

CLIMATE CHANGE

The Intergovernmental Panel on Climate Change (IPCC) projects that, due to the accumulation of carbon dioxide in the atmosphere, global mean temperatures could increase by between 1.4 and 5.8 degrees Celsius by 2100. The IPCC states that there is compelling evidence that most warming observed in the last 50 years can be attributed to human activity.²⁹



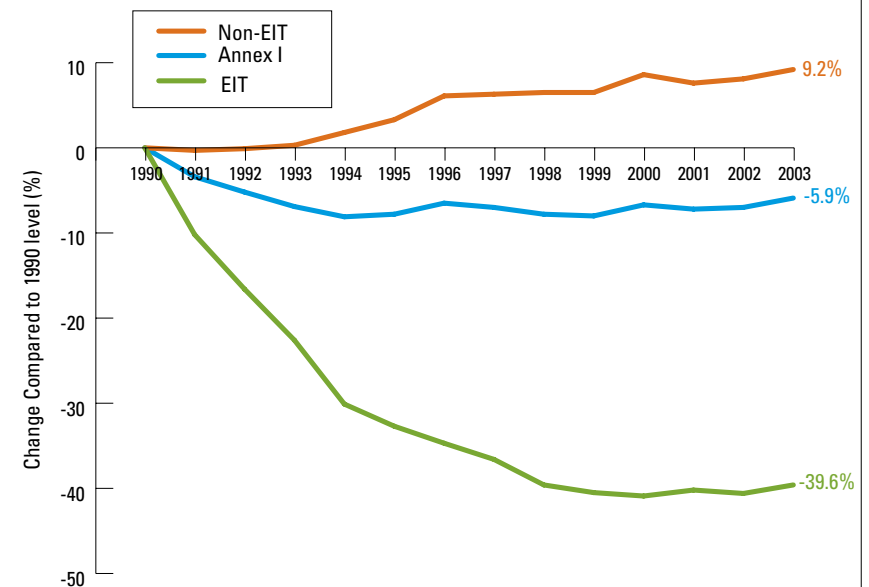
GHG emissions from Annex-I countries decline but largely due to lower emissions from economies in transition

Aggregate greenhouse gas (GHG) emissions for Annex I Parties declined by 5.9% over the period 1990–2003. Total emissions for the 14 Parties with economies in transition (EIT Parties) have decreased by almost 40%, although most of these Parties reported that CO₂ emissions increased from 2000 to 2003. Emissions from other Annex I Parties as a group increased by 9.2%.

“One of the greatest environmental and development challenges in the twenty-first century will be that of controlling and coping with climate change.”

—Kofi Annan,
“In Larger Freedom”, 2005

Changes in GHG Emissions (without LULUCF) from Annex I, EIT & Non-EIT Parties



Note: LULUCF: land use, land use change and forests; EIT: economies in transition.

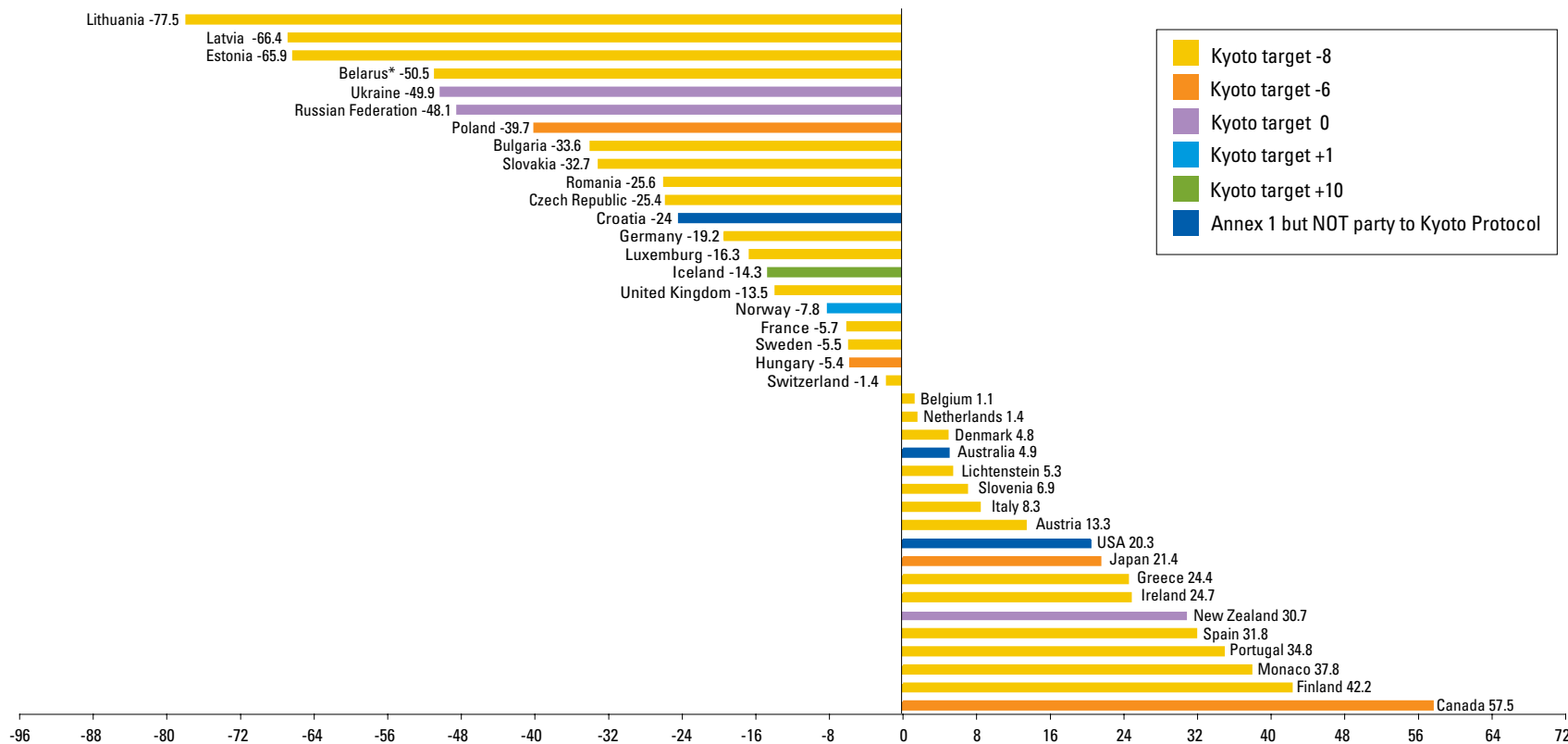
Source: UNFCCC, 2005.

While many countries have made significant progress towards reaching their Kyoto goals, others have far to go

Several non-EIT Annex I Parties, notably in the EU, had individually achieved or exceeded their Kyoto commitments as of 2003. On the other hand, several countries have emissions well above their Kyoto commitments. Of the EU-15, only four countries — France, Greece, Sweden and the UK — have thus far reached their EU target, while Germany is close. ³⁰

Many countries are using innovative policy instruments to reduce GHG emissions in cost-effective ways.

Change in GHG with LULUCF (%), 1990-2003



*Belarus' Kyoto target is -5%

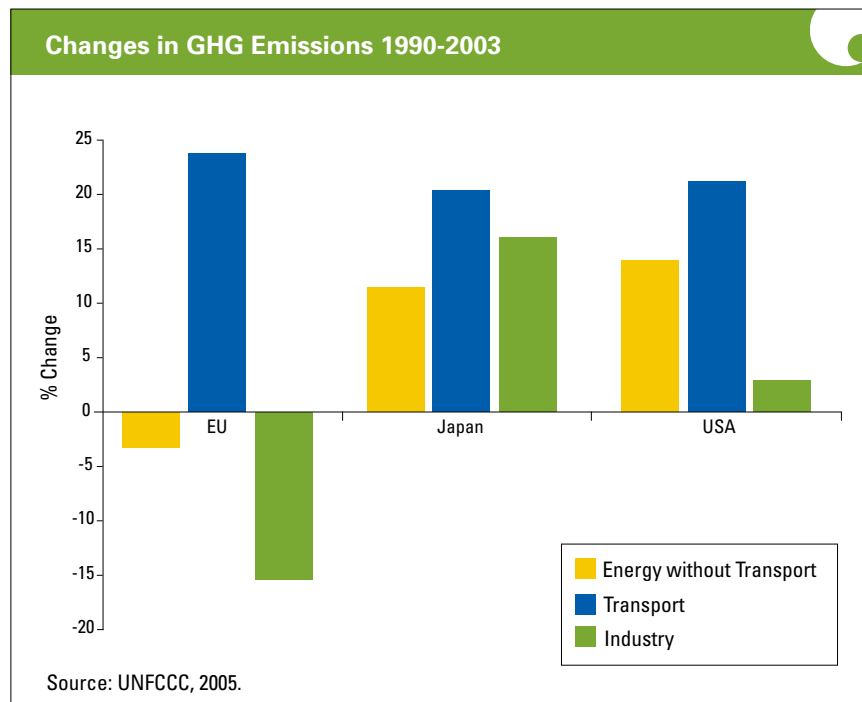
Note: The colours in the legend represent a country's Kyoto Protocol target, while the numbers beside each country indicate the reported % change in greenhouse gas emissions with LULUCF from 1990 to 2003. Hence for example, Lithuania, which has a Kyoto target of -8%, has as of 2003 more than met the target at -77.5%.

LULUCF: land use, land use change and forests; EIT: economies in transition.

Source: UNDESA-DSD based on UNFCCC, 2005.

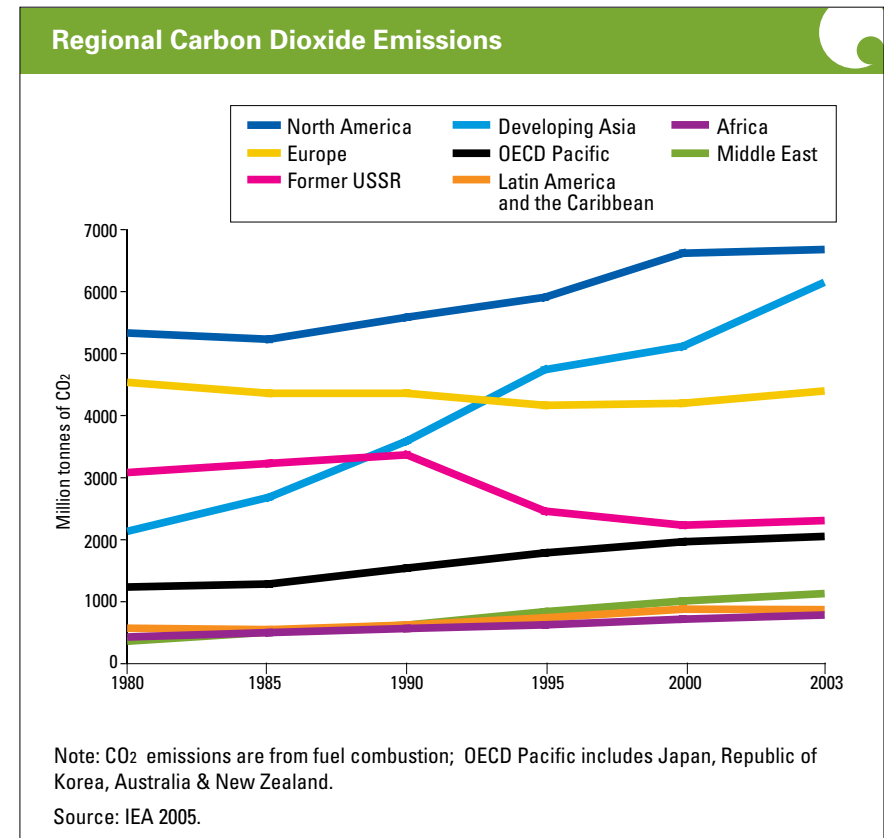
GHG emissions from transport grow fastest of any sectoral emissions

The contribution of the energy sector (including transport) to GHG emissions from Annex-I Parties remained roughly steady between 1990 and 2003, with the share in 2003 standing at 84%. Within that total, however, transport emissions — including from international aviation — have increased substantially (21 and 50%, respectively). Of the three major developed economies — EU, Japan and USA — the first saw the biggest percentage increase in transport emissions, combined with a steep drop in industrial emissions. Agriculture, industrial processes and waste management all saw their shares of overall emissions decline over the period but their rates of decline have slowed.³¹



GHG emissions from North America and developing Asia grow rapidly

Strong economic growth has more than offset any GHG mitigation measures in the United States and Canada, resulting in increased levels of GHG emissions in North America. Meanwhile, rapid growth in the emerging economies of Asia, powered in large measure by coal combustion, has resulted in a tripling of emissions compared to 1980. For some developing countries with large forested areas and high deforestation rates, land-use change represents a much larger net contributor to GHG emissions than energy and industrial processes.³²

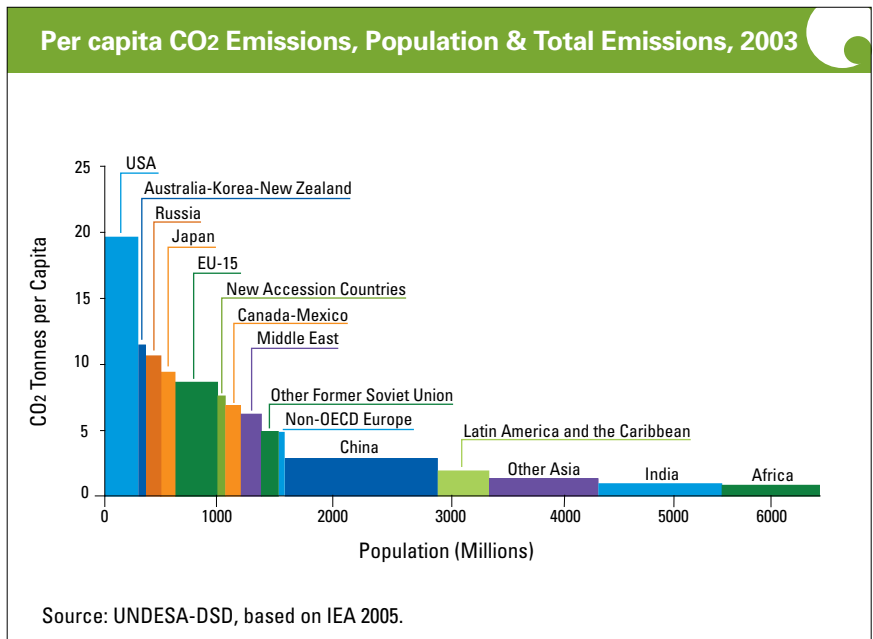
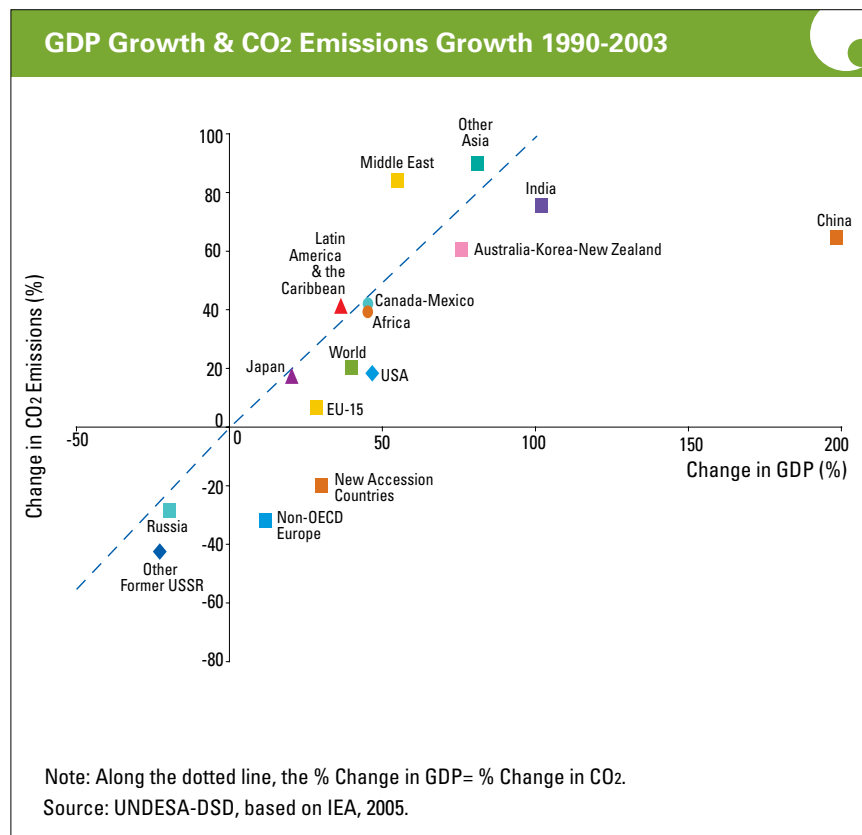


Economic growth in the large emerging economies of Asia has been significantly faster than growth in CO₂ emissions

China and India have thus seen the emissions intensity of their economies fall. In many countries with economies in transition, the decline in CO₂ emissions has been the result of economic decline.

Some high-income countries as well as some middle-income ones have seen their CO₂ emissions rise more rapidly than economic output.

The Latin American and Caribbean region stands out for the combination of slow economic growth and relatively high emissions growth.



Per capita CO₂ emissions vary enormously across countries and regions

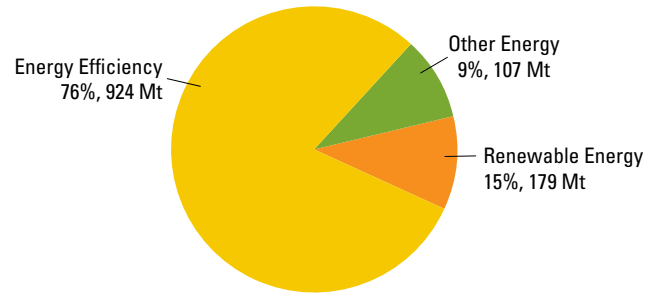
High per capita CO₂ emissions in the United States — twenty-seven times those of sub-Saharan Africa — mean that, even with a population roughly a fourth of China's and a third of India's, it is the world's largest emitter. In China, the combination of a large population and rapid growth of CO₂ emissions in recent years has brought total emissions almost on a par with those of the EU-15. Meanwhile, sub-Saharan Africa's total emissions are roughly on a par with those of Canada and Mexico combined.³³

GEF climate change mitigation projects are making an impact

Over 120 full-scale climate change mitigation projects have been approved by the Global Environment Facility (GEF) since 1991, with GHG reduction goals identified for most. These projects largely aim to abate CO₂ emissions from the energy sector. Estimates are that the GEF climate change portfolio will result in a global environmental benefit of over 1.2 billion tonnes of CO₂ avoided. While the majority of projects funded address renewable energy, the largest impact by far is attributable to energy efficiency projects.



Estimated CO₂ Mitigation Results from GEF Climate Change Projects, 1992-2005



Source: GEF Project Database.

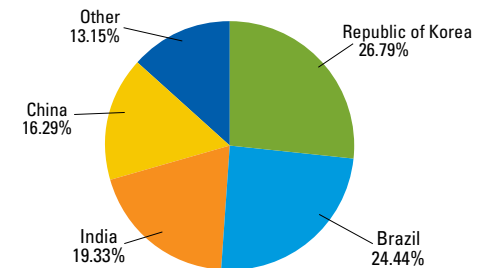
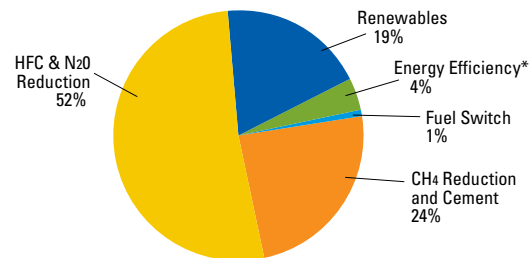
With the entry into force of the Kyoto Protocol in February 2005, the Clean Development Mechanism (CDM) was launched

The CDM allows industrialised countries or their companies to earn emissions credits for investments in emissions-reducing projects located in developing countries, while developing countries acquire technology, capital and clean energy. As of March 2006, 135 CDM projects had been registered while more than 500 were in the pipeline. The first group of registered projects principally addresses power generation through renewable energy sources (mostly biomass and run-of-river hydro, and increasingly wind), methane gas recovery and HFC and N₂O emissions reduction, but the scope for CDM projects is broad.³⁴

Geographically, Latin America registers the largest number of CDM projects (60%), followed by Asia-Pacific (34%). In terms of certified emission reductions from those projects, four countries account for over 85%. Three are large countries, so some concentration there is to be expected. The very small fraction of projects in Africa remains a concern.



Registered CDM Projects by Focal Area & by Country/Region: Expected Annual Average CERs, 2008-2012



* Inter alia, energy efficiency includes conversion from single cycle to combined cycle power generation.

Note: Distribution by the estimated number of certified emission reductions, 2008-2012.

Sources: (Left chart) URC & UNEP, November 2005. (Right chart) UNFCCC March 2006.

Climate Change Programs Around the World

UK's Climate Change Levy is an energy tax applied to industry, commerce, agriculture and the public sector. Companies meeting their agreed-upon targets benefit from an 80% discount on the Levy. The Levy is part of the Climate Change Program (2000) which aims to meet the domestic goal of a 20% reduction in CO₂ emissions by 2010, as well as Kyoto Protocol commitments.³⁵

2005 Climate Change Plan for Canada: Legislation is being created that sets mandatory targets for the 700 Large Final Emitters, which are responsible for half of total domestic GHG emissions. Options for compliance include investing in in-house reductions or domestic offset credits and purchasing certified international credits. **The Climate Fund** is a market-based mechanism that will be responsible for purchasing emissions reduction and removal credits on behalf of the Government of Canada.³⁶

In the US, climate change mitigation actions are being initiated by several states and municipalities. Currently, 30 states have developed GHG action plans, either independently or under a regional agreement. Actions include voluntary and mandatory mechanisms and have focused on energy issues, including vehicle GHG emission standards. Several northeastern states have recently initiated a regional cap-and-trade program.³⁷

National Biodiesel Program in Brazil was created with the intent of reducing GHG emissions by progressively increasing the share of biodiesel content in diesel fuel. From zero use at present, the goal is to have at least 3% of biodiesel added to fossil diesel by 2008, and 5% by 2012. Biodiesel can be produced from several beans and palms that grow in Brazil.³⁸

Australia's GHG Abatement Program is a subsidy program that supports activities likely to result in substantial emission reductions or sink enhancement.³⁹

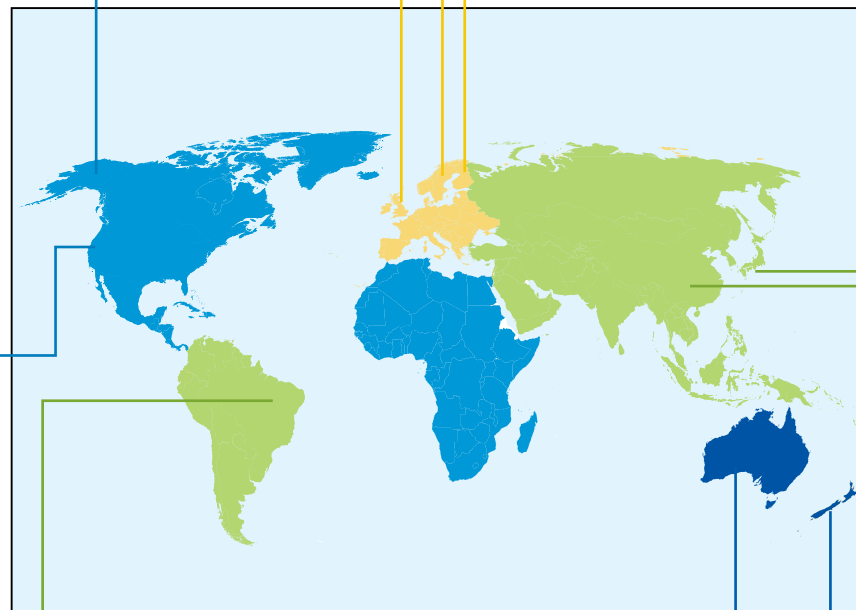
EU Greenhouse Gas Emissions Trading Scheme (2005) is the first international trading system for CO₂ emissions in the world and covers about half of the CO₂ emissions in the EU. Allocations of emissions allowances are done by Member-States on the basis of historical emission trends, expected production levels and the respective CO₂ emission reduction commitments under the Kyoto Protocol.⁴⁵

Several European countries **tax energy use or energy-related CO₂ emissions.** However, implicit taxes applied to fossil fuels are inversely related to carbon content (Sweden and Denmark are exceptions). Some firms joining voluntary agreements to improve energy efficiency pay a reduced carbon tax rate.⁴⁴

Green Taxation Plan for Automobiles in Japan, which provides tax relief for low-polluting vehicles and for certain fuel-efficient and low-emissions vehicles, has been in place since 2001, and taxes on old polluting vehicles have been increased.⁴² Under the **Kyoto Protocol Target Achievement Plan** approved in 2005, an environmental tax on all fossil fuels is planned for 2007.⁴³

Carbon tax and negotiated GHG agreements in New Zealand: under these agreements, firms or industries that, as a result of the carbon tax to be introduced in 2007, face significant risk to their competitiveness vis-à-vis producers in countries with less stringent climate change policies are eligible to receive full or partial exemption from the tax in exchange for moving to world best practice in emissions management.⁴⁰

Although **China** does not have GHG reduction obligations under Kyoto, its proactive stance in energy efficiency policy-making has contributed to reducing emissions. **The 2005 Law on renewable energy,** for instance, establishes that, by 2020, 10% of total power consumption should come from renewable sources (the share was 3% in 2003). In 2004, China also adopted its first vehicle fuel efficiency standards.⁴¹



Evidence of climate change and its impacts is steadily accumulating

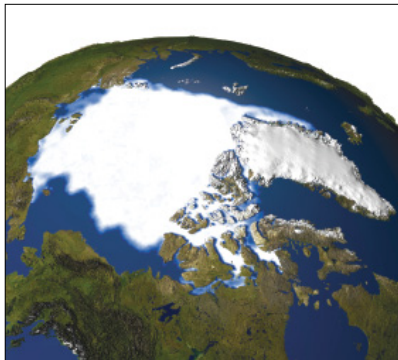
Recent evidence indicates that current atmospheric CO₂ concentrations are high compared with levels over the last million years.⁴⁶

Historical and current pictures of Arctic sea ice and tropical glaciers indicate the extent of warming and melting that has occurred over the past 25-35 years.⁴⁷

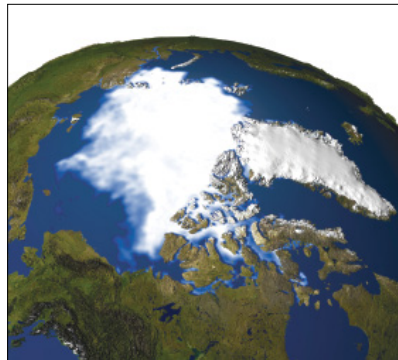
Global warming is currently raising sea-levels by almost 2 cm per decade,⁴⁸ and that rate is expected to increase with rising atmospheric CO₂ concentrations, leading to flooding of low-lying coastal areas. Recent research suggests that global warming is increasing the intensity of hurricanes and other storms,⁴⁹ leading to greater storm damage and coastal flooding. Increasing atmospheric CO₂ is also increasing ocean acidity,⁵⁰ with negative impacts on marine biodiversity, including coral and plankton, and thus on the fish that rely on them for habitat and food.⁵¹ Agricultural models suggest that climatic warming will tend to reduce agricultural productivity in the tropics.⁵² There are also some indications of changing oceanic circulation patterns, notably in the North Atlantic Gulf Stream, which could lead to disruptive climate change.⁵³

Arctic Sea Ice

September 1979



September 2003



Source: NASA Earth Observatory.

Oori Kalis Glacier, Peru

1978



2000

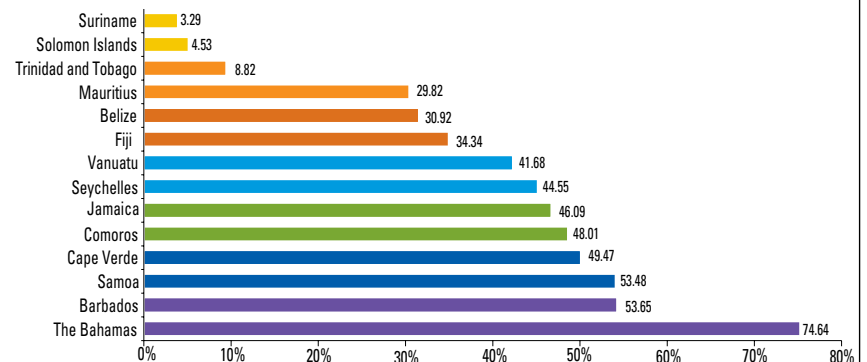


Source: Thompson, L., Byrd Polar Research Center, Ohio State University.

Sea-level rise and damage to marine biodiversity from climate change are increasing the vulnerability of small island developing States (SIDS)

The dependence of SIDS on tourism poses a long-term sustainable development challenge as many of these countries are atolls and low-lying island states that are vulnerable to sea-level rise as a result of climate change. Expected impacts include loss of beaches, salinization of soils and freshwater sources, increased stress on coastal ecosystems such as coral reefs, and infrastructure damage. These threaten the tourism industry and other economic activity and make adaptation to climate change a priority in these countries.⁵⁴

International Tourism Receipts as a % of Total Exports in Selected SIDS, 1995-2003



Source: World Development Indicators Online Database.