

## TABLES AND FIGURES CHAPTER 1

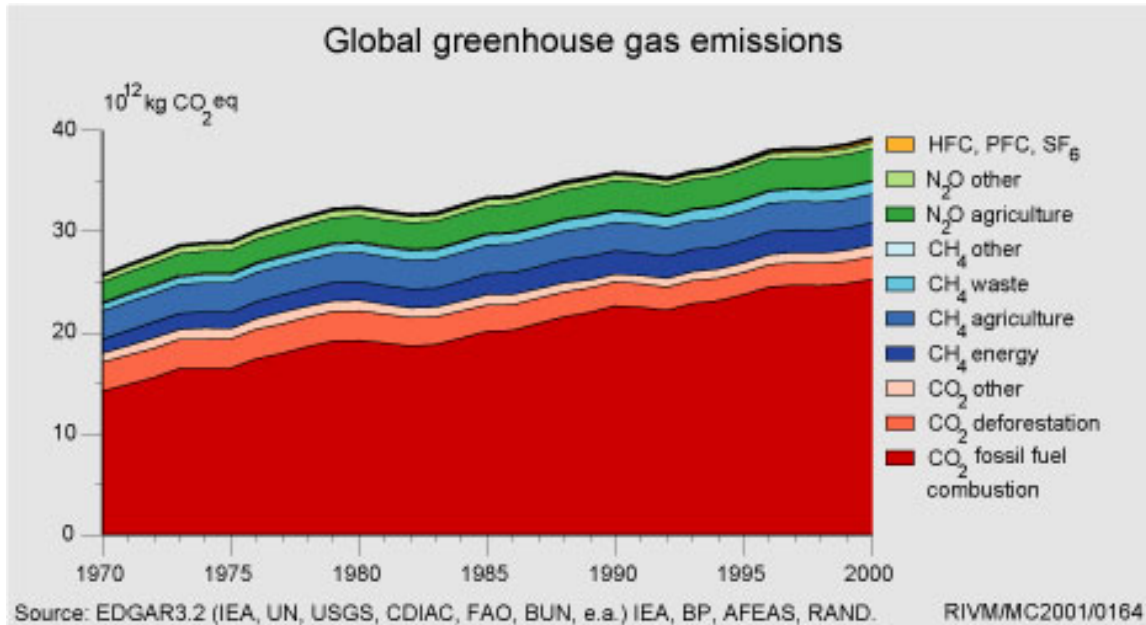
*Table 1.1. Annex I emissions: Average of 1990-1999*

<b>Source</b>	<b>Emissions [%]</b>
Fossil fuel combustion	66.4
Transport	16.9
Industry	3.9
Agriculture	8.2
F gases	1.5
Waste	3.2

Source: Compiled from data <http://ghg.unfccc.int/index.html> and spreadsheet version of <http://unfccc.int/resource/webdocs/2003/03.pdf>. 1990-1999 period used as Russian Federation data from 2000-2002 are not yet included and their exclusion affects the proportions of emissions.

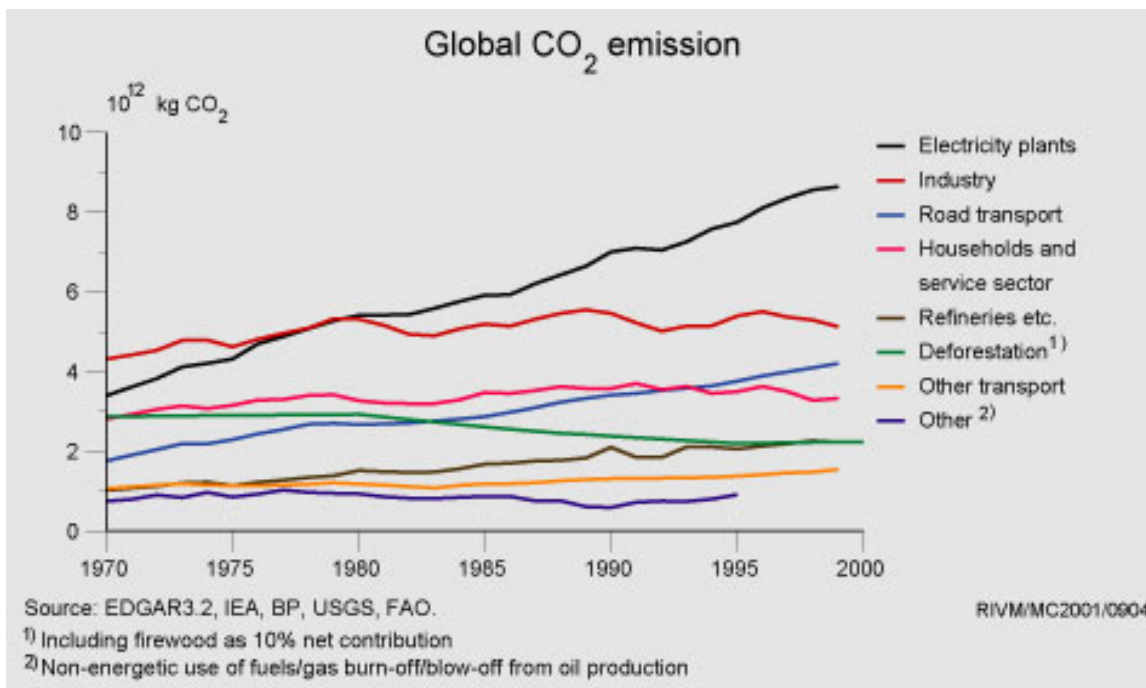
**Table 1.2: Interaction of air pollution and climate change.**

Air Pollutant	Local and regional environmental; effects	Climate system effects	Effects of greenhouse gas mitigation
Sulphur dioxide (SO <sub>x</sub> ) from fossil fuel combustion	Leads to acid deposition and negative effects on ecosystems, agriculture and human health. Can be transported over intercontinental distances affecting the local environment of regions remote from the source (Bard, 1999)	Formation of aerosols which have a cooling effect regionally and globally and can affect precipitation. Regionally changes in rainfall and monsoon behaviour are thought to have resulted from high levels of these kinds of pollutants (Xu, 2001; Menon <i>et al.</i> , 2002)	Reduction fossil fuel emissions leads to reduction in SO <sub>x</sub> emissions with improvements in air quality and large health and other co-benefits (Gielen and Changhong ,2001; Seip <i>et al.</i> , 2001; Anun <i>et al.</i> , 2004). Reduced SO <sub>x</sub> emissions will result in a positive radiative forcing effect on the global climate. Regional climate effects of SO <sub>x</sub> reduction are likely to be complex.
Black carbon (soot) from fossil fuel and biomass combustion.	Adverse effects on human health (Ramanathan and Crutzen, 2003)	Tends to warm the atmosphere regionally and globally. May also contribute to reductions in rainfall (Ramanathan <i>et al.</i> , 2005). Reduction in albedo (reflectivity) of snow is likely due to the deposition of black carbon (Hansen and Nazarenko, 2004; Jacobson, 2004)	Reduction in fossil fuel emissions leads to reduction on BC emissions and substantial health benefits. Reductions in soot emissions also have a large short term climatic benefit as well as substantial health benefits particularly in developing countries (Reddy and Venkataraman, 2002) where there are large emissions from biomass use (Mukherji <i>et al.</i> , 2002).
Carbon monoxide (CO) nitrous oxide(CO) and nitrous oxide (NO <sub>x</sub> ) from fossil fuel and biomass combustion	Local air pollution with adverse effects on human health and crops both directly and through the effect on levels of tropospheric ozone. It has been found that tropospheric ozone transport can occur also over intercontinental distances (Liu and Mauzerall, 2005)	These gases, in particular CO, lead to the formation of tropospheric ozone under conditions that prevail in many polluted areas, and can also affect the lifetime of methane and other gases such as HCFCs that are oxidised in the atmosphere through the effects of atmospheric oxidizing capacity. Hence CO emissions can feedback to further warming via increases to tropospheric ozone and increase to the lifetime of some GHGs	Improved air quality with substantial co benefits and in general a reduction in tropospheric ozone formation and hence a reduction in radiative forcing from this source. Effects on methane lifetime may vary by region.



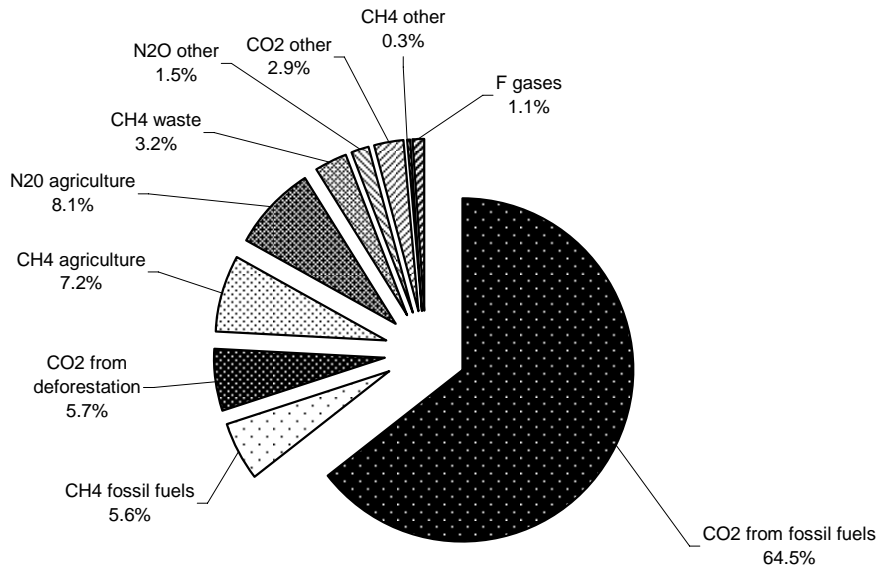
Note: IPCC 1996 100 year greenhouse warming potentials used for conversion of emissions to CO<sub>2</sub>eq.

**Figure 1.1: Global greenhouse gas trends 1970-2000**



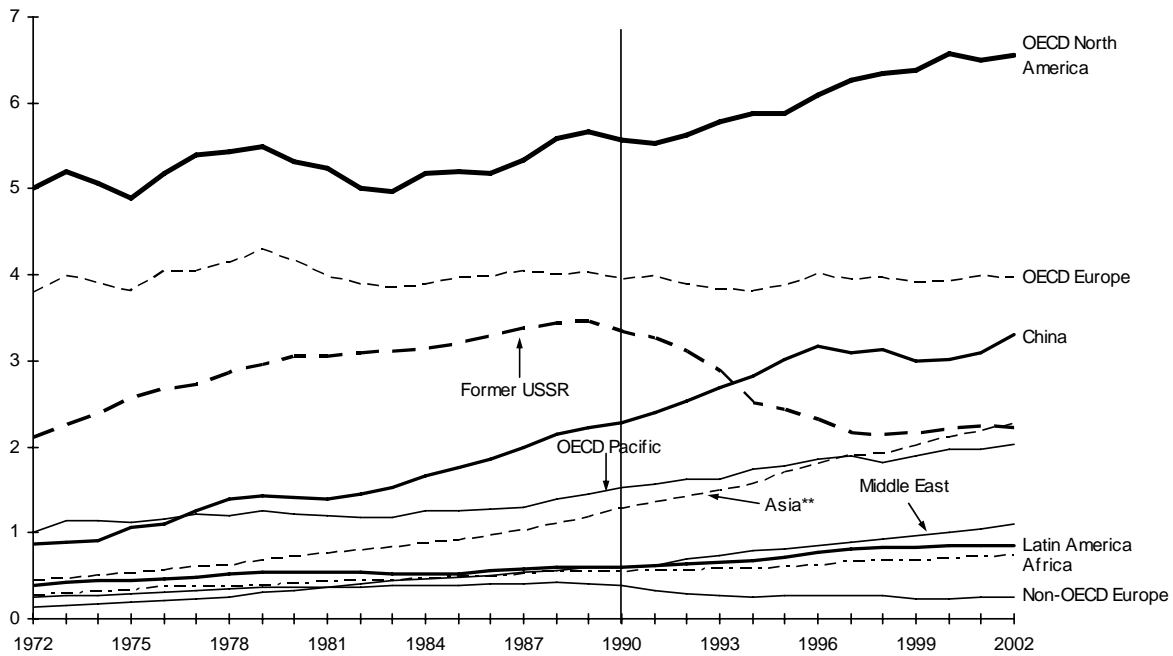
Note: IPCC 1996 100 year GWPS used for conversion of emissions to CO<sub>2</sub>eq.

**Figure 1.2 Sources of Global CO<sub>2</sub> emissions 1970-2000**

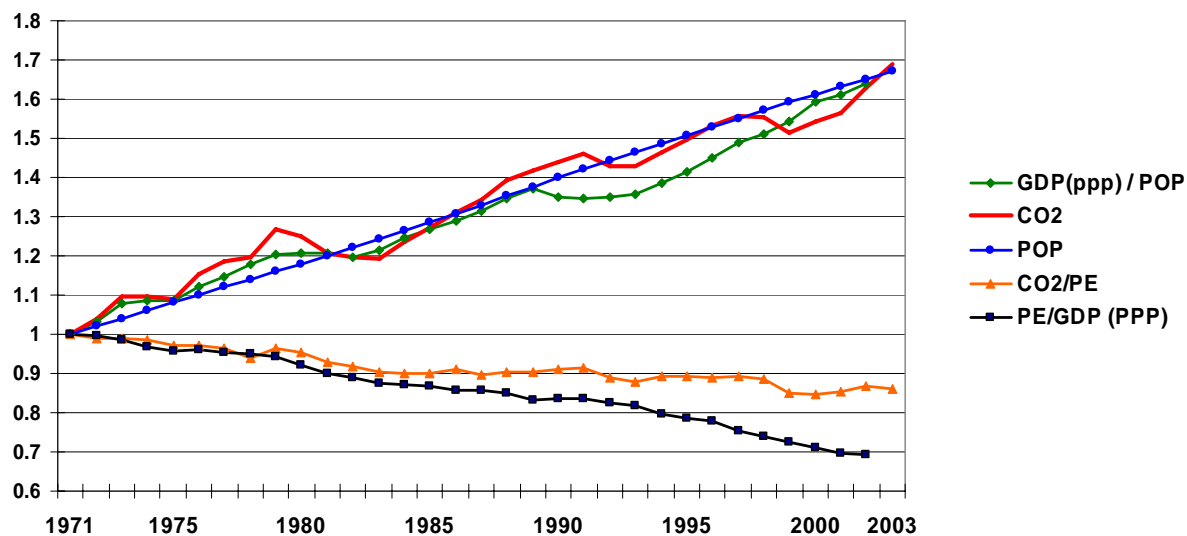


Source: Compiled from Edgar 3 database <http://arch.rivm.nl/env/int/coredata/edgar/>

**Figure 1.3 Sources of greenhouse gas emissions in 2000**



**Figure 1.4: Regional Emissions of CO<sub>2</sub> Emissions from Fuel Combustion, Source (IEA, 2005)**



**Figure 1.5: Gross Domestic Product (GDP) measured in PPP (Purchase Power Parity), Population (POP), Energy intensity (Primary Energy (PE) per GDP) and Carbon Intensity (CO<sub>2</sub>/PE). Sources: - World Bank, Carbon Dioxide Analysis Information Center, International Energy Agency.**