calculation of CO₂ emissions during distribution

*CO₂ emissions per unit ton-kilometer in truck transportation

- in FY2005 It is calculated using the values in the item of "energy consumption to carry a baggage of one metric ton in a distance of one kilometer (in FY2005)" in the "Directory of energy relating to transportation for 2006" (Ministry of Land, Infrastructure and Transport).
- from FY2006 to FY2008 It is calculated using the values in the item of "energy consumption to carry a baggage of one metric ton in a distance of one kilometer (in FY2006)" in the "Directory of energy relating to transportation for 2007" (Ministry of Land, Infrastructure and Transport).
- from FY2009 to FY2010 CO₂ emissions are calculated using the improved ton-kilometer method stipulated in the Manual for Calculation and Report of Greenhouse Gas Emissions Ver.2.4 (March 2009) (Ministry of the Environment and Ministry of Economy, Trade and Industry). (CO₂ emissions = ton-kilometer transported x CO₂ emissions per ton-kilometer (calculated by the improved ton-kilometer method))

*CO₂ emissions per unit ton-kilometer except for truck transportation

- The values are used in the item of "carbon dioxide emissions per ton-kilometer of transportation by transport vehicle" in the "Manual for Calculation and Report of Greenhouse Gas Emissions (Ver.2.4)" (March 2009, Ministry of the Environment and Ministry of Economy, Trade and Industry).

*Targeted area of calculation of CO₂ emissions is gradually expanding.

- Only KUBOTA Corporation non-consolidated is targeted in FY2005. Some subsidiaries and affiliates in Japan also become targets in and after FY2006.