

Greenhouse gas emissions

Greenhouse gases are constituents of the earth's atmosphere that are capable of storing thermal energy. They are considered to be responsible for climate change. The substances in question were subsequently defined in the Kyoto protocol, emission levels were limited and individual countries were assigned corresponding quotas.

Roche supports the targets for reducing emissions specified in the protocol. The goal for reducing energy consumption in GJ/employee by 10% until 2014 (based on the 2009 figures) is linked to a 10% reduction of greenhouse gas emissions per employee accordingly.

The greenhouse gases emitted by Roche consist for the most part of CO₂ from energy generation; less than 1% are halogenated hydrocarbons from refrigeration and cooling plants. These are calculated as CO₂ equivalents by applying the corresponding IPCC conversion factors.

Greenhouse gas emissions and sales are used as indicator variables for calculating Roche's specific contribution to the greenhouse effect. This contribution is stated in t of CO₂ equivalents per CHF 1 million of sales. The value for the reporting year is 24.23, which represents an increase of 6.8% relative to the preceding year, mostly due to currency effects (our sales being reported in Swiss Francs).

Over the years the trend shows that CO₂ emissions follow a largely parallel course to energy consumption.

Specific contribution to the anthropogenic greenhouse effect in the Roche Group

	2007	2008	2009	2010	2011
CO ₂ emissions from combustion (t)	1 043 868	1 053 502	1 039 731	1 070 794	1 023 521
CO ₂ equivalents from emissions of halogenated hydrocarbons ¹ (t)	8 539	8 612	13 387	6 507	7 092
Total CO ₂ equivalents (t)	1 052 407	1 062 114	1 053 118	1 077 301	1 030 613
Sales (CHF million)	46 133	45 617	49 051	47 473	42 531
CO ₂ equivalents (t) / CHF 1 million sales	22,81	23,28	21,47	22,69	24.23

¹ Average greenhouse potential of halogenated hydrocarbons, calculated using IPCC conversion factors.

Besides affecting the climate halogenated hydrocarbons containing chlorine (such as CFCs and HCFCs) damage the ozone layer. Therefore a Group directive on the progressive phasing out of CFCs and HCFCs commits us to eliminate them from our cooling and fire extinguishing systems by 2010. However, several projects to replace HCFCs in refrigeration units have been held up by the lack of accepted alternatives in some countries. Additional delays are caused by the acquisition of new operations which are allowed to work towards separate timelines to give them the same time frame as sites involved in the original process.

HFCs (hydrofluorocarbons) and PFCs (perfluorinated carbons), which are often used as replacements to HCFCs and CFCs, do not affect the ozone layer. However, they have considerable global warming potential and/or are persistent. We do not consider them to

be a suitable long-term alternative and we aim to phase out these compounds by 2015. Also here extended timelines apply to newly acquired operations. Appropriate plans are in place and investment projects are being implemented to meet this goal. Since there still exist applications where no alternatives for HFC or PFC refrigerants are available we do not plan a complete phase out. A residual amount of 10% of such compounds is tolerated for the time being.

With a number of phase out projects being completed the inventory of halogenated hydrocarbons decreased by 11.3% relative to the preceding year (including rented and leased buildings).

Emissions totalled 3.9 t and were thus on the same level as in the previous year. Future reductions in the inventory are expected to be accompanied by reduced amounts of emissions.

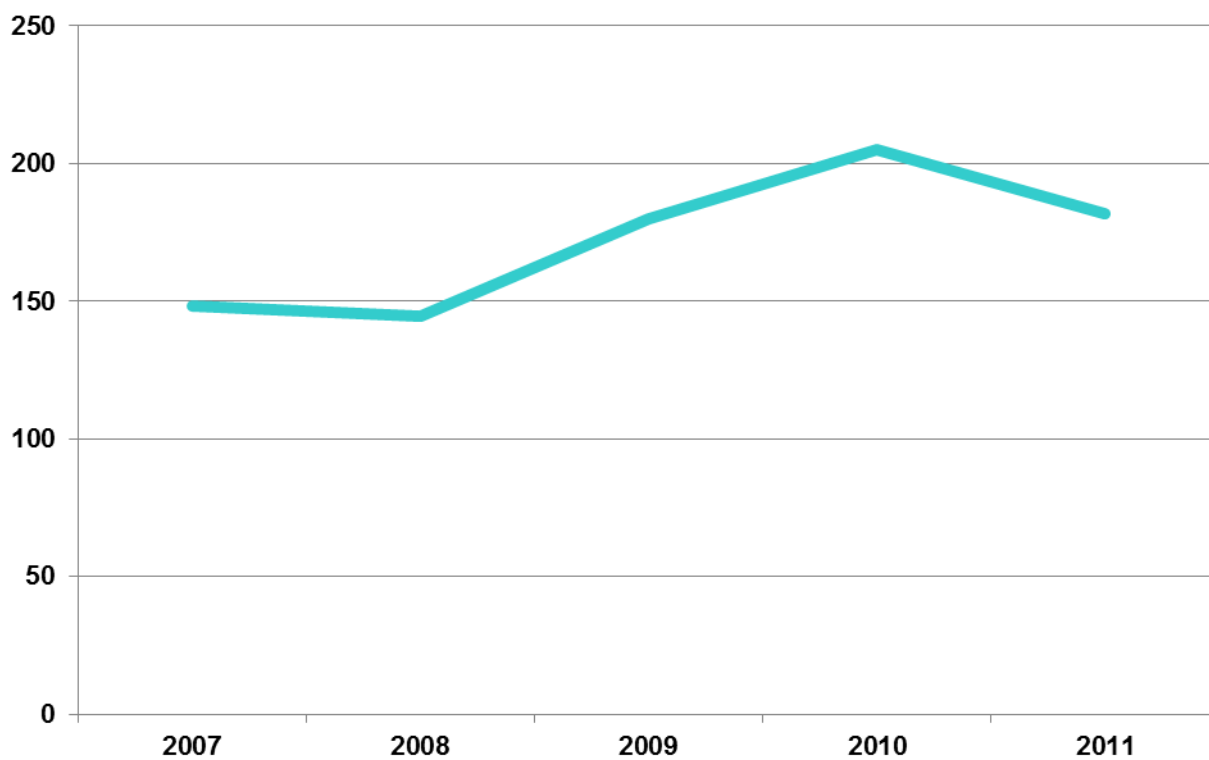
CO₂ equivalents (t) emitted per million CHF sales



Year	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Emissions (t) / mio CHF	26.84	32.46	20.12	15.99	13.37	14.41	113.80	12.48	34.81	30.37
Year	2006	2007	2008	2009	2010	2011				
Emissions (t) / mio CHF	23.31	22.81	23.28	21.47	22.69	24.23				

The trend since 2003 is a reflection of the changes in the system boundaries for collecting key figures. The contributions made by our affiliates Genentech and Chugai have been included since 2004. Energy consumption and greenhouse gas emissions take account of the corporate vehicle fleet and business travel, and imported energy such as electricity has likewise been assigned a CO₂ emission factor.

Inventory of halogenated hydrocarbons (t)

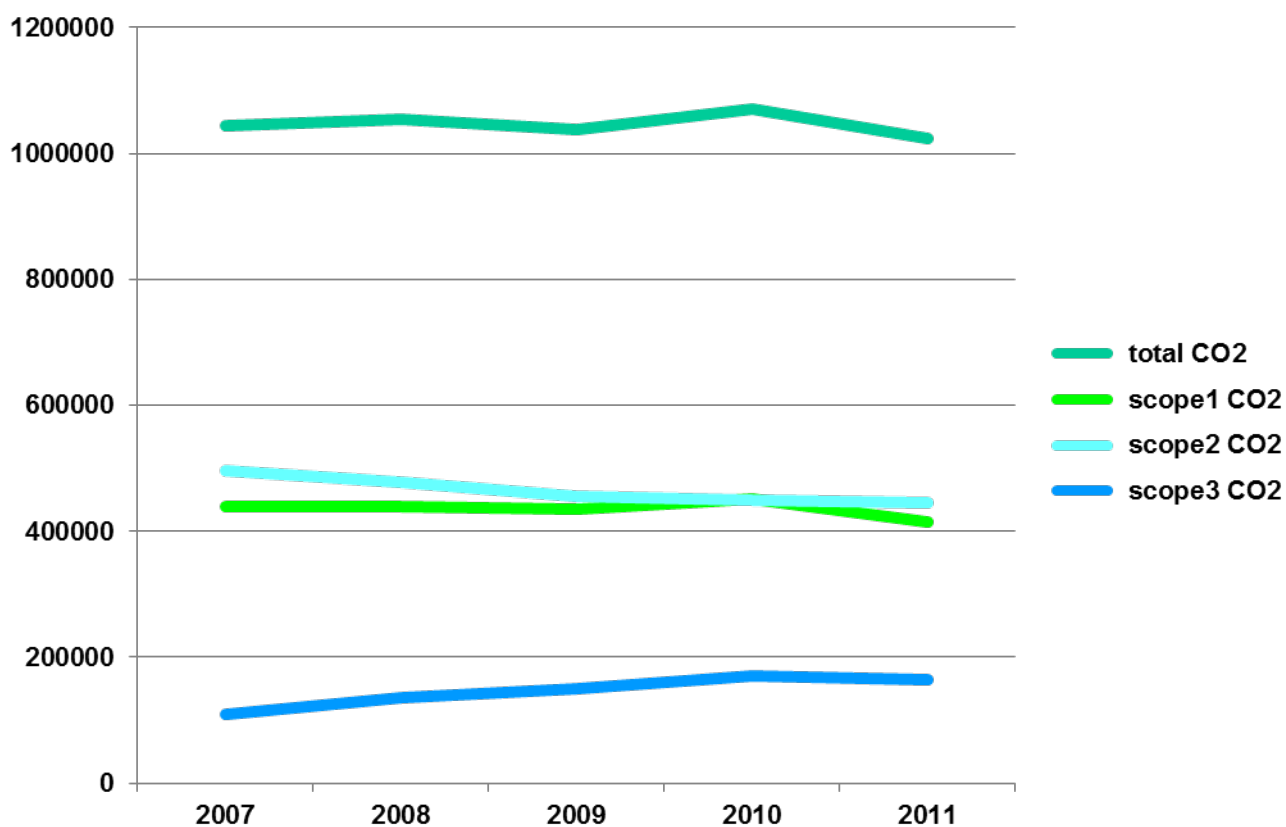


Year	2007	2008	2009	2010	2011
t halogenated hydrocarbons	148.2	144.6	178.0	205.2	181.9

The Greenhouse Gas Protocol

The Greenhouse Gas Protocol, issued in 2004 by the World Business Council for Sustainable Development (WBCSD) and the World Resources Institute (WRI) is meant as a corporate accounting and reporting standard for greenhouse gases. It has been adopted by the Global Reporting Initiative (GRI) as the official standard for the reporting of greenhouse gas emissions. The protocol makes clear distinctions between emissions from sources owned or directly controlled by the reporting entity (scope 1: direct emissions), emissions allocated to purchased energy such as electricity (scope 2: indirect emissions) and other indirect emissions, such as e.g. business travel, that are a consequence of the activities of the company but occur from sources not owned or controlled by the company (scope 3). The following diagram is providing details on CO₂ emissions over the last five years. The total (graph on top) is split into scopes 1,2 and 3.

CO₂ emissions (t) split according to the greenhouse gas protocol



Year	2007	2008	2009	2010	2011
Total t CO ₂	1 043 868	1 053 502	1 038 201	1 070 794	1 023 521
Scope 1 t CO ₂	438 719	439 535	434 101	451 073	419 306
Scope 2 t CO ₂	496 265	477 624	454 527	448 460	443 583
Scope 3 t CO ₂	108 884	136 343	149 573	171 261	160 632

