



2008

G8 CLIMATE SCORECARDS

**CLIMATE PERFORMANCE OF CANADA, FRANCE, GERMANY, ITALY, JAPAN, RUSSIA, UNITED
KINGDOM AND UNITES STATES OF AMERICA
BACKGROUND INFORMATION FOR CHINA, BRAZIL, INDIA, MEXICO AND SOUTH AFRICA**

THE G8 CLIMATE SCORECARDS WERE COMMISSIONED JOINTLY BY ALLIANZ, A LEADING GLOBAL FINANCIAL SERVICE PROVIDER, AND WWF, A LEADING GLOBAL ENVIRONMENTAL NGO.

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Dr. Joachim Faber,
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The international Climate Change debate has gained momentum and the urgent need for action has become obvious.

This action-oriented approach led WWF and Allianz SE, Dow Jones Sustainability Index leader in the insurance sector, to publish the G8 Climate Scorecards. They give a transparent account of the climate profile of the leading industrialized countries. They are intended to contribute to laying the groundwork for a productive international climate debate. The overall question is: How do the G8 Nations ensure the world's long-term interest of keeping climate change under control and moving towards a low carbon economy? We also included scorecards for the five emerging countries, Brazil, China, India, Mexico and South Africa to round out the picture.

Ultimately, the G8 Climate Scorecards should help policy makers and a wider public to identify the path leading to a global low carbon economy. Finding solutions and collaborating with governments and the wider public is a key element of the strategic partnership of Allianz SE and WWF in the pursuit of sustainable development. We strongly believe that all stakeholders including ourselves have a responsibility to create solutions and raise awareness for one of the most urging problems of today.

The G8 Summit in Hokkaido this July can make a start, by agreeing emission reductions deep enough to keep global warming below 2°C. The leading industrialized nations need to pledge emission cuts of at least 25 to 40 percent by 2020 below 1990.

This is no doubt a major effort but it makes the best business sense in the long run.

Summary

Climate change is a serious and urgent threat to global society. The level at which climate change becomes “dangerous” depends, however, on the values attached to the threatened systems. Based on the latest scientific assessment of the Intergovernmental Panel on Climate Change (IPCC), several countries, such as the EU, the Philippines, Iceland and Micronesia, have agreed that the increase of global average temperature should be kept below 2°C in comparison to pre-industrial levels.

As a consequence, global greenhouse gas emissions will have to peak in the next 10 to 15 years and decline below half of the level of 1990 by 2050 and continue to decline afterwards. Leaving some room for growth for developing countries, industrialized countries need to decrease their emissions by 80% by 2050. Current trends are still going in the opposite direction, with high emissions in developed countries and growing emissions in most developing countries.

Given the urgency of the challenge, the current Japanese G8 Presidency followed the example of the German Presidency in 2007 and made climate change and emission reductions the priority of this year’s G8+5 agenda.

The G8 (Canada, France, Germany, Italy, Japan, Russia, United Kingdom and United States of America) and other major industrialized countries have a large responsibility for taking the lead on action to tackle climate change. They must show leadership by committing to deep emission cuts as a group in the order of at least 25% to 40% below the 1990 level by 2020 and by putting policies and measures in place to achieve these targets and harnessing the massive economic benefits of a clean energy future.

They also have a responsibility to drive global cooperation with the +5 (Brazil, China, India, Mexico and South Africa) and other developing countries to foster sustainable development through technology transfer and financing. Sending a political signal in support of international cooperation and ambitious targets to cut global emissions, this year’s G8+5 can also help make the UN climate talks in Poznan this December a success.

Individual countries have reacted differently to the climate challenge. Each country is unique in its starting position, including the economic activities that result in greenhouse gas emissions, its level of development, industrial structure, availability of natural resources and public perceptions.

The G8 climate scorecards provide a comparable snapshot of the current situation across the G8 countries as well as the five major developing countries. They provide recent and expected emission developments of each country and various other indicators. The scorecards also provide an overview of the most important activities by the governments to respond to the threat of climate change.

For the G8 countries, they provide an overall summary evaluation of the climate performance of the federal governments of each country based on all of the criteria covered in the scorecards, and on the core benchmark that countries implement enough measures to reduce their emissions by 80% by 2050. In addition, countries’ performance in the areas energy efficiency, renewable energy and the development of the carbon market are summarised separately.

THREE COUNTRIES HAVE FAILED THE TEST: USA, CANADA AND RUSSIA

- » The United States score the worst of all G8 countries, being the largest emitter with the highest per capita emissions and an increasing trend in total emissions. At the same time the US have not ratified the Kyoto Protocol. While substantial activities emerge at the state level, little substantive federal measures are in place to curb emissions in the short term.
- » Second on the list is Canada with a similar situation: very high per capita emissions, a steadily increasing trend in total emissions (recently revised upwards), far away from its Kyoto target and inadequate mid to long-term greenhouse gas targets. A plan to curb emissions is developed but is yet to be implemented. The Kyoto target will stay out of reach.

- » Russia ranks a bit better due to declining absolute emissions in the early 1990s and a large share of less CO₂-intensive natural gas. But since 1999 emissions increase steadily and there is hardly any policy in place to curb emissions. Recent modest government plans exist but still need to be implemented.

LOWER MEDIUM RANK COUNTRIES ITALY AND JAPAN HAVE MADE SOME EFFORTS BUT ARE STILL FAR AWAY FROM MAKING AN ADEQUATE CONTRIBUTION TO KEEPING GLOBAL TEMPERATURE RISE BELOW 2°C:

- » Japan has relatively low emission rates (per capita, per GDP and per industrial production) compared to the average of industrialized countries due to high energy efficiency, and its use of nuclear power (which WWF does not consider as viable alternative). But absolute emissions are increasing and no mandatory emission reduction scheme exists. The lack of such policies led to the relatively low rank of Japan.
- » Italy's absolute emissions increase steadily and are considerably above the Kyoto target. The country has started some efforts, but only a few national measures are yet in place that have reduced emissions. As an EU member state, Italy does support the EU greenhouse gas emission reduction targets for 2020 as well as the EU energy saving and renewables targets and has been relatively strict in allocating allowances in the EU Emission Trading Scheme.

THE THREE COUNTRIES FURTHEST ALONG THIS TRACK ARE GERMANY, FRANCE AND UK, BUT EACH IS LIKELY TO SEE INCREASES IN EMISSIONS IF FURTHER MEASURES ARE NOT IMPLEMENTED SOON:

- » Germany's emissions declined 1990 to 2000 partly due to economic downturn in Eastern Germany but also due to national measures. Since then, emissions are stable and a gap to meet the Kyoto target is expected if no immediate measures are put in place or external credits are purchased. Germany is successful with its promotion of new renewable energy sources. But it is politically less ambitious for electricity

production from fossil fuels, facing a high share of coal and lignite and announced investment plans that would lock Germany into a high level of carbon intensity for the next 40 years. Germany is lagging behind its aspirations in implementing the measures required to reach its ambitious -40% reduction target for GHG emissions by 2020. Especially the automotive sector as part of transportation is currently politically shielded from carbon reducing pressures.

- » Emission rates (per capita and per GDP) in France are relatively low for an industrialized country, partially due to a high share of nuclear energy (which WWF does not consider as viable policy). Emissions have been roughly stable since 1990. The ambitious long-term target still needs to be implemented. France could strengthen its efforts in the building and transport sectors and be more ambitious in the electricity sector.
- » UK's emissions are already below the Kyoto target, largely due to a transition from coal to gas in the 1990s. But the fall in emissions has levelled off since 2000, the share of coal has again increased and emissions are expected to rise further. The strong national climate debate has led to innovative national policies such as the Climate Change Bill, which offer the potential for significant emission reductions in future. However, improvements could still be made in transport and non-residential buildings.
- » As EU member states, all three support the EU greenhouse gas emission reduction targets for 2020 as well as EU energy efficiency and renewables targets. Allocation among member states and application to national level is currently discussed.

SOME POSITIVE DEVELOPMENTS ARE TO BE HIGHLIGHTED:

- » The operation of the Emission Trading Scheme in the EU was improved and led to more stringent allocations in the phase 2008 to 2012. Auctioning of allowances creates new financial resources that can be used for climate change mitigation.
- » While federal activities in Canada and the USA are insufficient, activities of states within these countries are very encouraging.

- » An intensive national debate on climate policies has started in almost all G8 countries at a high political level and with strong public interest. All countries are yet to make decisions on their policy.
- » Some countries, like Japan, have made considerable efforts in energy efficiency.

THERE ARE MOSTLY NEGATIVE DEVELOPMENTS IN SOME COUNTRIES' CLIMATE PERFORMANCE

- » Japan, France, Germany and the EU as a whole received international recognition for announcing ambitious climate targets such as halving global emissions by 2050 or reducing emissions by 20%, 30% or 40% by 2020. However, they fail to date to put policies in place to reach these targets.
- » Emissions continued to increase, e.g. in Canada and Russia
- » Projections of future emissions have been increased, e.g. for Canada

Energy efficiency potential is not tapped: Although large potential exists to save energy and money at the same time, all G8 countries have insufficient policies in place to overcome barriers to energy efficiency. Countries' programmes are incomplete focussing on only some aspects such as appliances or buildings. Efficiency improvements in transport are usually not sufficiently encouraged. Japan scores well on dynamic efficiency standards ("top-runner approach") for appliances and cars but leaves energy performance of buildings and in the power sector uncovered. Canada, USA and Russia rank last on energy efficiency with broadly insufficient or lacking policies.

Successful support for renewable energy has been demonstrated, but efforts are insufficient in most countries: Renewable energy technologies need support mechanisms to accelerate their deployment. Positive developments can be observed e.g. in Germany with a comprehensive strategy but most other countries lack behind expectations.

Carbon markets are maturing: The innovative instruments of the carbon market (emissions trading and creditable emission reduction projects through the Clean Development Mechanism, CDM, and Joint Implementation, JI) are expected to play a major role in future actions against climate change. Most countries are improving their implementation of the carbon market. No or only small activities are present in Canada, USA and Russia.









THE +5

This report also provides information for the +5, the major developing countries. These five countries are expecting large growth of emissions in the future. But all of them undertake action to slow emissions growth, e.g. significant support for renewable energy in Brazil, China and India. These countries have not been scored in the same manner as G8 due to their different national circumstances and level of development. The question remains how G8 countries will assist them in developing in a less carbon intensive manner and how much effort they undertake themselves.

SCORING

The scoring, based on the twelve indicators, demonstrates that none of the G8 countries are implementing enough measures to be considered in line with the target to keep global temperature rise below 2°C. Given the urgency of the climate challenge, the G8 countries collectively still have a long way to go. Some countries have underlined their intent to move ahead globally by doing their fair share through setting mid-term targets for 2020 (e.g. the EU member states whose 30% reduction target would be just about in line with a 2°C pathway). The other G8 countries – Russia, Japan, Canada and the US – have so far put few objectives and policies in place that show they are taking the challenge seriously.

Ranking summary

	IMPROVEMENTS SINCE 1990	CURRENT STATUS	POLICIES FOR THE FUTURE	RANKING
UK 	● ● ●	● ● ● ●	● ● ● ● ●	1
FRANCE 	● ● ●	● ● ● ●	● ● ● ● ●	2
GERMANY 	● ● ●	● ● ● ●	● ● ● ● ●	3
ITALY 	● ● ●	● ● ● ●	● ● ● ● ●	4
JAPAN 	● ● ●	● ● ● ●	● ● ● ● ●	5
RUSSIA 	● ● ●	● ● ● ●	● ● ● ● ●	6
CANADA 	● ● ●	● ● ● ●	● ● ● ● ●	7
USA 	● ● ●	● ● ● ●	● ● ● ● ●	8

Past emission trend from 1990 to 2006
Current distance to the Kyoto target
Increase of the share of renewable energy sources

Emissions per capita
Emissions per GDP
CO₂ per kWh electricity
Energy efficiency in industry

Electricity/nuclear
Industry
Households and services
Transport
Renewables

Performance on energy efficiency

Conserving energy is the most cost effective measure to reduce greenhouse gas emissions in the short term. This section provides an overview on how countries support energy efficiency across all sectors. This assessment is part of the overall assessment of the countries' climate policies.

-
- JAPAN** ●
- » Achieved relatively high average efficiency through policies since the 70's
 - » Increase of energy efficiency has been offset by increasing use of cars, electric appliances and power production; total energy consumption has been rising
 - » Efficiencies have worsened since 1990 in cement and chemicals
 - » Buildings: "Top runner" (automatically increasing) energy efficiency standards for electrical appliances, but no effective policies or standards to improve overall energy performance of buildings
 - » Transport: "Top runner" energy efficiency standards for cars
 - » Power/industry: no absolute reduction target but voluntary action, no policies to encourage combined heat and power generation (CHP)
-
- ITALY** ●
- » Average energy efficiency level in power, industry, buildings and transport
 - » Buildings: reasonably effective for new buildings, partly effective for renovated buildings; first in EU to implement white certificate scheme; class A is minimum standard for electrical equipment as of 2010; zero stand-by as of 2010 and no sales of incandescent bulb of 2011
 - » Transport sector: fragmented policy and not very effective; no standards
 - » Power/industry: Emission trading scheme needs to become effective; CHP policy has effect
 - » With financial law 2007 and 2008 important energy efficiency tax rebate introduced for domestic and commercial sector
-
- FRANCE** ●
- » Average energy efficiency level in power, industry, buildings and transport
 - » Buildings: reasonably effective for new buildings, but not effective for renovated buildings; lacking efficiency standards for electrical appliances
 - » Transport: Additional taxation for cars emitting more than 200 gCO₂/km; soon also tax credit below 130 gCO₂/km; no standards; insufficient policy in the freight sector.
 - » Power/industry: Emission trading scheme needs to become effective; weak mandatory targets imposed on utilities to promote energy efficiency by demand side actions
-
- GERMANY** ●
- » Average energy efficiency level in power, industry, buildings and transport
 - » Buildings: reasonably effective for new buildings; partly effective for renovated buildings, but still a big potential in the building sector is unused; lacking efficiency standards for electrical appliances
 - » Transport: reasonably effective tax system (planned to be based on CO₂ emissions) but no standards; automotive industry is regularly protected by government interactions
 - » Power/industry: Emission trading scheme needs to become effective; CHP policy has been a failure to date
-

-
- UNITED KINGDOM** ●
- » Average energy efficiency level in power, buildings and transport; low in industry
 - » Buildings: only moderate effect so far, but new ambitious standards
 - » Transport: reasonably effective in the 1990s, but has stagnated since then; no standards
 - » Power sector: Emission trading scheme needs to become effective; CHP policy too weak to push development and off track for target
-

- CANADA** ●
- » Average energy efficiency very low in power, industry, households and transport
 - » No national, economy-wide commitment to energy efficiency improvement
 - » Buildings: codes, energy performance requirements not ambitious or lacking
 - » Transport: Weak national vehicle fuel efficiency standards; effectiveness of voluntary agreement unclear; some Provinces endorsing California car standards
 - » Power/industry: caps, fiscal instruments (energy pricing/taxes) and tradable permits not utilized; commitment of Ontario to shut 5 coal plants by 2014
 - » Expanding energy-intensive oil production from tar sands; planned intensity reduction measures will allow sectoral emissions to double or triple
-

- USA** ●
- » Currently very low average energy efficiency level in power, industry, households and transport
 - » Recent “Energy Independence and Security Act” has tightened some standards
 - » Buildings: building codes not ambitious; standards for equipment not ambitious or not existing
 - » Transport: weak fuel standards; improvement limited due to increased share of light trucks and sport utility vehicles
 - » Power/industry: fiscal instruments (energy pricing/taxes) and tradable permits not been utilized; reliance on ineffective voluntary partnerships
-

- RUSSIA** ●
- » Currently very low average energy efficiency level in power, industry and medium efficiency in households and transport but lower driving activity and lower floor space per person
 - » Practically no energy efficiency policies in place; recent government plans exist but still need to be implemented
-

Performance on renewable energy

Energy from renewable sources will be one of the most important measures to reduce greenhouse gas emissions in the long run. This section provides a comparison of policies on the federal level of the countries to support the development and deployment of renewable energy technologies, repeating those provided in the scorecards. They are part of the overall assessment of the countries' climate policies.

-
- GERMANY** ●
- » Proposed EU target of the renewable energy sources (RES) Directive: 18 % by 2020
 - » National RES electricity target in 2010 is 12.5 % of gross electricity consumption
 - » National indicative targets for biofuels amount to 2 % in 2005 and 5.75 % in 2010. 10 % target for 2020 has been suspended
 - » Guaranteed tariffs for delivered electricity from renewable sources through feed-in law, which led to considerable increase of renewable capacity
-
- FRANCE** ●
- » Proposed EU target of the RES Directive: 23 % by 2020
 - » National RES electricity target in 2010 is 21 % of gross electricity consumption, but current share declines
 - » Fiscal incentives for renewable energy sources and guaranteed tariffs for delivered electricity
-
- UNITED KINGDOM** ●
- » Proposed EU target of the RES Directive: 15 % by 2020 but current share is very low at 2 % despite natural resources
 - » National RES electricity target in 2010 is 10 % of gross electricity consumption, likely to be missed
 - » Obligation on electricity suppliers to supply percentage renewable energy, linked to tradable certificates
 - » The government has completed a consultation on differentiated levels of support for different renewable technologies and is intending to implement this
 - » Exemption of renewable energy from Climate Change Levy
 - » Biofuel: 1.7 % in 2008, 2.6 % in 2009 and 3.5 % in 2010, linked to a renewable transport fuel obligation on fuel suppliers that started in April 2008; 2.5 % renewable transport fuel in 2008/09, 3.75 % for 2009/10 and 5 % in 2010/11
-

-
- CANADA** ●
- » Some incentives but overall strategy still weak
 - » Incentives for renewables (wind, ethanol) to achieve 10% of new capacity from renewable sources
 - » Incentive provides CAD \$200 million (2005-2010) to achieve 4,000 MW increase in wind generating capacity
 - » Biofuels programme (2008-2017) will invest up to CAD \$1.5 billion to support biofuels production
 - » Several other renewable energy programmes, e.g. tendering schemes, at provincial level (not considered in ranking)
-
- USA** ●
- » Some incentives but overall strategy still weak
 - » No target for renewable energy
 - » Tax incentives on federal level (production tax credit, accelerated cost recovery system)
 - » Renewable Portfolio Standards for utilities - minimum targets for renewable electricity - in many states (not considered in ranking)
 - » Renewable fuel standard aims to produce 15 billion gallons of biofuels by 2015, 36 billion by 2022
 - » Solar Energy Technologies Program to make solar energy cost-competitive with conventional electricity by 2015; target: at least 5 GW new solar electric capacity
-
- ITALY** ●
- » Proposed EU target of RES Directive: 17% by 2020
 - » National RES electricity target in 2010 is 25% of gross electricity consumption
 - » Biofuels 2.5% in 2008 and 5.75% in 2010
 - » Renewable certificates and feed-in tariffs
 - » Tax credit for geothermal energy and biomass
 - » Planned: small plants (up to 1 MW) have choice between being granted with green certificates or receiving feed-in tariff
 - » Ranked among the last in EU report on progress towards renewable targets; renewable incentive scheme hampered by administrative barriers
-
- JAPAN** ●
- » Only very weak target on renewable energy (12.2TWh by 2010 and 16TWh by 2014)
 - » R&D programmes and grants
-
- RUSSIA** ●
- » No target for renewable energy
 - » Long-term plan to develop nuclear, large hydro and coal energy; attention to renewable energy is very small
-

Performance in carbon markets

The innovative instruments of the carbon market (emissions trading and creditable emission reduction project through the Clean Development Mechanism, CDM, and Joint Implementation, JI) are expected to play a major role in future actions against climate change. This section provides an overview on how countries support the development of the carbon market and how much they use it. This assessment is part of the overall assessment of the countries' climate policies.

UNITED KINGDOM

- » Participates in and supports the internal EU Emission Trading Scheme with relatively stringent allocations
 - » Developed a pilot national trading scheme before EU trading scheme
 - » Comparably late in setting up institutions to support CDM/JI
 - » 812 registered CDM and 21 registered JI projects
-

JAPAN

- » Japan's Voluntary Emissions Trading Scheme (JVETS)
 - » Proactively supported development of JI and CDM
 - » Allocated about US\$ 100 million (2006), 340 million (2007) and 730 million (2008 incl. future payments) for funds that purchase emissions credits from developing countries
 - » 288 registered CDM and 10 registered JI projects
-

ITALY

- » Participates in and supports the internal EU Emission Trading Scheme with moderate allocations and no limit for new entrants,
 - » Comparably late in setting up institutions to support CDM/JI
 - » 98 registered CDM and 0 registered JI projects
-

GERMANY

- » Participates in and supports the internal EU Emission Trading Scheme with moderate to stringent allocations; introduced many exceptions
 - » Comparably late in setting up institutions to support CDM/JI
 - » 116 registered CDM and 1 registered JI project
-

FRANCE

- » Participates in and supports the internal EU Emission Trading Scheme with moderate allocations
 - » No additional activities to support CDM/JI
 - » 43 of registered CDM and 1 registered JI project
-

-
- CANADA** ●
- » No national emission trading scheme or equivalent measure
 - » No government intent to purchase credits from CDM/JI, although likely to miss Kyoto target
 - » 55 of registered CDM and 0 registered JI projects
-
- USA** ●
- » No national emission trading scheme or equivalent measure (several state initiatives for emission trading systems, not considered in ranking)
 - » No intent by federal government to purchase credits from CDM/JI
 - » Some voluntary activity of companies to become carbon neutral but not driven by government policy
-
- RUSSIA** ●
- » No national emission cap and trade scheme or equivalent measure
 - » Late in setting up procedures to host JI projects
 - » No need to purchase credits
 - » 73 registered JI projects as host country generating 35246 ktCO₂eq.
-

Explanation of the scorecards

Traffic light

A visualisation of the approximate overall climate performance taking into account the emission indicators and the climate policies. The benchmark is, whether a country is on a path to keep the global-average temperature increase below 2°C in comparison with pre-industrial levels.

Summary evaluation

A general evaluation of the countries' climate performance based on the information provided below.

Emission trends

Includes the historical trend and future projections of emissions of those greenhouse gases and sectors that are relevant under the Kyoto Protocol in comparison to the Kyoto target.

Emissions by sectors

Includes the split of emissions into the different sectors. It shows which activities are responsible for the emissions.

Energy sources

As most greenhouse gas emissions originate from energy use, it is instructive to examine the energy mix of a country. The chart shows the primary energy consumption, which includes also energy that is consumed but not used such as waste heat.

Traffic lights

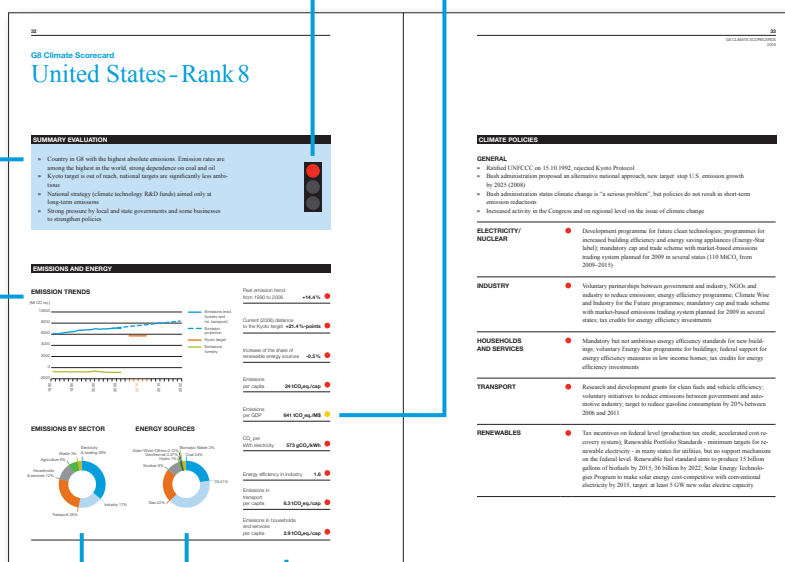
An approximate indication how these indicators relate to the necessary level to stay below the 2°C limit.

General climate policies

A brief description of the general climate policies put in place by the national government.

Sector policies and traffic lights

A description of the status of the climate policies in place in different sectors. Assessment of the relative comparison of the ambition level and comprehensiveness of policies.



Quantitative indicators

- » Past emission trends over the whole economy
- » Current distance to the Kyoto target as magnitude of emission reductions still necessary to reach the Kyoto target
- » Change in share of renewable energy sources showing efforts made to use more renewable energy since 1990
- » Emissions per capita
- » Emission per Gross Domestic Product
- » CO₂ per kWh electricity of electricity production (national aggregate)
- » Energy efficiency in industry as a qualitative aggregate for major industries
- » Greenhouse gas emissions in transport per capita
- » Greenhouse gas emissions in households and services per capita excluding emissions from use of electricity

Aggregation method

The overall performance of the G8 countries is assessed by comparing indicators of past, present and future performance, weighted 1/3 each.

Past performance includes emission trends since 1990, the distance to the Kyoto target and the increase in the share of renewable energy. Current performance includes national emissions per capita and per Gross Domestic Product as well as the electricity sector's emissions per electricity production and the efficiency in industry. For each numerical indicator for the past trend and current situation, a score between -2.5 and +2.5 is given, where the extremes are the worst and best performance within developed countries not considering small country outliers. The middle position (score 0) is chosen in line with keeping global average temperature increase below 2°C. Policies for future improvements are rated for each of the major sectors and additionally for the support for renewable energy. Policies for future improvements in-

clude only those implemented (not planned) by national governments (not sub-national governments). In each sector they are rated between -2.5 (lacking or symbolic) and +2.5 (ambitious and/or very innovative) by expert judgement. The weight given to this indicator depends on the sector's share of national emissions.

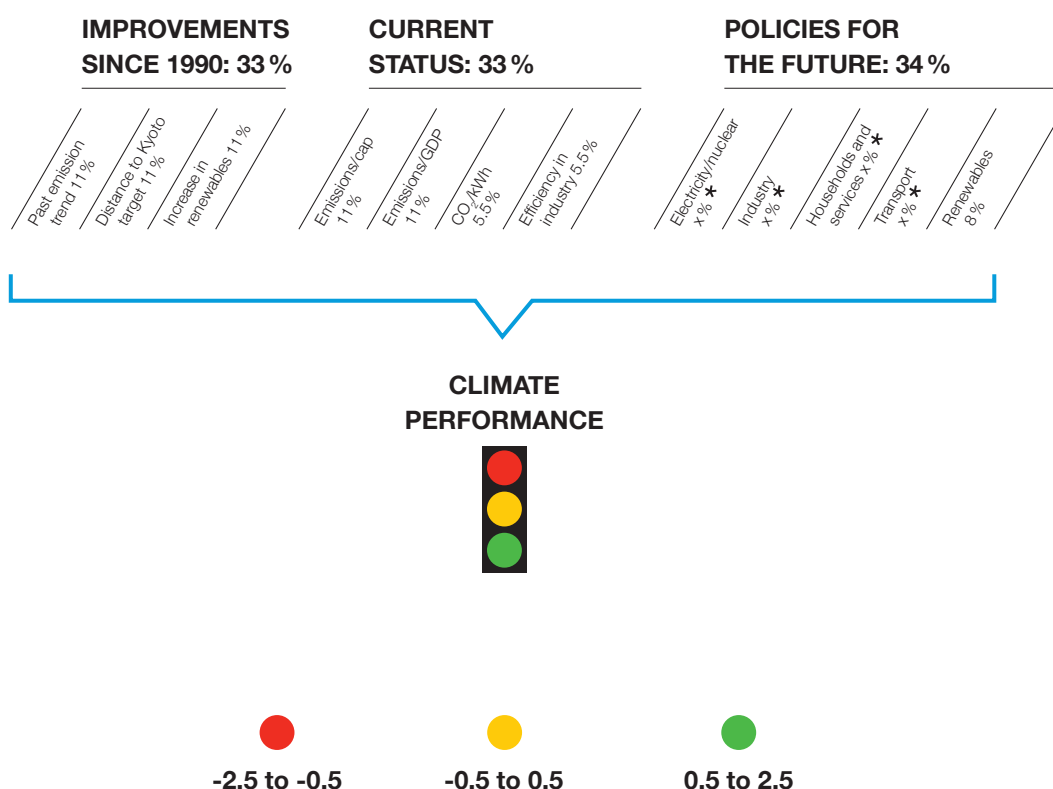
All indicators are aggregated using the weights shown below.

The scores (between -2.5 to +2.5) for each numerical indicator, each policy field and the summary climate performance are translated into coloured dots or traffic lights.

WWF does not consider nuclear power as a viable policy option. A policy approach that favours use of nuclear power is weighted negatively.

Further detail on the method and data sources is provided in the technical annex.

* Weighted individually per country by the sector's share of national emissions, e.g. for Canada the weight for the four sectors is 11%, 5%, 3% and 8%.



G8 Climate Scorecard

Canada - Rank 7

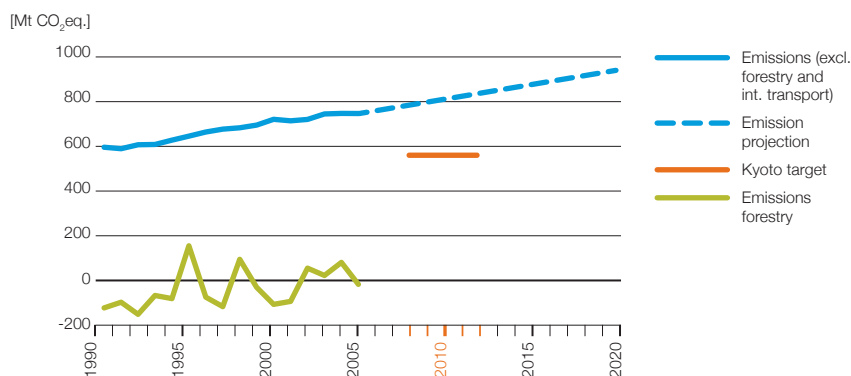
SUMMARY EVALUATION

- » Very high emission rates per capita compared to average of industrialized countries despite high share of hydropower
- » Strongly increasing emissions in most sectors; projections have recently been corrected upwards
- » Expanding energy-intensive un-conventional oil development (tar sands); neither provincial nor planned federal regulation will reduce overall emissions
- » No official/enforceable climate plan; proposed national plan does not even aim for compliance with Kyoto target



EMISSIONS AND ENERGY

EMISSION TRENDS



Past emission trend from 1990 to 2005 **+25.3%** ●

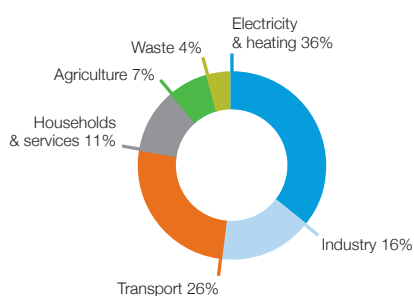
Current (2005) distance to the Kyoto target **+31.3%-points** ●

Increase of the share of renewable energy sources **-0.0%** ●

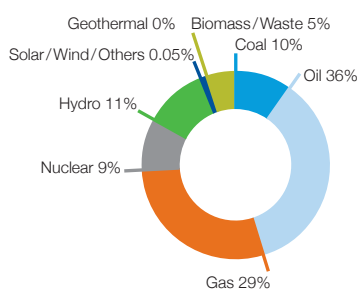
Emissions per capita **23 tCO₂eq./cap** ●

Emissions per GDP **790 tCO₂eq./M\$** ●

EMISSIONS BY SECTOR



ENERGY SOURCES



CO₂ per kWh electricity **199 gCO₂/kWh** ●

Energy efficiency in industry **1.7** ●

Emissions in transport per capita **6.1 tCO₂eq./cap** ●

Emissions in households and services per capita **2.6 tCO₂eq./cap** ●

G8 Climate Scorecard

Canada - Rank 7

CLIMATE POLICIES

GENERAL

- » Ratified UNFCCC on 04.12.1992, ratified Kyoto Protocol on 17.12.2002
- » Effectively reneged on Kyoto target – federal government’s proposed plan (released 26.04.2007) that aims for 20% reduction below 2006 emission levels by 2020, i.e. 11% above the Kyoto target in 2020; out of compliance with federal law requiring development of a plan to meet Kyoto obligations
- » Federal Government will not purchase international emission credits although proposal would allow industry to purchase credits for up to 10% of their reduction
- » Various provinces have GHG regulations, including British Columbia (economy wide carbon tax, cap and trade system for large emitters to come), Alberta (12% reduction of industrial emission intensity by the end of 2008), Manitoba (aims to reach the Kyoto target) and Ontario (to phase out coal plants)

ELECTRICITY/
NUCLEAR

- Tax incentives for efficient or renewable energy production; planned: mandatory reduction requirements as of 2010, standards for new facilities, new coal fired power plants as of 2012 only with CO₂ capture and storage

INDUSTRY

- Planned: mandatory GHG intensity reduction requirements as of 2010, standards for new facilities, regulatory targets based on CO₂ capture and storage as of 2012 for oil production from tar sands which come into effect in 2018

HOUSEHOLDS
AND SERVICES

- Labelling and energy performance standards for many energy-using appliances; financial incentives available for energy efficiency retrofits to a modest number of households

TRANSPORT

- Fuel efficiency standards for passenger vehicles not trucks; voluntary improvement targets for the automotive sector by 2010; federal government has announced intent to segue in 2011 to the dominant (less efficient) North American standard

RENEWABLES

- Incentives for modest amount of renewable energy production, i.e. Wind Power Production Incentive provides CAD \$200 million (2005-2010) to achieve 4,000 MW increase in wind generating capacity. Ethanol target of 5% by 2010 and 2% bio diesel by 2012, with modest financial incentives available for bio fuel producers; biofuels programme (2008-2017) will invest up to CAD \$1.5 billion to support biofuels production by providing operating incentive; several other renewable energy programmes, e.g. Province of Ontario: guaranteed price for electricity from renewable energy

G8 Climate Scorecard

France - Rank 2

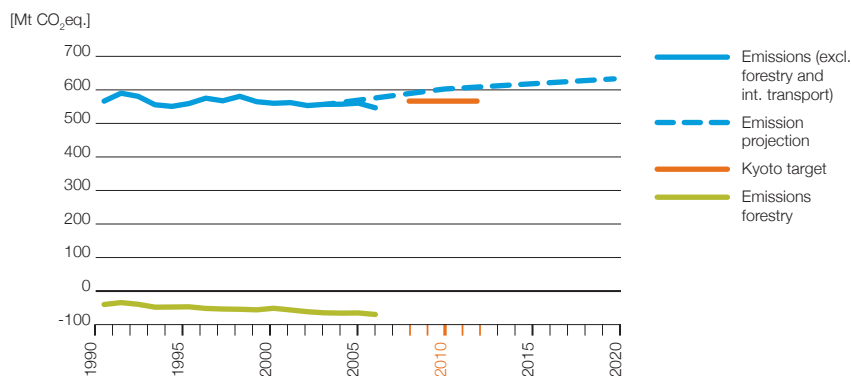
SUMMARY EVALUATION

- » Emission rates low for industrialized countries partially due to high share of nuclear energy, which WWF does not consider as viable policy
- » Emissions currently below Kyoto target, emissions in transports stabilized but total emissions are projected to increase if no further policies are implemented
- » Most ambitious long-term target, but short term targets not yet in line
- » Supports ambitious EU GHG emission reduction target by 2020



EMISSIONS AND ENERGY

EMISSION TRENDS



Past emission trend from 1990 to 2006 **-3.5%** ●

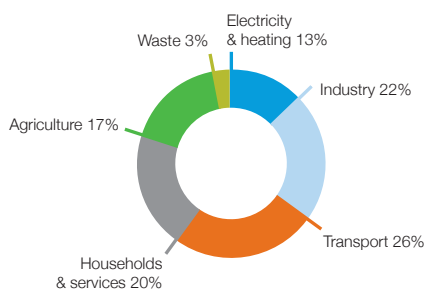
Current (2006) distance to the Kyoto target **-3.5%-points** ●

Increase of the share of renewable energy sources **-1.1%** ●

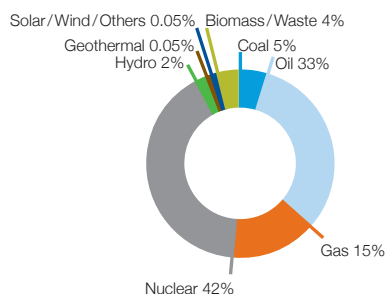
Emissions per capita **9 tCO₂eq./cap** ●

Emissions per GDP **336 tCO₂eq./M\$** ●

EMISSIONS BY SECTOR



ENERGY SOURCES



CO₂ per kWh electricity **91 gCO₂/kWh** ●

Energy efficiency in industry **1.3** ●

Emissions in transport per capita **2.2 tCO₂eq./cap** ●

Emissions in households and services per capita **1.8 tCO₂eq./cap** ●

G8 Climate Scorecard

France - Rank 2

CLIMATE POLICIES

GENERAL

- » Ratified UNFCCC on 25.03.1994, ratified Kyoto Protocol on 31.05.2002
- » Supports that global temperature increase should be kept below 2°C and global emissions should be halved by 2050
- » Long-term national emissions target: -75% by 2050 compared to 1990 level for all GHG. Target for 2020 not yet in line with the long-term goal
- » Agreed to ambitious EU targets for 2020: unilaterally reduce GHG emissions 20% below 1990 and 30% if other countries commit to similar efforts, save 20% energy consumed and increase renewables to a 20% share
- » Objectives by sectors (bill is discussed in Parliament, still needs to be confirmed): reduce energy consumption of existing buildings by 38% by 2020, reduce GHG emissions from the transport sector by 20% by 2020

ELECTRICITY/
NUCLEAR

- Participant in EU Emission Trading Scheme; moderate allocation for 2008 to 2012; weak mandatory targets imposed on utilities to promote energy efficiency by demand side actions; financial incentives for CHP and heating network; strong support for nuclear power

INDUSTRY

- Half of industry emissions covered by EU Emission Trading Scheme; moderate allocation for 2008 to 2012

HOUSEHOLDS
AND SERVICES

- Grants and income tax reduction for energy efficiency, including improved insulation and use of renewable energy sources; energy consumption minimum standards for new buildings; minimum standards to apply for renovation of large buildings; compulsory energy label scheme for buildings; audit every time a building is built, sold or rented

TRANSPORT

- Income tax reduction for vehicles using electricity, natural or liquefied gas; voluntary agreements with automotive industry; CO₂ emissions labels on new cars; additional taxation for cars emitting more than 200 gCO₂/km, soon also tax credits below 130 gCO₂/km; increase of the high-speed train lines

RENEWABLES

- Financial incentives for renewable energy sources and guaranteed tariffs for delivered electricity; ambitious target for 2020; impact of biofuel target unclear because of poor emissions balance of French biofuels

G8 Climate Scorecard

Germany - Rank 3

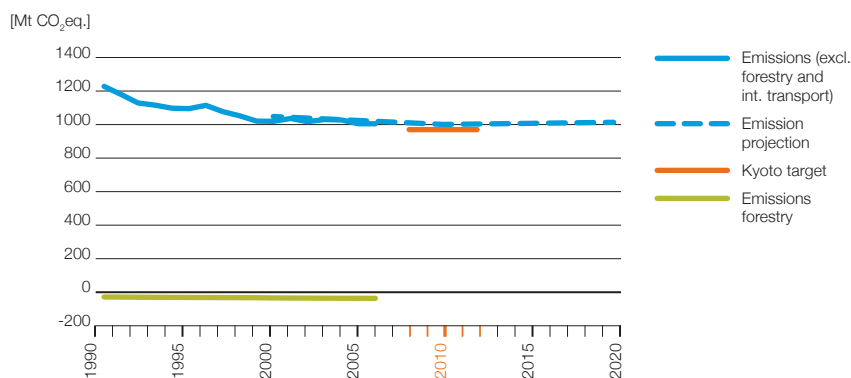
SUMMARY EVALUATION

- » High emission rates from electricity generation due to use of coal/lignite
- » Declining emissions 1990 to 2000 partly due to economic downturn in Eastern Germany but also due to national measures
- » Since 2000 stable emissions and likely gap to meet Kyoto target without further measures; increasing trend from electric utilities and plans for new coal capacity
- » Successful promotion of new renewable energy sources, but less ambitious for electricity production from fossil fuels
- » Ambitious EU GHG emission reduction target by 2020; current policy plan insufficient to meet envisaged German 40% emission reduction by 2020



EMISSIONS AND ENERGY

EMISSION TRENDS



Past emission trend from 1990 to 2006 **-18.2%** ●

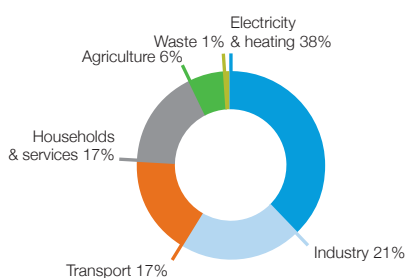
Current (2006) distance to the Kyoto target **+2.8 %-points** ●

Increase of the share of renewable energy sources **3.1%** ●

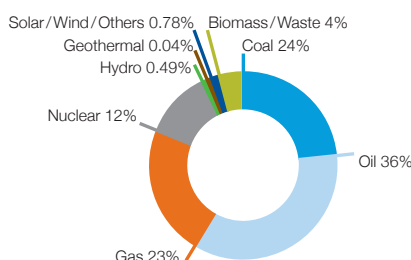
Emissions per capita **12 tCO₂eq./cap** ●

Emissions per GDP **472 tCO₂eq./M\$** ●

EMISSIONS BY SECTOR



ENERGY SOURCES



CO₂ per kWh electricity **349 gCO₂/kWh** ●

Energy efficiency in industry **1.3** ●

Emissions in transport per capita **2.0 tCO₂eq./cap** ●

Emissions in households and services per capita **2.1 tCO₂eq./cap** ●

G8 Climate Scorecard

Germany - Rank 3

CLIMATE POLICIES

GENERAL

- » Ratified UNFCCC on 09.12.1993, ratified Kyoto Protocol on 31.05.2002
- » Supports that global temperature increase should be kept below 2°C and global emissions should at least be halved by 2050 compared to 1990
- » Envisages 40% emission reduction by 2020 compared to 1990 if EU commits to 30% and other countries commit to comparable efforts
- » Agreed to and supported ambitious EU targets for 2020: unilaterally reduce GHG emissions 20% below 1990 and 30%, if other countries commit to similar efforts, save 20% energy consumed and increase renewables to a 20% share
- » Initiated the “KfW Carbon Fund” to pool industry demand for credits from CDM projects
- » Moves forward the debate on climate change within the G8 and other international fora
- » Energy Efficiency Action Plan: -9%-target compared to 2001-2005: 833 PJ by 2016, interim target for 2010: 510 PJ (~ 61% of target for 2016), broad review of present and new measures to reach targets

ELECTRICITY/
NUCLEAR

- Participant in the EU Emission Trading Scheme; auctioning of 8.8% of allowances is planned for 2008-12; moderate to stringent allocation for 2008 to 2012; combined heat and power programme in place that shows little effect; eco-tax on coal, coke and lignite which is weakened by a lot of exemptions, e.g. for coal for electricity generation; phase out of nuclear power; majority of capacity to be built is coal or lignite

INDUSTRY

- Half of industry emissions covered by EU Emission Trading Scheme; energy saving ordinance for small/medium industries

HOUSEHOLDS
AND SERVICES

- Favourable loans for energy efficiency and CO₂ reduction measures in domestic sector; energy saving ordinance; ambitious building standards, but no penalties in place

TRANSPORT

- Voluntary efficiency enhancement from automotive industry, but no German manufacturer is likely to meet the agreement; energy-efficiency labels on new cars; tax exemption for biofuels abandoned; quota for biofuel blending for 2020 withdrawn; automotive industry is regularly protected by government

RENEWABLES

- Guaranteed tariffs for delivered electricity from renewable sources through feed-in law which led to considerable increase of renewable capacity; aims to produce 12.5% of electricity from RE by 2010

G8 Climate Scorecard

Italy - Rank 4

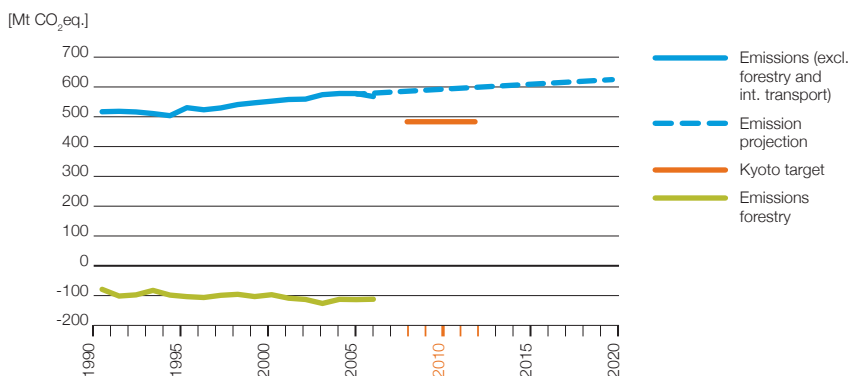
SUMMARY EVALUATION

- » Emission rates are average/low for industrialized countries with relatively high but decreasing share of oil
- » Emissions considerably above Kyoto target and projected to further increase substantially
- » Only a few national measures in place that have reduced emissions
- » Ambitious EU GHG emission reduction target by 2020
- » No use of nuclear power since 1987



EMISSIONS AND ENERGY

EMISSION TRENDS



Past emission trend from 1990 to 2006 **+9.9%** ●

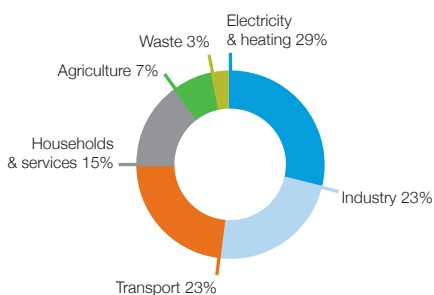
Current (2006) distance to the Kyoto target **+16.4%-points** ●

Increase of the share of renewable energy sources **2.1%** ●

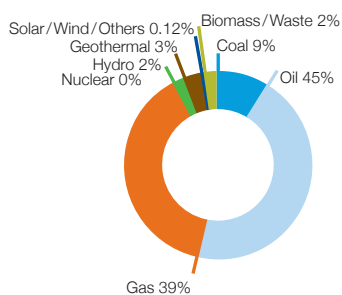
Emissions per capita **10 tCO₂eq./cap** ●

Emissions per GDP **388 tCO₂eq./M\$** ●

EMISSIONS BY SECTOR



ENERGY SOURCES



CO₂ per kWh electricity **405 gCO₂/kWh** ●

Energy efficiency in industry **1.3** ●

Emissions in transport per capita **2.2 tCO₂eq./cap** ●

Emissions in households and services per capita **1.5 tCO₂eq./cap** ●

G8 Climate Scorecard

Italy - Rank 4

CLIMATE POLICIES**GENERAL**

- » Ratified UNFCCC on 15.04.1994, ratified Kyoto Protocol on 31.05.2002
- » Supports that global temperature increase should be kept below 2°C
- » Mixed public/private “Italian Carbon Fund” set up to provide certificates from CDM/JI projects
- » Agreed to ambitious EU targets for 2020: unilaterally reduce GHG emissions 20% below 1990 and 30% if other countries commit to similar efforts, save 20% energy consumed and increase renewables to a 20% share

**ELECTRICITY/
NUCLEAR**

- Participant in the EU Emission Trading Scheme; moderate allocation for 2008 to 2012 and no limit for new entrants; tradable energy efficiency certificates (white certificates); financial incentives for combined heat and power; projected new coal power installations not compatible with present Kyoto targets; state aid to power plants jeopardises efficient policy in curbing CO₂ emissions; no use of nuclear power; only class A electrical appliances can be sold after and no stand-by allowed after 2010, no incandescent bulbs after 2011

INDUSTRY

- Half of industry emissions covered by EU Emission Trading Scheme; tradable energy efficiency certificates (white certificates) but need reform and new target to be consistent with Kyoto targets; negotiated agreements; tax rebate for high efficiency motors and inverters; CO₂ tax not weighted on real carbon content of energy sources; energy consumption per GDP increased

**HOUSEHOLDS
AND SERVICES**

- Financial incentive for solar thermal installations and efficiency improvements; supporting measures at regional and local level for renewable heat or cooling; tax rebate for energy efficiency investments up to 2010; mandatory standards for new buildings; energy efficiency certification of building is in process but still not in place; existing policies coherent with Kyoto target

TRANSPORT

- Fragmented and ineffective policies; voluntary agreement with automotive industry and a biofuels tax exemption which was now transformed in green certificate obligation; EU commission decision on allocation (May 2007) has rejected all CO₂ emission reduction from transport sector claimed by Italy as inconsistent with existing policy

RENEWABLES

- Renewable certificates and feed-in tariffs; tax credit for geothermal energy and biomass; planned: small plants (up to 1 MW) have choice between being granted with green certificates or receiving feed-in tariff; ranked among the last in EU report on progress towards renewable targets; renewable incentive scheme hampered by administrative barriers

G8 Climate Scorecard

Japan - Rank 5

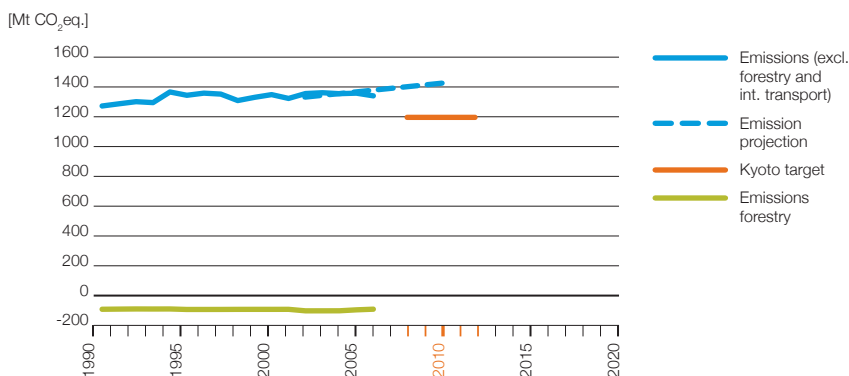
SUMMARY EVALUATION

- » Relatively low emission rates compared to average of industrialized countries due to high efficiency and use of nuclear power, which WWF does not consider as viable policy
- » Increasing emissions and wide distance to Kyoto target
- » No mandatory emission reduction scheme
- » Discussion on 2020 or long-term greenhouse gas emission reduction targets not concluded



EMISSIONS AND ENERGY

EMISSION TRENDS



Past emission trend
from 1990 to 2006 **+5.3%** ●

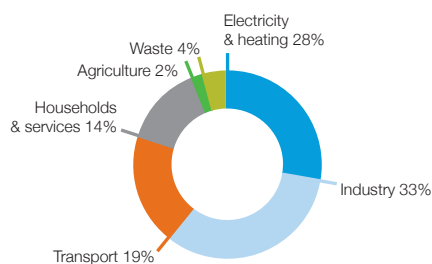
Current (2006) distance
to the Kyoto target **+11.3%-points** ●

Increase of the share of
renewable energy sources **-0.3%** ●

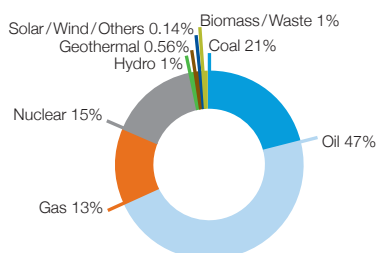
Emissions
per capita **11 tCO₂eq./cap** ●

Emissions
per GDP **389 tCO₂eq./M\$** ●

EMISSIONS BY SECTOR



ENERGY SOURCES



CO₂ per
kWh electricity **429 gCO₂/kWh** ●

Energy efficiency in industry **1.1** ●

Emissions in
transport
per capita **2.0 tCO₂eq./cap** ●

Emissions in households
and services
per capita **1.5 tCO₂eq./cap** ●

G8 Climate Scorecard

Japan - Rank 5

CLIMATE POLICIES

GENERAL

- » Ratified UNFCCC on 28.05.1993, ratified Kyoto Protocol on 04.06.2002
- » Government plans to achieve at least 1.6% of the 6% Kyoto target from JI and CDM and 3.8% from land-use change and forestry
- » Acted early to develop JI and CDM

ELECTRICITY/
NUCLEAR

- Voluntary agreement with industry association; target -20% CO₂ emissions per unit of output in 2010, but CO₂ emissions of sector have been increasing; strong support for nuclear power; enhancing efficiency of household appliances through “top runner” (automatically improving) standards and energy saving labels; tax deduction for high-efficiency equipment (lighting, air conditioners) and subsidies for efficient water heaters

INDUSTRY

- Voluntary agreement with industry association; target to reduce GHG emissions below 1990 level by 2010; obligatory energy management system; voluntary emission trading scheme with subsidies (target to reduce emissions by 1.3 MtCO₂eq. by 2012)

HOUSEHOLDS
AND SERVICES

- Obligatory energy management system for commercial buildings; tax credits for households to apply CHP; “top runner” energy efficiency standards for appliances

TRANSPORT

- “Top runner” standards for vehicles and fuel economy labels; obligatory energy management systems for emitters; clean Vehicles programmes for highly efficient vehicles; development of infrastructures (rail network)

RENEWABLES

- R&D programmes and grants; very weak target on renewable energy (12.2TWh by 2010 and 16TWh by 2014)

G8 Climate Scorecard

Russia - Rank 6

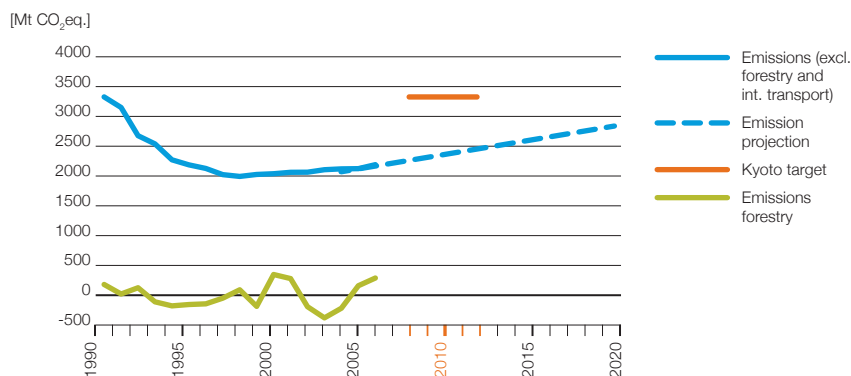
SUMMARY EVALUATION

- » Emission rates are average for industrialized countries with high use of natural gas but low efficiency
- » Emissions well below Kyoto target due to economic downturn but currently steadily increasing
- » Effectively no national measures in place



EMISSIONS AND ENERGY

EMISSION TRENDS



Past emission trend
from 1990 to 2006

-34.2% ●

Current (2006) distance
to the Kyoto target

-34.2% -points ●

Increase of the share of
renewable energy sources

-0.4% ●

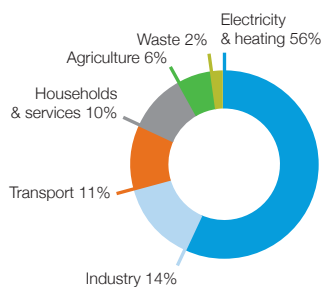
Emissions
per capita

15 tCO₂eq./cap ●

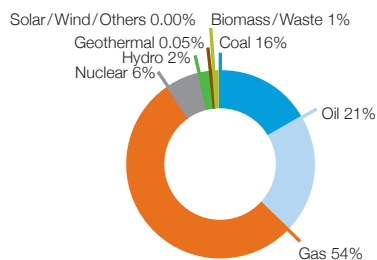
Emissions
per GDP

1531 tCO₂eq./M\$ ●

EMISSIONS BY SECTOR



ENERGY SOURCES



CO₂ per
kWh electricity

338 gCO₂/kWh ●

Energy efficiency in industry

2.5 ●

Emissions in
transport
per capita

1.3 tCO₂eq./cap ●

Emissions in households
and services
per capita

1.4 tCO₂eq./cap ●

G8 Climate Scorecard

Russia - Rank 6

CLIMATE POLICIES**GENERAL**

- » Ratified UNFCCC on 25.03.1994, ratified Kyoto Protocol on 18.11.2004
- » The Energy Strategy through 2020 (2003): improvement of energy efficiency by 2020 by 50% compared to 2000

**ELECTRICITY/
NUCLEAR**

- Programme to phase out subsidies to fossil based energy production; energy efficiency programme announced, but practically no concrete measures implemented yet; intends to increase reliance on nuclear power

INDUSTRY

- Programme to increase energy efficiency and improve gas based technologies and increase coal quality

**HOUSEHOLDS
AND SERVICES**

- Very limited policies in the domestic sector

TRANSPORT

- Plan to increase the share of biofuels but no concrete measures

RENEWABLES

- Long-term plan to develop renewable energy

G8 Climate Scorecard

United Kingdom - Rank 1

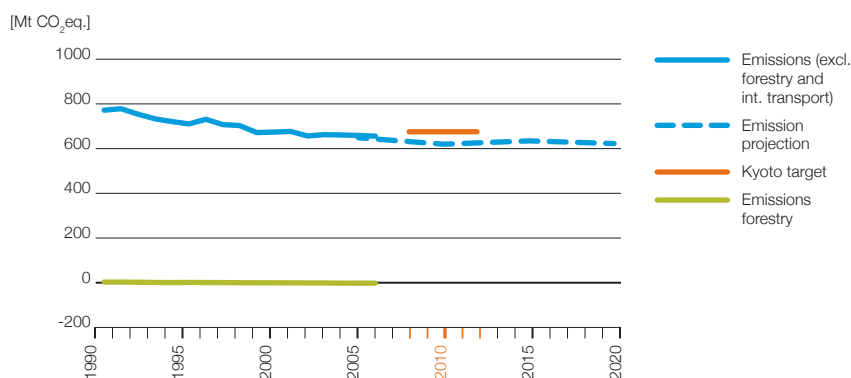
SUMMARY EVALUATION

- » Emissions already below Kyoto target but trend has stalled since 2000. Emissions are expected to rise further but UK will meet the Kyoto target. The voluntary national 20% target for CO₂ by 2010 will be missed by about 10 percentage points
- » Very small share of renewable energy
- » Proactive in taking national measures, many additional measures in the pipeline and driving the international debate
- » Long-term target, but not ambitious enough; ambitious EU GHG emission reduction target by 2020



EMISSIONS AND ENERGY

EMISSION TRENDS



Past emission trend from 1990 to 2006 **-15.1%**

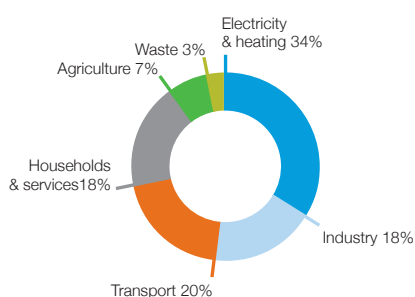
Current (2006) distance to the Kyoto target **-2.6%-points**

Increase of the share of renewable energy sources **1.5%**

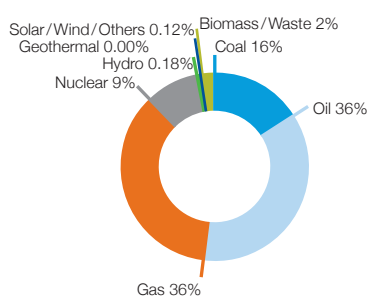
Emissions per capita **11 tCO₂eq./cap**

Emissions per GDP **380 tCO₂eq./M\$**

EMISSIONS BY SECTOR



ENERGY SOURCES



CO₂ per kWh electricity **473 gCO₂/kWh**

Energy efficiency in industry **1.9**

Emissions in transport per capita **2.2 tCO₂eq./cap**

Emissions in households and services per capita **2.0 tCO₂eq./cap**

G8 Climate Scorecard

United Kingdom - Rank 1

CLIMATE POLICIES

GENERAL

- » Ratified UNFCCC on 08.12.1993, ratified Kyoto Protocol on 31.05.2002
- » Supports that global temperature increase should be kept below 2°C and global emissions should be halved by 2050
- » Long-term target to cut CO₂ emissions by at least 60% by 2050 and at least 26% by 2020 compared to 1990 levels to be confirmed in new legislation; strong national climate debate pushing for targets of at least 80% by 2050
- » Agreed to ambitious EU targets for 2020: unilaterally reduce GHG emissions 20% below 1990 and 30% if other countries commit to similar efforts, save 20% energy consumed and increase renewables to a 20% share
- » Initiated debate on climate change within the G8, drives debate in international fora

ELECTRICITY/
NUCLEAR

- Participation in the EU Emission Trading System; relatively stringent allocation for 2008 to 2012; carbon emissions increased between 2005 and 2006 due to increased use of coal; net acquirer of allowances in 2006; commitment on electricity and gas suppliers to increase energy efficiency in homes; Climate Change Levy with exemption for combined heat and power, plans to build new coal and nuclear stations; medium-scale demonstration scheme for carbon capture and storage planned

INDUSTRY

- Half of industry emissions covered by the EU Emission Trading System with moderate allocations; negotiated energy efficiency targets with industry-sector associations; targets generally seen as modest; exemption from Climate Change Levy if negotiated agreement is met; most industry not covered by the EU ETS or negotiated agreements will be included in mandatory trading scheme (Carbon Reduction Commitment, forth draft legislation in summer 2008)

HOUSEHOLDS
AND SERVICES

- Building standards for houses based on CO₂ emissions; tax exemption for houses meeting zero carbon standards; ambitious standards announced in 2006 to reduce CO₂ emissions of new houses by 25% in 2010, 44% in 2013 and zero carbon in 2016; grants for microgeneration on buildings; large commercial and public sector organizations must participate in the mandatory trading scheme; new non-domestic buildings to be zero-carbon by 2019

TRANSPORT

- Biofuels tax exemption; modest tax relief for low emission cars. Policy to increase road fuel taxation annually abandoned in 2001, another planned increase deferred in 2008; strong national debate over plans for significant expansion in airport capacity and aviation emissions

RENEWABLES

- Obligation on electricity suppliers to supply a specified percentage of electricity from renewables, linked to tradable certificates; consultation completed on differentiated levels of support for different renewable technologies and intent to implement them; exemption of renewable energy from Climate Change Levy; renewable transport fuel obligation on fuel suppliers started in 2008

G8 Climate Scorecard

United States - Rank 8

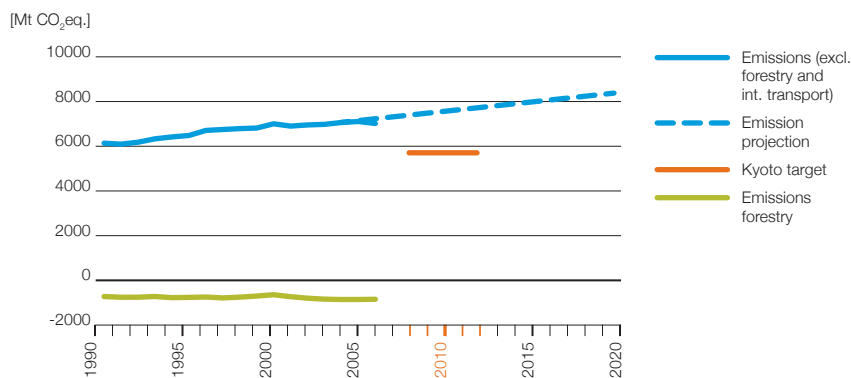
SUMMARY EVALUATION

- » Country in G8 with the highest absolute emissions. Emission rates are among the highest in the world, strong dependence on coal and oil
- » Kyoto target is out of reach, national targets are significantly less ambitious
- » National strategy (climate technology R&D funds) aimed only at long-term emissions
- » Strong pressure by local and state governments and some businesses to strengthen policies



EMISSIONS AND ENERGY

EMISSION TRENDS



Past emission trend from 1990 to 2006 **+14.4%**

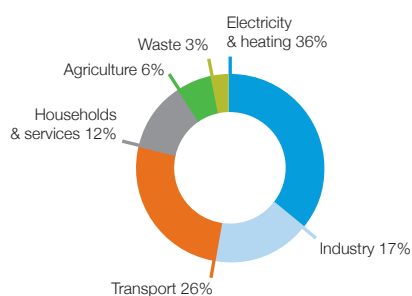
Current (2006) distance to the Kyoto target **+21.4 %-points**

Increase of the share of renewable energy sources **-0.5%**

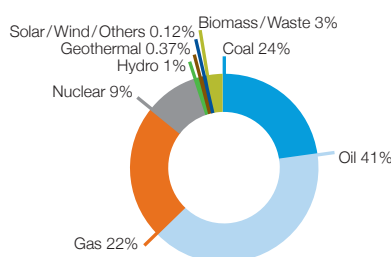
Emissions per capita **24 tCO₂eq./cap**

Emissions per GDP **641 tCO₂eq./M\$**

EMISSIONS BY SECTOR



ENERGY SOURCES



CO₂ per kWh electricity **573 gCO₂/kWh**

Energy efficiency in industry **1.6**

Emissions in transport per capita **6.3 tCO₂eq./cap**

Emissions in households and services per capita **2.9 tCO₂eq./cap**

G8 Climate Scorecard

United States - Rank 8

CLIMATE POLICIES**GENERAL**

- » Ratified UNFCCC on 15.10.1992, rejected Kyoto Protocol
- » Bush administration proposed an alternative national approach, new target: stop U.S. emission growth by 2025 (2008)
- » Bush administration states climate change is “a serious problem”, but policies do not result in short-term emission reductions
- » Increased activity in the Congress and on regional level on the issue of climate change

**ELECTRICITY/
NUCLEAR**

- Development programme for future clean technologies; programmes for increased building efficiency and energy saving appliances (Energy-Star label); mandatory cap and trade scheme with market-based emissions trading system planned for 2009 in several states (110 MtCO₂ from 2009–2015)

INDUSTRY

- Voluntary partnerships between government and industry, NGOs and industry to reduce emissions; energy efficiency programme; Climate Wise and Industry for the Future programmes; mandatory cap and trade scheme with market-based emissions trading system planned for 2009 in several states; tax credits for energy efficiency investments

**HOUSEHOLDS
AND SERVICES**

- Mandatory but not ambitious energy efficiency standards for new buildings; voluntary Energy Star programme for buildings; federal support for energy efficiency measures in low income homes; tax credits for energy efficiency investments

TRANSPORT

- Research and development grants for clean fuels and vehicle efficiency; voluntary initiatives to reduce emissions between government and automotive industry; target to reduce gasoline consumption by 20% between 2006 and 2011

RENEWABLES

- Tax incentives on federal level (production tax credit, accelerated cost recovery system); Renewable Portfolio Standards - minimum targets for renewable electricity - in many states for utilities, but no support mechanism on the federal level. Renewable fuel standard aims to produce 15 billion gallons of biofuels by 2015, 36 billion by 2022; Solar Energy Technologies Program to make solar energy cost-competitive with conventional electricity by 2015, target: at least 5 GW new solar electric capacity

Climate Scorecard

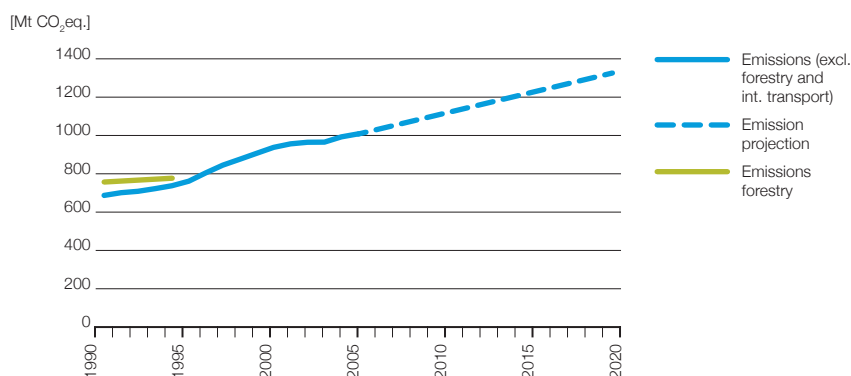
Brazil

SUMMARY EVALUATION

- » Very low emission intensity for electricity generation due to extensive use of hydropower
- » Increasing national emissions from the energy sector
- » Emissions from deforestation and agriculture account for large share of total greenhouse gas emissions. Deforestation shows decreasing trend recently, but is very sensitive to international agricultural commodity prices

EMISSIONS AND ENERGY

EMISSION TRENDS



Past emission trend from 1990 to 2005 **+46.8%**

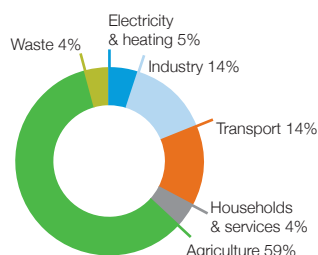
Increase of the share of renewable energy sources **-4.0%**

Emissions per capita **5,4 tCO₂eq./cap**

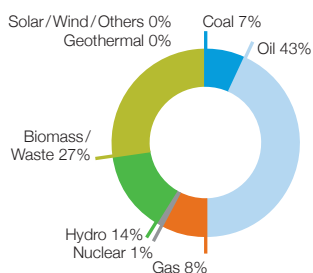
Emissions per GDP **708 tCO₂eq./M\$**

CO₂ per kWh electricity **84 gCO₂/kWh**

EMISSIONS BY SECTOR



ENERGY SOURCES



Energy efficiency in industry **1.6**

Emissions in transport per capita **0.7 tCO₂eq./cap**

Emissions in households and services per capita **0.2 tCO₂eq./cap**

Access to electricity **95%**

Climate Scorecard

Brazil

CLIMATE POLICIES**GENERAL**

- » Ratified UNFCCC on 28.02. 1994, ratified Kyoto Protocol on 23.08.2002
- » 132 CDM projects currently registered with the UNFCCC (est. annual reduction: 18.1 MtCO₂eq.)
- » National Plan for Confronting Climate Change under development; it will include a National Climate Policy under the federal government and a National Climate Law which will be voted by both houses of Congress
- » National Plan for the Prevention and Combat of Deforestation was successful in decreasing deforestation trends, but currently increase again

ELECTRICITY

Promotion of natural gas import and use of in cogeneration plants; National Program for Electricity Conservation (PROCEL) in place since 1991; large hydroelectric projects still highly encouraged by government policies

INDUSTRY

Energy performance standards are set for electric motors; national program for the rationalization of the use of oil and gas derivatives (CONPET) in place since 1991

**HOUSEHOLDS
AND SERVICES**

Voluntary labelling for electric appliances and mandatory labelling for gas-power stoves and ovens; tax reduction for efficient light bulbs

TRANSPORT

Tax incentive for efficient car engines

RENEWABLES

National programme (PROALCOOL) to support the use of ethanol as substitute for petrol, regular gasoline contains 25% bioethanol; programme (PROBIODIESEL) for fuel retailers to blend at least 2% of biodiesel into commercialised diesel by 2008 and 5% by 2013; today alcohol generates more energy than hydroelectricity; recent official long-term energy plan forecasts a share of 7% in 2020 and 12% in 2030; programme (PROINFA) since 2002 to expand the use of alternative renewable sources for electricity generation (e.g. small hydroelectric, wind and biomass) by establishing feed-in tariff guaranteed for 20 years, target: share of 10% renewable electricity after 20 years

Climate Scorecard

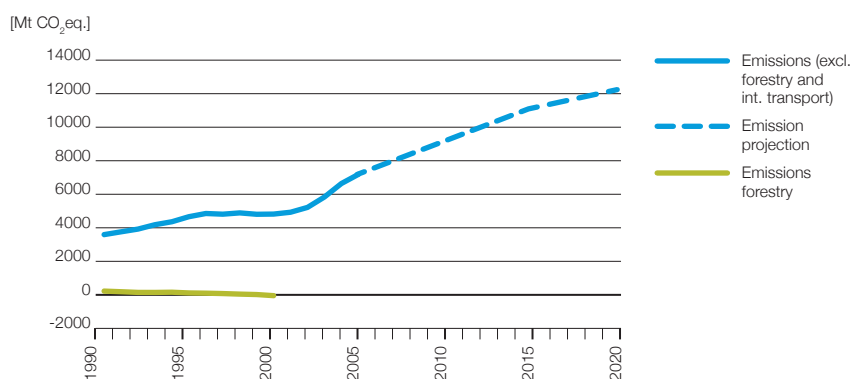
China

SUMMARY EVALUATION

- » Emissions per capita at developing country average, low compared to world average, but strongly increasing total emissions
- » Strong dependence on coal in electricity generation and industry, but efforts to broaden use of natural gas
- » Fast development of the energy system includes efforts to increase share of renewable sources and implement energy efficiency measures

EMISSIONS AND ENERGY

EMISSION TRENDS



Past emission trend
from 1990 to 2005 **+100 %**

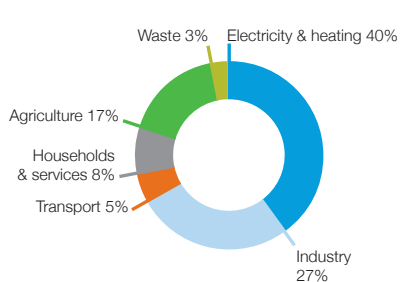
Increase of the share of
renewable energy sources **-9.3 %**

Emissions per capita **5.5 tCO₂eq./cap**

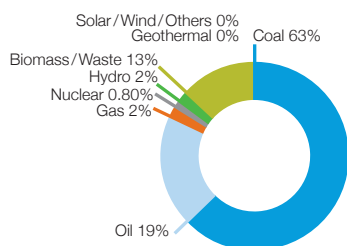
Emissions per GDP **903 tCO₂eq./M\$**

CO₂ per kWh
electricity **788 gCO₂/kWh**

EMISSIONS BY SECTOR



ENERGY SOURCES



Energy efficiency
in industry **1.9**

Emissions in transport
per capita **0.2 tCO₂eq./cap**

Emissions in households
and services
per capita **0.4 tCO₂eq./cap**

Access to electricity **99 %**

Climate Scorecard

China

CLIMATE POLICIES**GENERAL**

- » Ratified UNFCCC on 05.01.1993, ratified Kyoto Protocol on 30.08.2002
- » 202 CDM projects currently registered with the UNFCCC (est. annual reduction: 108.3 MtCO₂eq.)
- » Ambitious energy intensity target: -20% primary energy per GDP from 2005 to 2010
- » Law on Conserving Energy, strengthened (4/2008), now tougher standards and energy conservation as one of the indicators for the performance assessment of government officials

ELECTRICITY

Electric Power Law promulgated in 1995 to start market-oriented electricity power system reform; incentive to substitute coal by natural gas through provision of improved infrastructure for natural gas

INDUSTRY

Efforts to reduce consumption of energy and other resources

**HOUSEHOLDS
AND SERVICES**

Mandatory standards for energy-efficiency of appliances together with voluntary labelling program

TRANSPORT

Establishment of the energy-efficient integrated transportation system; standards to limit energy consumption of cars

RENEWABLES

Commitment to use 15% of total energy from renewable sources by 2020; renewable energy law with feed-in tariff, national fund, discounted lending and tax preferences for renewable energy projects

Climate Scorecard

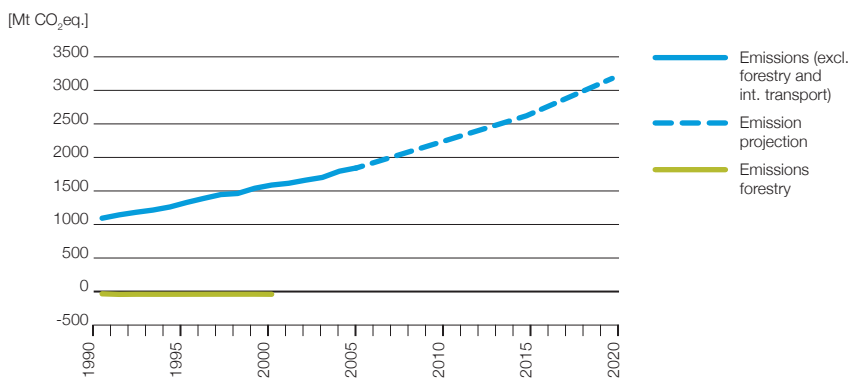
India

SUMMARY EVALUATION

- » Emissions per capita are well below developing country average, but strongly increasing absolute emissions
- » Strong dependence on coal, efforts underway to increase energy efficiency as well as the share of renewables
- » Some initial efforts made to slow emission growth; energy intensity per GDP is declining
- » Large number of people still without access to modern energy
- » High share of methane emissions from agriculture (rice fields and animals)

EMISSIONS AND ENERGY

EMISSION TRENDS



Past emission trend from 1990 to 2005 **+68.6%**

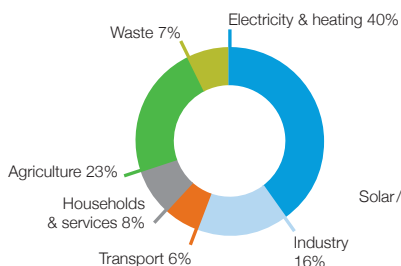
Increase of the share of renewable energy sources **-12.5%**

Emissions per capita **1.7 tCO₂eq./cap**

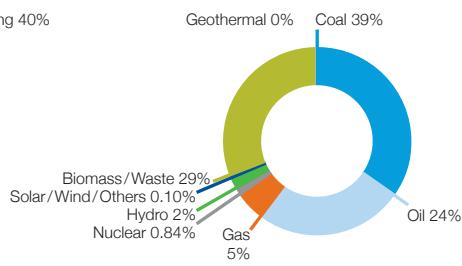
Emissions per GDP **542 tCO₂eq./M\$**

CO₂ per kWh electricity **943 gCO₂/kWh**

EMISSIONS BY SECTOR



ENERGY SOURCES



Energy efficiency in industry **1.7**

Emissions in transport per capita **0.1 tCO₂eq./cap**

Emissions in households and services per capita **0.1 tCO₂eq./cap**

Access to electricity **43%**

Climate Scorecard

India

CLIMATE POLICIES**GENERAL**

- » Ratified UNFCCC on 01.11.1993, ratified Kyoto Protocol on 26.08.2002
- » 333 CDM projects currently registered with the UNFCCC (est. annual reduction: 30.2 MtCO₂eq.)
- » National Action Plan on Climate Change on mitigation and adaptation under preparation; to be released in June 2008
- » Ambitious target of reducing the energy intensity by 20% per unit of GDP between 2007-2012
- » Energy Conservation Act (2001) provides legislative and regulatory framework for implementation of energy efficiency across key sectors

ELECTRICITY

The Electricity Act 2003 forms the basis for reforms in the power sector, including loss reduction and efficiency improvements in generation, transmission and distribution; clean coal initiatives to restructure the coal sector, including reduced subsidies, regulating conversion efficiency of power plants, shift towards super critical technologies

INDUSTRY

Obligation for industries to report energy efficiency improvements to facilitate identification of existing potentials; industries have started voluntary steps towards reducing ecological footprint including voluntary carbon disclosure

**HOUSEHOLDS
AND SERVICES**

Standards and labelling for household appliances on voluntary basis; energy conservation code for commercial buildings; public investment for development of a natural gas infrastructure; demand side management in households and agriculture

TRANSPORT

Reduction of vehicle emissions through measures like adherence to performance standards or obligatory use of compressed natural gas as fuel (commercial vehicles) and initiatives for strengthening public transport especially electricity based automotive transport

RENEWABLES

Renewable energy programme including subsidies for renewable technologies; Renewable Energy Portfolio standards through mandatory minimum purchase of renewable energy in energy mix, including feed-in tariff under National Tariff Policy; regulatory and financial incentives for grid-connected decentralised distributed power generation from renewables

Climate Scorecard

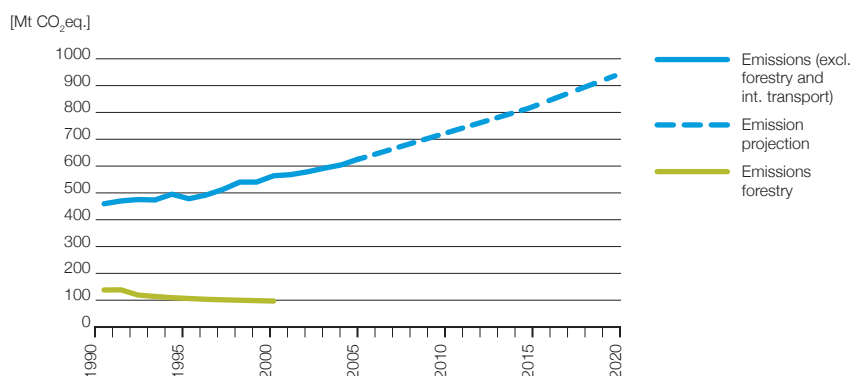
Mexico

SUMMARY EVALUATION

- » Emissions per capita average for developing countries, low compared to world average, but increasing and projected to increase faster in the future
- » Strong dependence on oil
- » First efforts to slow emission growth

EMISSIONS AND ENERGY

EMISSION TRENDS



Past emission trend
from 1990 to 2005 **+36.3%**

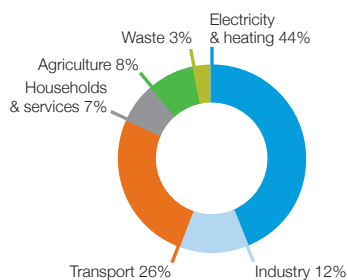
Increase of the share of
renewable energy sources **-1.4%**

Emissions per capita **5.9 tCO₂eq./cap**

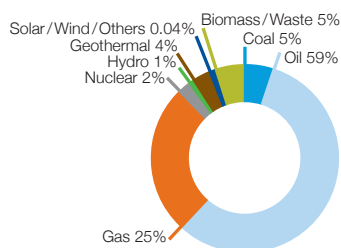
Emissions per GDP **651 tCO₂eq./M\$**

CO₂ per kWh
electricity **515 gCO₂/kWh**

EMISSIONS BY SECTOR



ENERGY SOURCES



Energy efficiency
in industry **1.7**

Emissions in transport
per capita **1.3 tCO₂eq./cap**

Emissions in households
and services
per capita **0.3 tCO₂eq./cap**

Access to electricity **95%**

Climate Scorecard

Mexico

CLIMATE POLICIES

GENERAL

- » Ratified UNFCCC on 11.03.1993, ratified Kyoto Protocol on 07.09.2000
- » 104 CDM projects currently registered with the UNFCCC (est. annual reduction: 7.1 MtCO₂eq.)
- » Leading by preparing its fourth national report to the UNFCCC

ELECTRICITY

Programme to reduce leakages of gas

INDUSTRY

Programme for energy saving and fuel switch of National Mexican Petroleum Company (PEMEX); development of integrated system of industrial regulation and management (SIRG) as well as registration of emissions and pollution transfer (RETC)

HOUSEHOLDS AND SERVICES

Up to date energy efficiency standards for electric appliances, gas boilers and thermal insulations; fiscal incentives, investment subsidies and soft loans for energy-efficiency improvement in services and households; enhancing natural gas use by opening gas transport and distribution to private sector

TRANSPORT

Pilot project for use of hybrid buses in public transport; fiscal incentives, investment subsidies and soft loans for energy efficiency improvement

RENEWABLES

Target: 8% of renewable electricity generation by 2012; on track meeting this target mainly due to large-scale hydro power

Climate Scorecard

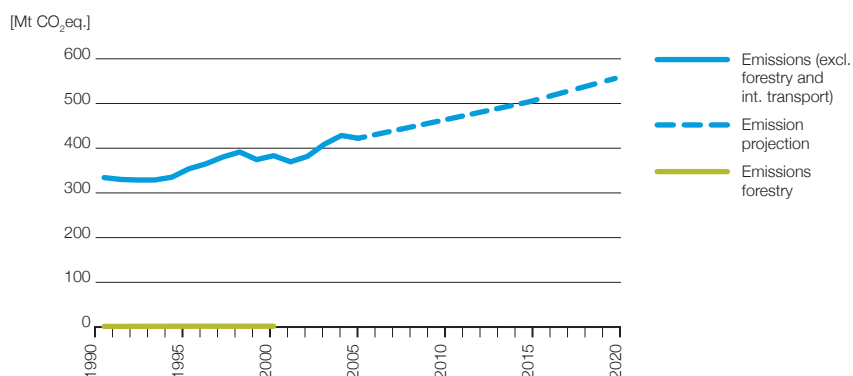
South Africa

SUMMARY EVALUATION

- » Emissions per capita only slightly below average of industrialized countries, well above developing country average, increasing trend
- » Very strong dependence on coal
- » First intentions to lower emissions in the future
- » Approximately 34% of people without access to modern energy

EMISSIONS AND ENERGY

EMISSION TRENDS



Past emission trend
from 1990 to 2005 **+26.3%**

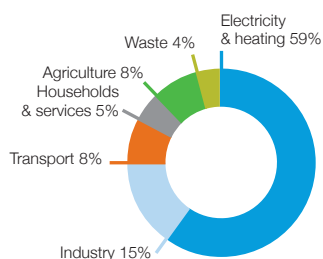
Increase of the share of
renewable energy sources **-0.7%**

Emissions per capita **9.0 tCO₂eq./cap**

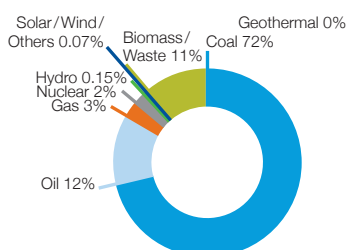
Emissions per GDP **858 tCO₂eq./M\$**

CO₂ per kWh
electricity **848 gCO₂/kWh**

EMISSIONS BY SECTOR



ENERGY SOURCES



Energy efficiency
in industry **2.5**

Emissions in transport
per capita **0.9 tCO₂eq./cap**

Emissions in households
and services
per capita **0.6 tCO₂eq./cap**

Access to electricity **66%**

Climate Scorecard

South Africa

CLIMATE POLICIES**GENERAL**

- » Ratified UNFCCC on 28.08.1997, ratified Kyoto Protocol on 31.07.2002
- » 13 CDM projects currently registered with the UNFCCC (est. annual reduction: 2.5 MtCO₂eq.)

ELECTRICITY

Energy efficiency strategy for energy production sectors; legal and economical framework development for future substitution of coal-based fuel by natural gas, e.g. the Gas Act

INDUSTRY

–

**HOUSEHOLDS
AND SERVICES**

Planned energy efficiency standard for buildings and appliances

TRANSPORT

Planned efficiency label for motor vehicles; planned fiscal incentives for transport fuel efficiency

RENEWABLES

Renewable energy target of 10,000 GWh by 2013; capital subsidies for renewable energy technologies; white paper on renewable energy and energy policy; off-grid electrification programme (PV)

Technical annex

PERFORMANCE IN CARBON MARKETS

CDM and JI data taken from UNEP/RISØ JI/CDM pipeline (<http://cdmpipeline.org/>) in May 2008

GREENHOUSE GAS EMISSIONS

Unless otherwise specified, emissions refer to greenhouse gas emissions from CO₂, CH₄, N₂O, HFCs, PFCs, and SF₆ in Mt CO₂ equivalent. The emissions exclude “Land-Use Change & Forestry” and exclude “International Bunker Fuels”.

For the G8 countries, emissions are those reported to the UNFCCC in 2008, <http://www.unfccc.int>. Canada did not yet report hence last year’s submission was used.

Brazil, China, India, Mexico, South Africa: The emissions data for CO₂ are taken from IEA (2007) CO₂ Emissions from Fuel Combustion (2007 edition); process CO₂ emissions from cement production from CDIAC (2005) Global, Regional, and National Fossil Fuel CO₂ Emissions. In Marland, G., T.A. Boden and R. J. Andres (Eds.), A Compendium of Data on Global Change were added, 2004 values were also used for 2005; data for non-CO₂ gases according to USEPA (2006) Global Anthropogenic Non-CO₂ Greenhouse Gas Emissions: 1990 – 2020. Appendix A-D; emissions from land-use change as published by Houghton in the WRI climate indicator analysis tool (Houghton 2003) Emissions (and Sinks) of Carbon from Land-Use Change, except Brazil, where the national communication was used (Brazil’s initial national communication, <http://unfccc.int/resource/docs/natc/brazilinc1e.pdf>).

KYOTO TARGETS

Difference between emissions in 2006 (2005) and the Kyoto target as percentage of 1990 emissions. Additional allowances can optionally be generated to meet the Kyoto targets from “Forest Management” up to a specified amount (Annex to decision 11/CP.7 in UNFCCC document FCCC/CP/2001/13/Add.1): Canada: 44 MtCO₂/y which would be 7% of the base year emissions, France: 3.2 MtCO₂/y (0.6%), Germany: 4.5 MtCO₂/y (0.4%), Italy: 10.2 MtCO₂/y (2%), Japan: 48 MtCO₂/y (3.8%) Russia: 121 Mt CO₂/y (4%) UK: 1.4 Mt CO₂/y (0.2%). No limit is specified for the USA.

FUTURE EMISSIONS

G8: Future emissions projections are taken from national communications reported to the UNFCCC, in-depth review reports of these national communications or newer official national publications.

Canada: “Canada’s Energy and GHG Emissions Projections Reference case: 2006–2020” March 2008, http://www.ec.gc.ca/doc/virage-corner/2008-03/pdf/nat_eng.pdf

France: National Communication to UNFCCC “Quatrième communication nationale à la Convention cadre des Nations unies sur les changements climatiques 2006”. GHG projection, including current policies. <http://unfccc.int/resource/docs/natc/franc4f.pdf>

Germany: National Communication to UNFCCC “Fourth National Report by the Government of the Federal Republic of Germany 2006”. GHG projection, including current policies. <http://unfccc.int/resource/docs/natc/gernc4.pdf>

Italy: National Communication to UNFCCC “Fourth National communication”, p. 129, trend scenario, <http://unfccc.int/resource/docs/natc/itanc4.pdf>

Japan: In-Depth Review Report of the UNFCCC “Report of the centralized in-depth review of the fourth national communication of Japan, 2007”. GHG projection, including current policies. <http://unfccc.int/resource/docs/2007/idr/jpn04.pdf>

Russia: National Communication to UNFCCC “ЧЕТВЕРТОЕ НАЦИОНАЛЬНОЕ СООБЩЕНИЕ, 2006”. GHG projection, including current policies. http://unfccc.int/resource/docs/natc/rusnc4r_rev.pdf

UK: In-Depth Review Report of the UNFCCC “Report of the centralized in-depth review of the fourth national communication of the United Kingdom of Great Britain and Northern Ireland”. GHG projection, including current policies. <http://unfccc.int/resource/docs/2007/idr/gbr04.pdf>

USA: National Communication to UNFCCC “US climate action report 2006”, <http://unfccc.int/resource/docs/natc/usnc4.pdf>, scenario “full implementation of climate programs and measures”

Brazil, China, India, Mexico, South Africa: Projections are taken from the World Energy Outlook 2007 of the International Energy Agency (IEA 2007) for CO₂ from fossil fuel combustion (using regional growth rates for Brazil, Mexico and South Africa), constant 2004 values for CO₂ emissions from industrial processes from

CDIAC (2005) Global, Regional, and National Fossil Fuel CO₂ Emissions and USEPA (2006) Global Anthropogenic Non-CO₂ Greenhouse Gas Emissions: 1990 – 2020. Appendix A-D. for non-CO₂ gases.

INDICATORS

Emissions by sector: For the year 2005 except for France, Germany, Italy, Japan, Russia, UK, USA (2006). “Industry” includes energy, process and fugitive emissions but excludes emissions from electricity generation. “Households and services” also excludes emissions from electricity generation. “Transport” includes only domestic transport and excludes international aviation and shipping. “Agriculture” includes only non-CO₂ emissions. The sector “Land-Use Change & Forestry” is excluded from the figure.

Energy sources: For the year 2005. Total primary energy supply as provided by IEA (2007) Energy Balances, Paris, France.

Increase of share of renewable energy sources: Change in share of renewable energy sources in primary energy consumption from 1990 to 2005 based on IEA (2007) Energy Balances, Paris, France. Includes also large hydro, due to lack of disaggregated data. WWF only supports hydropower that is consistent with World Commission on Dams guidelines.

Emissions per capita: For the year 2005/2006. Population in 2005/6 is based on United Nations World Population Prospectus (UN 2007).

Emissions per GDP: For the year 2005/2006. Gross Domestic Product in purchase power parities is based on World Development Indicators (World Bank 2007), retrieved on April 2008.

CO₂ per kWh electricity: For the year 2005. Based on IEA (2007) CO₂ emissions from fuel combustion and IEA (2007) Energy Balances, Paris, France. The values consider electricity *and* heat generated. They may therefore differ from nationally published estimates derived with a different methodology, e.g. 616 gCO₂/kWh for Germany. France: emissions per kWh are very low (91 gCO₂/kWh). However, the climate meter was set at the middle position, since WWF does not consider nuclear energy a viable option.

Energy efficiency in industry: Energy efficiency index aggregated for iron & steel, pulp & paper, ce-

ment, petrochemical industry and petroleum refineries as provided by Kuramochi 2006 (Kuramochi, Takeshi. 2006. Greenhouse gas emissions reduction based on a bottom-up approach: Focus on industrial energy efficiency benchmarking and future industrial activity indicators. Utrecht: University of Utrecht). An indicator of 1 denotes best available technology. A value of 1.2 shows that the country is using 20% more energy than best available technology.

Emissions in transport per capita: for the year 2005/2006 (developing countries 2004) excluding international transport. This value can be low if the efficiency of vehicles is high (e.g. Japan) and/or the total travel activity is low (e.g. Russia).

Emissions in households and services: For the year 2005/2006 (developing countries 2004). Includes only direct emissions (e.g. from space heating) and excludes indirect emissions from electricity use.

Access to electricity: For the year 2000. International Energy Agency (IEA). 2002. World Energy Outlook: Energy and Poverty. As downloaded from <http://earthtrends.wri.org/>

CLIMATE POLICIES

Three different ranking options (green, yellow, red) are available to assess the G8 countries’ performance in the scorecards. However, the underlying evaluation is more detailed and ranges from +2.5 (best) to -2.5 (worst). These values are given in **Table 1**.

CDM projects in Brazil, China, India, Mexico, and South Africa were retrieved from the UNFCCC CDM project database as of 30 April 2008.

AGGREGATION METHOD FOR G8 COUNTRIES

Values that define the middle of the climate meter are:

- » Past emission trend: -12% (chosen so that any increase is rated red, i.e. -2.5 to -0.5. Middle position would be more stringent, i.e. -20%, if the value of 2005 of a linear interpolation for an 80% reduction form 1990 to 2050 were chosen, which would be a consistent path towards 2°C)

- » Distance to Kyoto target: 0 %-points (chosen to be at that value)
- » Increase of share of renewable sources: 2.7 % (chosen so that any decrease in share is rated red, i.e. -2.5 to -0.5)
- » Emissions per capita: 11.2 tCO₂eq/cap (chosen as the value of 2005 of a linear interpolation between the Annex I average in 1990, i.e. 14 tCO₂eq., and a 80 % reduction in 2050)
- » Emissions per GDP: 593 tCO₂eq/M\$
- » CO₂ per kWh electricity: 350 g/kWh (For France the climate meter has been adapted from green to medium to reflect the relatively large share of nuclear power in the fuel mix)
- » Energy efficiency in industry: 1.3 (chosen as an achievable value, which is still 30 % above best available technology. Higher limit (green) is set at 1, i.e. best available technology)
- » Emissions in transport per capita: 2 tCO₂eq./cap
- » Emissions in households and services per capita: 1.8 tCO₂eq./cap

The minimum and maximum are defined as minimum and maximum over industrialized countries.

Past emission trend, distance to Kyoto target and increase in share of renewables are equally weighted at 11 %.

Emissions per capita and emissions per GDP are weighted at 11 %; CO₂ per kWh electricity and energy efficiency in industry are weighted at 5.5 % each.

Policies in the area of renewables are weighted at 8 % for all countries. Electricity, industry, households and services and transport are weighted differently for each country according to their contribution to greenhouse gas emissions in each country. This means, very good policies in a sector with a high amount of greenhouse gas emissions are valued more than very good policies in a sector that does not contribute much to emissions.

The individual numerical scores are added, resulting in an overall numerical score.

FINAL SCORES

The final scores and for comparison last years rating are provided in **Table 2**.

	Canada	France	Germany	Italy	Japan	Russia	UK	USA
Electricity/nuclear	-1	-1	-1	0	-1	-2	0	-2
Industry	-1	0	0	0	-1	-2	1	-1
Households and services	-1	0	0	0	-1	-2	0	-1
Transport	-1	-1	-2	-2	0	-2	-1	-1
Renewables	-1	0	2	-1	-1	-2	0	-1

Table 1

Detailed values of G8 policy rating per country and sector

	Canada	France	Germany	Italy	Japan	Russia	UK	USA
Final rating (2008)	-1.09	0.07	0.05	-0.26	-0.27	-0.89	0.09	-1.15
Last year's rating (2007)	-1.12	0.04	0.10	-0.38	-0.22	-0.94	0.00	-1.24

Table 2

Final rating for the G8 countries

Further reading

- » **Fact sheets:** Fact sheets for 60 countries with more detailed data but without ranking are available in the Ecofys report “Factors underpinning future action – 2007 update” funded by UK DEFRA
<http://www.fiacc.net/data/fufa2.pdf>
- » **Official national emission estimates reported to the UNFCCC:** Greenhouse gas inventory data of the UNFCCC secretariat
<http://ghg.unfccc.int/index.html>
- » **Compilation of national greenhouse gas emissions and other climate relevant data:** Climate Analysis Indicators Tool (CAIT) by the World Resources Institute,
<http://cait.wri.org>
- » **Information Toolkit for post-2012 climate policies:** Information on historical emissions and energy trends, emission pathways, stabilisation scenarios, mitigation potentials and costs, co-benefits and historical responsibility.
http://www.mnp.nl/en/themasites/wab/products/Climate_Change_Miscellaneous/Information_Toolkit_for_post_2012_climate_policies.html
- » **Annex I emission fact sheets:** Malte Meinshausen, 2004: “Emissions, Targets and Projections for Annex I Parties”, revised version of data appendix in F. Yamin and J. Depledge, “The International Climate Change Regime: A Guide to Rules, Institutions, and Procedures”, Cambridge University Press, 2004
<http://www.simcap.org>



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