



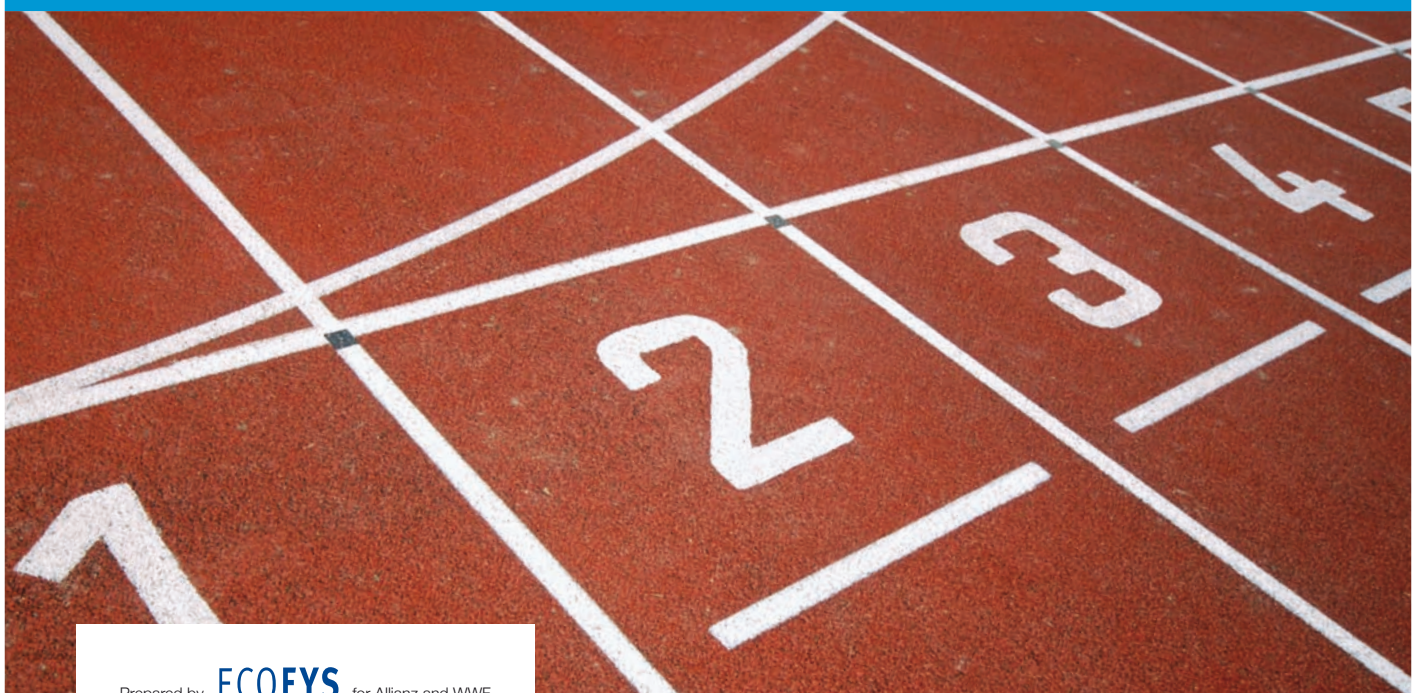
# G8

2009

# CLIMATE SCORECARDS

CLIMATE PERFORMANCE OF CANADA, FRANCE, GERMANY, ITALY, JAPAN, RUSSIA, UNITED KINGDOM AND UNITED 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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# Now is the time for decisions



Dr. Joachim Faber (left)  
James P. Leape (right)

**C**limate change is the greatest threat to development and prosperity on this planet, endangering people and cultures as well as the natural base of life.

While there might be a bailout possibility for the financial system, no amounts of money will save the planet once climate change crosses the danger threshold. It is therefore crucial to limit the rise of global temperature to below two degrees compared to pre-industrial levels.

The writing is on the wall and the latest findings of climate science are even more alarming. The urgency is real and accepted by all. Now is the time to act.

The opportunity to set the world on a more sustainable course comes in December, when a decisive UN Summit in Copenhagen will see the final round of negotiations for a new climate treaty, following the first phase of the Kyoto Protocol.

In this context it is particularly important that World Leaders meeting at the G8 Summit and Major Economies Forum in July set the scene for success in Copenhagen. They can do this by:

- » clearly committing to deep emission reductions in line with the 2 degree threshold

- » securing massive flows of secure and predictable funding for climate adaptation
- » steering the transition to a low carbon future with binding financial support

For the third consecutive year, Allianz and WWF are jointly presenting the Climate Scorecards 2009. Our Strategic Partnership is based on the belief that the financial sector has a key role to play to avert dangerous climate change. Allianz is committed to putting climate change right at the center of its business strategy, both on a products and an investment side.

Our contribution in the context of the G8 summits is the provision of an annual analysis of the G8 national efforts to tackle climate change. The 2009 edition shows that while some efforts exist, action remains insufficient to set the world on a low carbon economy course.

In the report, we provide a series of recommendations and concrete actions that political and business leaders must take to avoid dangerous climate change.

Dr. Joachim Faber  
Board Member Allianz SE

James P. Leape  
Director General WWF

# Summary

## THE G8 IN A CRUCIAL CLIMATE YEAR

Scientists warn more strongly than ever that the expected climate impacts exceed even the most challenging models of the Nobel-prize winning Intergovernmental Panel on Climate Change (IPCC).

We do, however, still have a window of opportunity to keep climate change and the warming of the atmosphere below the danger threshold defined as a 2°C rise of average global temperatures, compared to pre-industrial times.

To realize this, we need to put the world on a pathway where global emissions peak and decline well before 2020 and are reduced by more than 80% below 1990 levels by 2050.

2009 is a crucial year for climate change: at a pivotal UN conference in Copenhagen at the end of 2009, governments of the world need to agree the continuation of the global climate treaty, building on and strengthening the Kyoto Protocol.

The G8 leaders meeting in Italy this July have the opportunity to set the course for the Copenhagen conference to succeed. In doing this they will realize the **triple advantage of action against climate change:**

- » Action now will start to clean up our climate act, keeping the option open for the planet to avoid catastrophic climate change.
- » Action now will set the world on a sustainable energy path, which in the short run can help stabilize the economy, and in a few decades can provide ample energy for the whole planet.

- » Action now can help develop a low carbon economy that helps avoiding millions of climate refugees and massive cost for later adaptation to climate impacts.

## TESTING G8 LEADERS' WILLINGNESS TO ACT

WWF and Allianz present the Climate Scorecards 2009. These score the developments in national legislation and implementation of climate protection.

The scorecards look back at achievements and the lack of them. Based on this insight, leaders at the G8 Summit can grasp the opportunity and signal to the world how the course is changing. The analysis shows that action is underway in all countries but it is by far insufficient to keep the planet below the danger threshold of a 2°C rise of average global temperature above pre-industrial levels.

New developments at the legal and practical level need to be introduced with much greater vigor and rapidity than our scoring shows so far.

A simple 4-point test will reveal whether they will win or fail:

- » Leaders commit to a strong UN climate agreement in Copenhagen in December as a key lever for economic recovery.
- » To take advantage of the opportunities of climate action, leaders commit to increase their ambition level by setting strict emission reduction targets for their own countries.
- » Leaders acknowledge their responsibility to provide support to the most vulnerable countries for coping with those impacts of climate change that are already unavoidable.
- » Leaders agree with the large emerging economies the need for fair and pragmatic cooperation on technology, to ensure rapid deployment and diffusion of the cleanest technologies, as well as providing adequate finance to developing countries for low-carbon development.

## SHARING THE REMAINING CARBON BUDGET FAIRLY

It is critical for world leaders to recognize that only a limited atmospheric carbon budget remains, beyond which climate impacts will be catastrophic, and that the bulk of that remaining budget must be allocated to the developing world.

The atmospheric carbon budget is defined as the environmental space for additional CO<sub>2</sub> pollution to ensure warming stays well below the 2°C danger threshold. Leaders will have to focus on how to share that carbon budget. The decision needs to be based on the principle of common but differentiated responsibility (of the countries, dependent on their historical emissions) and capacity to act (e.g. relative wealth, level of R&D).

Leaving a margin for economic growth in developing countries, industrialized countries need to decrease their emissions by at least 95% by the year 2050 (contributing to bringing about a reduction of global emissions by at least 80%). Current trends are still going in the opposite direction, with high emissions in developed countries and growing emissions in most developing countries.

The G8 also have a responsibility to drive global cooperation with the G5 (Brazil, China, India, Mexico and South Africa) and other developing countries to foster sustainable development through technology transfer and financing. Strong political signals from the G8 summit in July that G8 leaders are willing to cooperate with developing countries are necessary to making UN climate talks in Copenhagen this December a success. The question remains as to how G8 countries will assist these countries in developing in a less carbon intensive manner and how much effort they will undertake themselves.

## THE ASSESSMENT - COUNTRY ACTIONS ARE STILL TOO SLOW

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. Accordingly, improvements since 1990, current status and policies for the future vary significantly.

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 present recent and expected emission developments of each country and various other indicators. The scorecards also give an overview of the most important activities by the federal governments to respond to the threat of climate change.

The overall performance of the G8 countries is assessed by comparing three groups of indicators: “improvements since 1990”, “current status” and “policies for the future”. In addition, G8 countries’ performance in the areas of energy efficiency, renewable energy and the development of the carbon market are summarized separately.

The core benchmark of this assessment is whether countries are on track to reduce emissions by 95% until 2050. As such, the rating of this year’s version is more ambitious compared to last year’s version where the benchmark was a reduction of 80% by 2050. This reflects the growing urgency of climate science. Major policies that are planned but not yet approved have been incorporated into the evaluation but given less weight. WWF does not

consider nuclear power to be a viable policy option, due to its costs, radiotoxic emissions, safety and proliferation impacts. To reflect this, a policy approach that favors the use of nuclear power was assessed in the following way: Indicators for the “current status” were adjusted, by assuming that electricity from nuclear energy was produced with gas, the most carbon efficient fossil fuel.

### KEY EXPECTATIONS FOR A SUCCESSFUL COPENHAGEN CLIMATE TREATY

The WWF Expectations Paper for the global climate deal and an NGO proposal for the treaty, published in June this year, outline what needs to be agreed at the Copenhagen Climate Summit in December 2009. It lists the key asks and ideas for an adequate and fair treaty that will help keep global warming far below the danger threshold of 2°C.

The central asks for a powerful, transformational Climate Treaty can be summarized as follows:

- » Global emissions must peak in the next commitment period (before 2020).
- » Industrialized countries as a group should commit to binding absolute emission reduction targets at 40% below 1990 levels by 2020, the vast majority of these being achieved domestically (30-35%). They should also commit to put in place Zero Carbon Action Plans (ZCAPs) to achieve zero net emissions (at least -95%) by 2050.
- » Developing countries as a group should pledge to reduce their actual emissions substantially by deviating by at least 30% below a business as usual pathway by 2020.
- » Adaptation Action Framework: Massive flows of secure and predictable funding delivered through well-governed and effective funding mechanisms, plus

regional climate risk insurance schemes. Together, these should be in the order of US\$ 63 billion per year.

- » A new institution, the *Copenhagen Finance Facility* should be set up to steer the transition to a low carbon future with binding financial support of at least US\$160 billion per year by 2017 from industrialized countries.

### THE G8 DOMESTIC CHALLENGE – BEST PRACTICE FOR ALL PERFORMANCE INDICATORS

The rating of the G8 countries is based on the assumption that a country that adequately addresses the issue of climate change to safeguard the 2°C limit should meet the performance indicators noted below. Meeting these criteria is rewarded with a green dot in the respective category.

#### Improvements since 1990

- » Have reduced emissions between 1990 and 2007 to be on a linear path from 1990 to - 95% in 2050. - Only emissions in Russia have declined more, mainly due to the economic downturn between 1990 and 1999 and emissions have risen again since then. Emissions are still steadily *increasing* in Canada and the USA.
- » Have already reached or are very close to the Kyoto target, which applies to the period of 2008 to 2012. - Only Russia, France, UK and Germany are in this position.
- » Have increased the use of renewable energy significantly since 1990. - This is only true for Germany. The share of renewable energy is declining or stagnating in four of the eight countries (Canada, France, Japan and USA).

#### Current status

- » Have per capita emissions on a linear path from the average level of all developed countries in 1990 to -95% in 2050. - Only Italy achieves this goal, due to its economic structure.



- » Produce fewer emissions per GDP than the average of all developed countries on a path towards -95% in 2050. - Only the UK and Italy qualify here.
- » Produce electricity on average with fewer emissions per kWh than using natural gas and without nuclear power. - Only Canada meets this criterion, due to its historical use of hydro power. This indicator was adjusted to account for electricity from nuclear energy as if being generated by gas.
- » Use only 24% more energy in industry than the best available technology. - Only Japan qualifies here, but in some Japanese industries the efficiency is decreasing again.

#### Policies for the future

- » Show leadership in the international climate negotiations. - Most of the G8 countries are either too silent or actively block the process at the UN level or within the EU on some or many aspects. - The UK, Germany and the US are rated best since they have pushed the issue of climate change to a high political level. However the UK and Germany have blocked progress on crucial issues, together with other EU countries, in the recent EU internal climate negotiations and the US has not set a target that increases in ambition with international action.
- » Have ambitious policies in place to decarbonize the power sector and to reduce demand for electricity. -

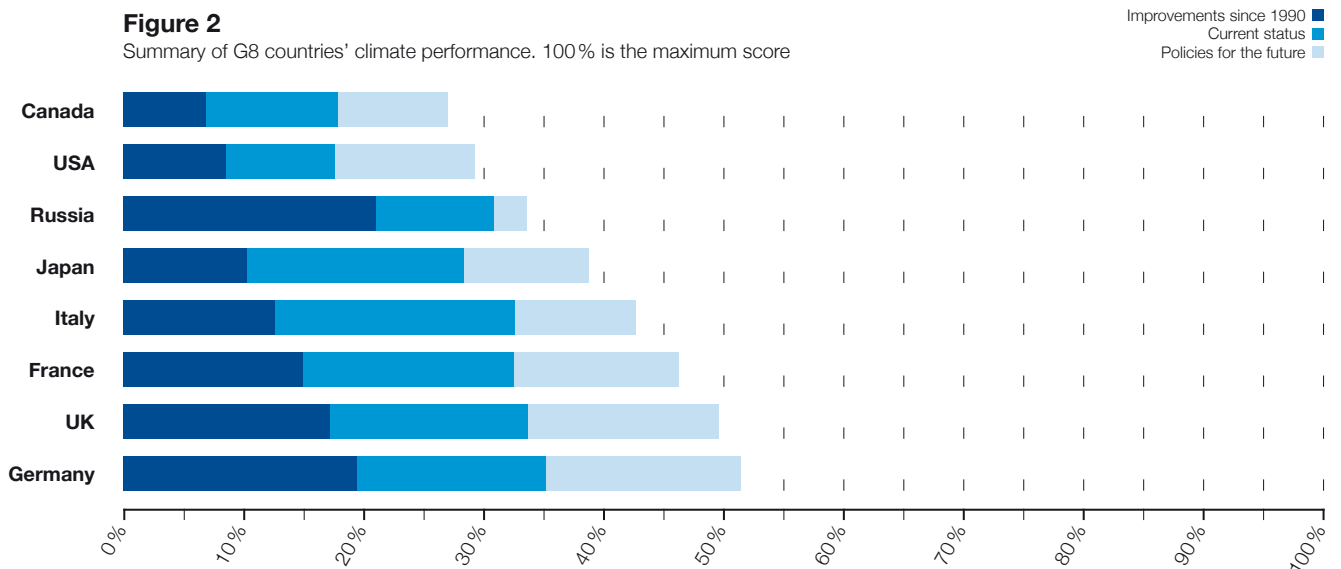
- All G8 countries are underperforming here, even the European countries with an emissions trading system, as the overall cap is not ambitious enough.
- » Have covered all emissions from industry with ambitious policies. - The UK comes closest with innovative and comprehensive policy making.
- » Have ambitious policies in place to reduce all direct fuel emissions in the households and service sector. - None of the G8 countries tap the full energy efficiency potential in this sector.
- » Have policies in place that start to transform the transport sector. - Policy making in this sector is largely underdeveloped. Stringent, ambitious or binding measures are mostly lacking. Only Japan has “top runner” standards for vehicle efficiency. The US has recently improved its automobile standards, but they are still below best available international standards.
- » Have successful measures in place to support the use of renewable energy. - Only Germany is performing here, all other G8 countries are underperforming.

**Figure 1** provides an overview of the scoring of the G8 countries. The three areas, i.e. improvements since 1990, current status, and policies for the future are weighted equally. **Figure 2** provides the overall rating.



**Figure 2**

Summary of G8 countries' climate performance. 100% is the maximum score



### CANADA AND RUSSIA HAVE FAILED THE TEST

- » Canada scores lowest of all G8 countries: total emissions are steadily increasing and are far above the Kyoto target, per capita emissions are among the highest in the world. Mid to long-term greenhouse gas targets are inadequate. A plan to curb emissions was developed last year but has not been implemented. The Kyoto target will stay completely out of reach.
- » Russia is rated only well for the “past trend” category due to declining absolute emissions in the early 1990s. But since 1999 emissions have been increasing steadily again. Few policies are in place to curb emissions. Recent high-level government goals exist but still need to be implemented.

### USA IS IMPROVING ON FUTURE POLICIES

- » The United States have improved compared to last year's rating, moving up in rank from last place. In the “policies for the future” category the US even rank fourth. The new Obama administration has presented ambitious plans for new climate change related policies, some of which have already been implemented, and others that still have to undergo

the legislative process. The agreed economic recovery package includes substantial support for energy efficiency and renewable energy. The package and the new plans led to the improvement in rank. Several state and regional climate initiatives are reducing emissions, but these were not rated in this study. Overall, there has been more action in the US on climate change in the last four months than in the last three decades – a trend that will hopefully continue in the coming years. However, the United States are still the largest total emitter of the G8 countries, and have among the highest per capita emissions in the world. Furthermore, its emissions are projected to continue to increase. The United States have also not ratified the Kyoto Protocol.

### JAPAN AND ITALY HAVE RELATIVELY LOW EMISSIONS (PER CAPITA, PER GDP AND PER INDUSTRIAL PRODUCTION) BUT POLICIES ARE INADEQUATE TO REDUCE EMISSIONS FURTHER:

- » Japan has relatively low emissions due to high energy efficiency and its use of nuclear power (which WWF does not consider a viable alternative option, due to

its costs, radiotoxic emissions, safety and proliferation impacts). However, absolute emissions are not declining and are still above the 1990 level. The recently announced emission target for 2020 is incompatible with the 2°C limit. No mandatory emission reduction policies are implemented. The lack of such policies led to the relatively low rank of Japan.

- » Italy's per capita emissions are at the low end of the G8 due to its economic structure. But Italy's absolute emissions have increased considerably since 1990 and are well above the Kyoto target. The country has started some policy efforts, but in general policy is weak and a strategic approach is lacking.

#### **FRANCE, UK AND GERMANY PERFORM BETTER THAN THE OTHER G8 COUNTRIES, BUT ARE STILL NOT MAKING AN ADEQUATE CONTRIBUTION TO KEEPING GLOBAL CLIMATE CHANGE BELOW THE 2°C LIMIT:**

- » Emissions in France are relatively low for an industrialized country, partially due to a high share of nuclear energy (which WWF does not consider a viable policy option). Due to the adjusted assessment for nuclear energy used in this rating, France moved to third place. Total emissions have only slightly declined since 1990.
- » The UK's emissions are already below the Kyoto target, largely due to a transition from coal to gas in the 1990s. The strong national climate debate has led to innovative national policies, such as the Climate Change Act, and there is potential for this to drive significant emission reductions in the future in areas where progress has been lacking: renewables, transport, households and services.
- » Germany leads the ranking only very slightly ahead of the UK. Germany's emissions declined between 1990 and 2000 partly due to the economic downturn in Eastern Germany but also due to national measures. Since then, emissions have been declining only slowly. Germany is successful with its promotion of new renewable energy sources and has an ambitious -40%

reduction target for GHG emissions by 2020. Implementation of this target is however lagging behind due to supporting less stringent rules in the emission trading system during the EU climate negotiations, no clear action against planned new coal power stations and not sufficiently stringent action on transport.

- » 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. The early announcement of the target was very constructive for the international debate. However, in the light of recent scientific findings, even the more ambitious variant of a 30% reduction by 2020 with an international agreement on climate change is not stringent enough.

#### **THE G5**

The G5 have not been scored in the same manner as the G8 countries due to their different national circumstances and levels of development. Also some of the rating criteria cannot be applied to the G5, e.g. distance to Kyoto goal.

All of the five developing countries are undertaking action to slow emissions growth in the future:

- » All countries have presented or are preparing national strategies to reduce emissions in the future. The most detailed plans were presented by South Africa and Mexico. South Africa acknowledges that their emissions need to be reduced by 30% by 2050. Mexico announced a 50% cut by 2050.
- » Support for renewables is significant e.g. in China, South Africa and India or a longstanding support for bioethanol in Brazil.
- » China and India have substantial national energy efficiency targets/objectives of reducing energy use per GDP by 20% in 5 years (China) and 9 years (India). Their implementation would have a significant effect on emissions. China negotiated energy reduction targets for 1000 most energy-intensive enterprises which are now being implemented.

- » Brazil has very ambitious plans to reduce deforestation, its most important source of emissions. The implementation of these plans will be difficult, but would reduce emissions significantly.

#### **SOME RECENT OVERALL POSITIVE DEVELOPMENTS ARE TO BE HIGHLIGHTED:**

- » The new Obama administration has made climate change a priority. Several clean energy initiatives are already underway and Congress has taken up climate-related legislation. The emission projections were corrected downwards as a result of the agreed economic stimulus package. The Administration has committed to participating in the international climate change negotiations. Such new actions, in conjunction with ongoing state and regional climate initiatives, signal a real change for the USA.
- » With action in the USA, competitiveness concerns of the industry could be removed, enabling more ambitious targets for all countries.
- » All major developing countries are making significant efforts to slow emission growth. Most prominently, Mexico aims to reduce its emissions by 50% until 2050.

- » The economic crisis has not yet watered down the ambition levels of countries. There is a general recognition that well-designed and properly spent public money can benefit economic development and employment as well as reducing greenhouse gas emissions.

#### **NEGATIVE DEVELOPMENTS IN SOME COUNTRIES' CLIMATE PERFORMANCE:**

- » Despite 20 years having passed since the international recognition of climate change as a problem, greenhouse gas emissions in some developed countries are still increasing.
- » Economic recovery packages for many countries have mostly missed the opportunity for greening the global economy. The stimulus for weak economies would have been a unique opportunity to make significant investments in a climate friendly future. However most packages only include a few climate friendly measures. Some are even counterproductive.<sup>1</sup>
- » Uncertainty about the future of emission reduction projects in developing countries under the clean development mechanism (CDM) has increased due to falling carbon prices as a reaction to the financial crisis, criticism of the performance of the mechanism<sup>2</sup> and the uncertain outcome of the Copenhagen Climate conference in December 2009.

<sup>1</sup> See "Economic/climate recovery scorecards - How climate friendly are the economic recovery packages?" of April 2009, [http://www.e3g.org/images/uploads/E3G-WWF\\_Economic\\_Climate\\_recovery\\_scorecards.pdf](http://www.e3g.org/images/uploads/E3G-WWF_Economic_Climate_recovery_scorecards.pdf)

<sup>2</sup> See report published by WWF in May 2009 "A rating of Designated Operational Entities (DOEs) Accredited under the Clean Development Mechanism (CDM) Scope, methodology and results" [http://www.wwf.de/fileadmin/fin-wwf/pdf\\_neu/WWF\\_Rating\\_der\\_Klimagutachter.pdf](http://www.wwf.de/fileadmin/fin-wwf/pdf_neu/WWF_Rating_der_Klimagutachter.pdf).



# 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. Excludes emissions from international transport and Land Use Change & Forestry.

## 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.



## 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**
- » **CO<sub>2</sub> 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

## Statement WWF

A statement of national WWF climate heads commenting the performance of their country.

# Aggregation method

The overall performance of the G8 countries is assessed by comparing three groups of indicators: improvements since 1990, current status, and policies for the future. They are weighted at a third each.

**Improvements since 1990** includes emission trends since 1990, the current distance to the Kyoto target and the increase in the share of renewable energy since 1990.

**Current status** includes national emissions per capita and per Gross Domestic Product in 2007 as well as the electricity sector's emissions per electricity production in 2007 and the efficiency in industry.

**Policies for the future** are rated for each of the major sectors. Additionally the support for renewable energy and the leadership in climate negotiations are also rated. Policies included in the rating are only those implemented by national governments (not sub-national governments), since the G8 scorecards are targeted at the heads of state. Some countries have major new policies in the pipeline, but agreement has not yet fully been reached by the government institutions. In such cases, the implemented and planned policies are weighted at 75% vs. 25%.

For each numerical indicator, a score of 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 outside of the G8. The threshold to

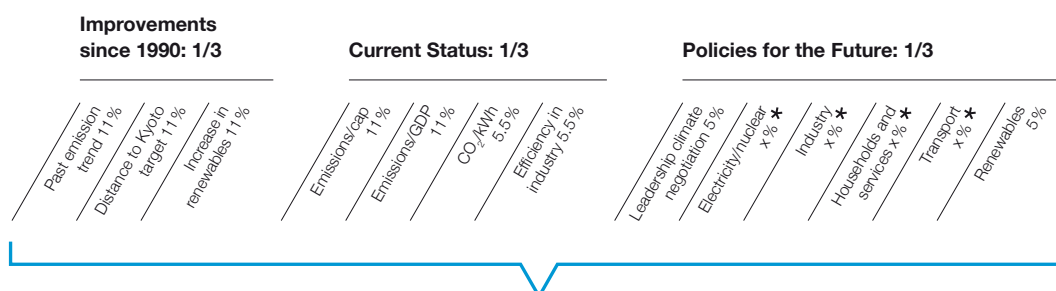
a green rating (+0.5) is chosen in line with keeping global average temperature increase below 2°C. In each sector policies are rated at between -2.5 (lacking or symbolic) and +2.5 (ambitious and/or very innovative) by expert judgment. The weight given to this indicator is different for each country; it is proportional to the sector's share of national emissions. A country with very high emissions in e.g. transport has to have very good transport policies, while a country with already very low emissions in e.g. electricity generation can have weak policies.

All indicators are aggregated using the weightings shown below. Finally, the scores (between -2.5 to +2.5) for each indicator, each policy field and the summary climate performance are translated into colored dots or traffic lights.

WWF does not consider nuclear power as a viable policy option, due to its costs, radiotoxic emissions, safety and proliferation impacts. In this report focusing on climate policies, a policy approach that favors the use of nuclear power is hence adjusted. The indicators emissions per capita, emissions per GDP and CO<sub>2</sub>/kWh are adjusted as if the generation of electricity from nuclear power had produced 350 gCO<sub>2</sub>/kWh (emission factor for natural gas). A country using nuclear energy is therefore rated as a country using gas, the most efficient fossil fuel.

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 is 9% for electricity, 5% for industry, 3% for households and services and 7% for transport



## CLIMATE PERFORMANCE



## G8 Climate Scorecard

## Canada - Rank 8

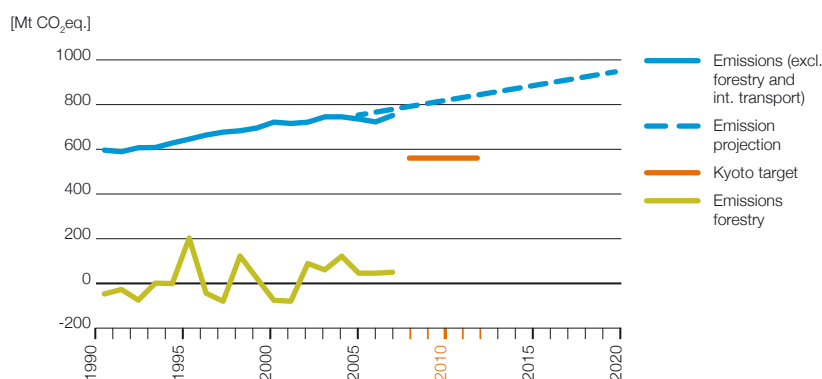
## SUMMARY EVALUATION

- » Very high emission rates per capita compared to the industrialized countries' average despite high share of hydropower
- » Among the few G8 countries with emissions still increasing
- » Expanding energy-intensive non-conventional oil development (tar sands); neither provincial nor planned federal regulation will reduce overall emissions
- » No significant policy improvements since last year; earlier climate plan does not aim for compliance with Kyoto target and has not been implemented



## EMISSIONS AND ENERGY

## EMISSION TRENDS



Past emission trend  
from 1990 to 2007

**+26.2 %** ●

Current (2007)  
distance to the  
Kyoto target

**+32.2 %-points** ●

Increase of the  
share of renewable  
energy sources

**-0.1 %-points** ●

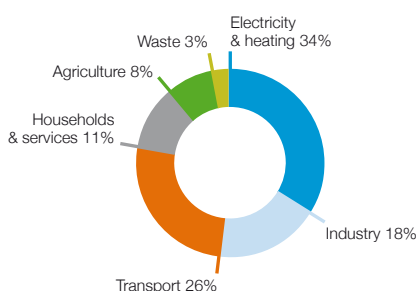
Emissions  
per capita

**24 tCO<sub>2</sub>eq./cap** ●

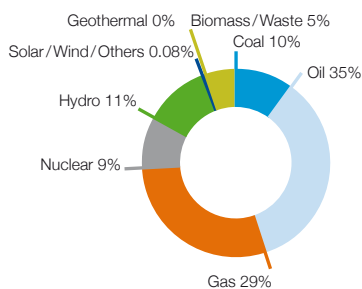
Emissions  
per GDP

**668 tCO<sub>2</sub>eq./M\$** ●

## EMISSIONS BY SECTOR



## ENERGY SOURCES



CO<sub>2</sub> per kWh  
electricity

**240 gCO<sub>2</sub>/kWh** ●

Energy efficiency in industry

**1.7** ●

Emissions  
in transport  
per capita

**6.1 tCO<sub>2</sub>eq./cap** ●

Emissions in households  
and services  
per capita

**2.5 tCO<sub>2</sub>eq./cap** ●

## G8 Climate Scorecard

## Canada - Rank 8

## CLIMATE POLICIES

## GENERAL

- » Ratified UNFCCC on 04.12.1992, ratified Kyoto Protocol on 17.12.2002
- » The 2007 'Turning the corner plan' has not been implemented
- » Federal government will not purchase international emission credits to reach Kyoto target although proposal would allow industry to purchase credits for up to 10% of their reduction
- » Various provinces have GHG regulations, including British Columbia (economywide carbon tax, cap and trade system for large emitters to come), Alberta (12% reduction of industrial emission intensity by the end of 2008), Manitoba (at level of the Kyoto target) and Ontario (to phase out coal plants)

●	<b>Leadership in climate negotiations</b>	Abandonment of its Kyoto Protocol commitment; generally slowing rather than advancing the international negotiation process by introducing a focus on national circumstances (e.g. emissions and removals from forests)
●	<b>Electricity/nuclear</b>	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 CO <sub>2</sub> capture and storage
●	<b>Industry</b>	Planned: mandatory GHG intensity reduction requirements as of 2010, standards for new facilities, regulatory targets based on CO <sub>2</sub> capture and storage as of 2012 for oil production from tar sands which come into effect in 2018; federal budget includes 1 billion CAD \$ for CO <sub>2</sub> capture and storage projects
●	<b>Households and services</b>	Labeling and energy performance standards for many energy-using appliances; financial incentives available for energy efficiency retrofits to modest number of households
●	<b>Transport</b>	Planned: law to limit GHG emissions from the automotive sector to be based on the USA federal government standard (not the more aggressive California Standard) (01.04.2009 note of intent)
●	<b>Renewables</b>	No additional funds by the government for the successful ecoENERGY for Renewable Power Program (running out of funds in 2009); Ethanol target of 5% by 2010 and 2% biodiesel by 2012, with modest financial incentives available for biofuel producers; biofuels program (2008-2017) will invest up to CAD \$1.5 billion to support biofuel production by providing operating incentive; several other renewable energy programs, e.g. Province of Ontario: guaranteed price for electricity from renewable energy

**KEITH STEWART, MANAGER, CLIMATE CHANGE CAMPAIGN, WWF CANADA** »NOWHERE ELSE ON EARTH DO FEWER PEOPLE STEWARD MORE RESOURCES, YET CANADA NOW STANDS LAST AMONGST THE G8 NATIONS IN PROTECTING OUR SHARED HOME FROM THE THREAT OF DANGEROUS CLIMATE CHANGE. IT IS CRUCIAL THAT THE GOVERNMENT OF CANADA RECOGNIZE THAT OUR FUTURE LIES IN BUILDING THE GREEN ECONOMY THAT WILL PROVIDE SUSTAINABLE LIVELIHOODS ON A LIVING PLANET, NOT IN TRANSFORMING THE TAR SANDS INTO MOONSCAPES.«



## G8 Climate Scorecard

## France - Rank 3

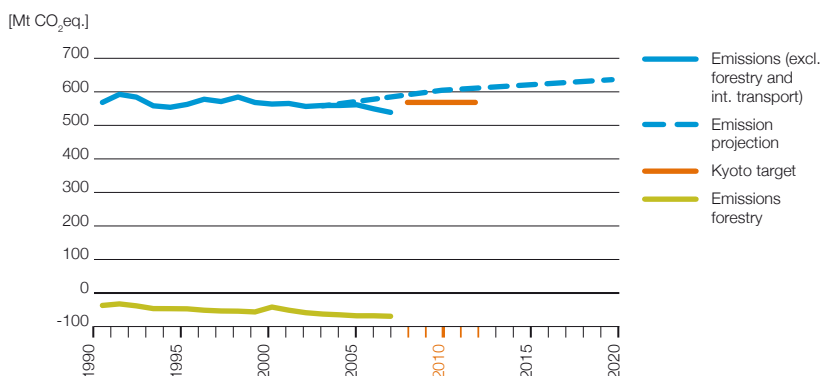
## SUMMARY EVALUATION

- » Low emission rates per capita compared to the industrialized countries' average partially due to high share of nuclear energy, which WWF does not consider a viable policy option
- » Emissions are currently below Kyoto target and transport emissions have stabilized, but total emissions are projected to increase if no further policies are implemented
- » One of the first countries to agree a long-term target (-75% by 2050) by law, but a detailed implementation plan is missing



## EMISSIONS AND ENERGY

## EMISSION TRENDS



Past emission trend  
from 1990 to 2007

**-5.3%** ●

Current (2007)  
distance to the  
Kyoto target

**-5.3%-points** ●

Increase of the  
share of renewable  
energy sources

**-0.9%-points** ●

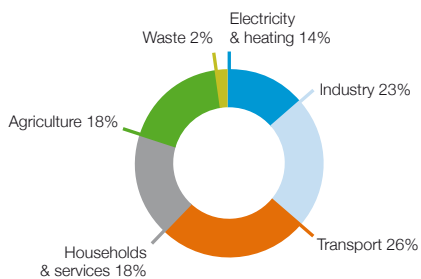
Emissions  
per capita

**11<sup>1</sup> tCO<sub>2</sub>eq./cap** ●

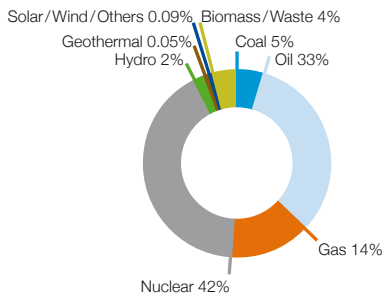
Emissions  
per GDP

**358<sup>1</sup> tCO<sub>2</sub>eq./M\$** ●

## EMISSIONS BY SECTOR



## ENERGY SOURCES



CO<sub>2</sub> per kWh  
electricity

**362<sup>1</sup> gCO<sub>2</sub>/kWh** ●

Energy efficiency in industry

**1.3** ●

Emissions  
in transport  
per capita

**2.3 tCO<sub>2</sub>eq./cap** ●

Emissions in households  
and services  
per capita

**1.6 tCO<sub>2</sub>eq./cap** ●

<sup>1</sup> WWF does not consider nuclear power to be a viable policy option. The indicators "emissions per capita", "emissions per GDP" and "CO<sub>2</sub> per kWh electricity" for all countries have therefore been adjusted as if the generation of electricity from nuclear power had produced 350 gCO<sub>2</sub>/kWh (emission factor for natural gas). Without the adjustment, the original indicators for France would have been much lower, e.g. 86 gCO<sub>2</sub>/kWh.

## G8 Climate Scorecard

## France - Rank 3

## CLIMATE POLICIES

## GENERAL

- » Ratified UNFCCC on 25.03.1994, ratified Kyoto Protocol on 31.05.2002
- » Long-term national emissions target: -75 % by 2050 compared to 1990 level for all GHGs. Target for 2020 not yet in line with the long-term goal
- » Agreed to EU targets for 2020: to unilaterally reduce GHG emissions 20 % below 1990 levels and 30 % if other countries commit to similar efforts, to reduce energy consumption by 20 % and increase renewables to a national 23 % share
- » Objectives by sectors (law under preparation, still needs to be confirmed) are: reduce energy consumption of existing buildings by 38 % by 2020 (Part of the 'Building Plan' to be implemented in 2009); reduce GHG emissions from the transport sector by 20 % by 2020

<span style="color: red;">●</span>	<b>Leadership in climate negotiations</b>	Long-term reduction target by law, but national implementation lagging behind; not vocal in driving the international debate
<span style="color: red;">●</span>	<b>Electricity/nuclear</b>	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
<span style="color: yellow;">●</span>	<b>Industry</b>	Half of industry emissions covered by EU Emission Trading Scheme, moderate allocation for 2008 to 2012
<span style="color: yellow;">●</span>	<b>Households and services</b>	Incentives for energy efficiency, including improved insulation and use of renewable energy sources (grants, income and value added tax reduction, 0 % interest rate loan, white certificates scheme, higher feed-in tariffs for building integrated photovoltaic systems); energy consumption minimum standards for new buildings; minimum standards to apply for renovation of large buildings; compulsory energy label scheme for buildings; energy performance certificate every time a building is built, sold or rented
<span style="color: red;">●</span>	<b>Transport</b>	Mandatory EU emission limit value for new cars of 130g/km to be phased in from 2012 to 2015; support for biofuels; income tax reduction for vehicles using electricity, natural or liquefied gas; CO <sub>2</sub> emissions labels on new cars; tax incentives based on CO <sub>2</sub> emissions, but at low ambition level (higher tax for used cars above 200 gCO <sub>2</sub> /km and new cars emitting above 160 gCO <sub>2</sub> /km, tax credit below 130 gCO <sub>2</sub> /km); development of alternatives to road transport
<span style="color: yellow;">●</span>	<b>Renewables</b>	Financial incentives for renewable energy sources and feed-in tariffs for delivered electricity; ambitious target for 2020; impact of biofuel target unclear because of poor emissions balance of French biofuels (but target of 7 % biofuel in fuel consumption by 2010 still in place)

**DAMIEN DEMAILLY, OFFICER CLIMATE CHANGE AND ENERGY, WWF FRANCE** » BETWEEN AN INNOVATING GRENELLE ENVIRONMENT ROUND TABLE DEFINING THE KEY POINTS OF GOVERNMENT POLICY ON ECOLOGICAL AND SUSTAINABLE DEVELOPMENT ISSUES FOR THE COMING FIVE YEARS AND A WEAK STIMULUS PLAN, FRANCE CULTIVATES PARADOXES. THE OBJECTIVES ARE AMBITIOUS, BUT THE MEANS OF IMPLEMENTATION AND TECHNOLOGY CHOICES REMAIN VAGUE. «

G8 Climate Scorecard

# Germany - Rank 1

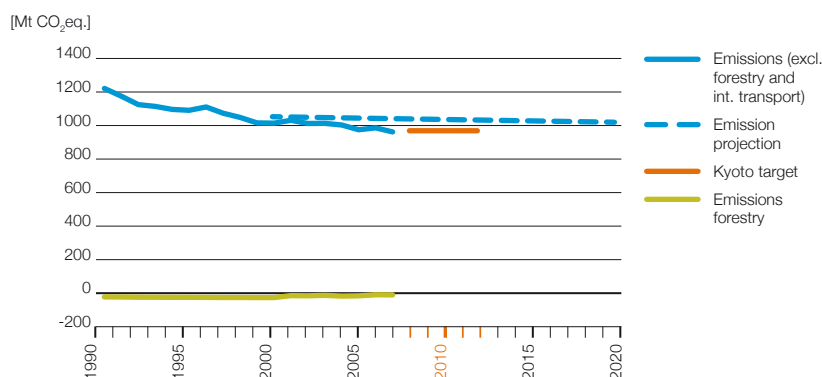
## SUMMARY EVALUATION

- » Significant reductions in emissions since 1990, partly due to economic downturn in Eastern Germany until 2000, but also due to national measures
- » Successful promotion of new renewable energy sources
- » No explicit national emission targets after 2020
- » Electricity sector is coal dominated, risk of carbon lock-in due to planning of new unabated coal capacity
- » No convincing strategy for low carbon transition in the transport sector



## EMISSIONS AND ENERGY

### EMISSION TRENDS



Past emission trend from 1990 to 2007 **-21.3%** ●

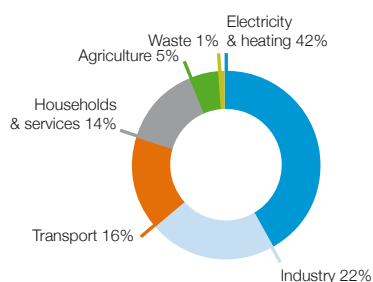
Current (2007) distance to the Kyoto target **-0.6%-points** ●

Increase of the share of renewable energy sources **+4.3%-points** ●

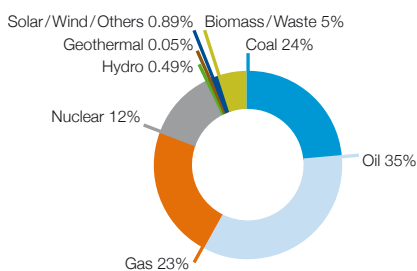
Emissions per capita **12 tCO<sub>2</sub>eq./cap** ●

Emissions per GDP **384 tCO<sub>2</sub>eq./M\$** ●

### EMISSIONS BY SECTOR



### ENERGY SOURCES



CO<sub>2</sub> per kWh electricity **497 gCO<sub>2</sub>/kWh** ●

Energy efficiency in industry **1.3** ●

Emissions in transport per capita **1.9 tCO<sub>2</sub>eq./cap** ●

Emissions in households and services per capita **1.6 tCO<sub>2</sub>eq./cap** ●

## G8 Climate Scorecard

## Germany - Rank 1

## CLIMATE POLICIES

## GENERAL

- » Ratified UNFCCC on 09.12.1993, ratified Kyoto Protocol on 31.05.2002
- » Integrated Energy and Climate Package: envisages 40 % emission reductions by 2020 compared to 1990
- » Agreed to EU targets for 2020: to unilaterally reduce GHG emissions by 20 % below 1990 levels and by 30 % if other countries commit to similar efforts, to reduce energy consumption by 20 % and increase renewables to a national 18 % share
- » Efficiency targets: -11 % reduction in electricity consumption by 2020 compared to 2001-2005, doubling energy productivity from 1990 to 2020, planned energy efficiency law has been postponed.

<span style="color: yellow;">●</span>	<b>Leadership in climate negotiations</b>	Strong leadership in 2007 during G8 presidency, but less active recently; advocated extensive exemptions from auctioning of CO <sub>2</sub> -certificates for energy-intensive industries and high quotas for the use of offsets (CDM) in the EU Emission Trading System; using revenues from the EU Emission Trading Scheme to help developing countries reducing emissions builds trust
<span style="color: red;">●</span>	<b>Electricity/nuclear</b>	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; phasing out of nuclear power; carbon capture and storage law approved April 2009; eco-tax on coal, coke and lignite is weakened by many exemptions, e.g. for coal for electricity generation; no long term targets for the power sector; majority of capacity to be built is unabated coal or lignite with the risk of a carbon lock-in; effect of the amended combined heat and power law is highly uncertain (target: double share of CHP to 25 % by 2020)
<span style="color: yellow;">●</span>	<b>Industry</b>	Half of industry emissions covered by EU Emission Trading Scheme, but only very limited auctioning planned; advice programs and investment credits for small/medium enterprises Planned energy efficiency law was postponed
<span style="color: yellow;">●</span>	<b>Households and services</b>	Favorable loans for energy efficiency and CO <sub>2</sub> reduction measures in domestic sector, extended as economic recovery measure; energy saving ordinance: ambitious building standards, but no monitoring or penalties in place Planned energy efficiency law was postponed
<span style="color: red;">●</span>	<b>Transport</b>	Mandatory EU emission limit value for new cars of 130g/km to be phased in from 2012 to 2015; so far voluntary efficiency enhancement from automotive industry, but no German manufacturer is likely to meet the agreement; new partly CO <sub>2</sub> related car tax; energy-efficiency labels on new cars; tax exemption for biofuels abandoned; quota for biofuel blending has been decreased due to sustainability considerations; automotive industry is regularly protected by government Planned action plan for electric vehicles
<span style="color: green;">●</span>	<b>Renewables</b>	Guaranteed feed-in tariffs for electricity from renewable sources through feed-in law, which led to considerable increase in renewable capacity. The national target of 12.5 % of electricity from renewables by 2010 was already exceeded in 2007 (14 % renewable electricity).

**REGINE GUENTHER, DIRECTOR CLIMATE AND ENERGY POLICY, WWF GERMANY** »ALTHOUGH GERMANY HAS SCORED COMPARATIVELY WELL IN THE LAST YEARS THERE IS NO REASON TO CELEBRATE. UNTIL NOW GERMANY HAS NEITHER COMMITTED TO A REQUIRED LONG-TERM TARGET OF REDUCING EMISSIONS BY AT LEAST 95 % BY 2050 COMPARED TO 1990 LEVELS, NOR TO A ZERO CARBON STRATEGY TO TRANSFORM SOCIETY WITHIN THE NEXT FOUR DECADES. THIS WOULD BE ESSENTIAL TO KEEP GLOBAL TEMPERATURE RISE WELL BELOW TWO DEGREES. «

## G8 Climate Scorecard

## Italy - Rank 4

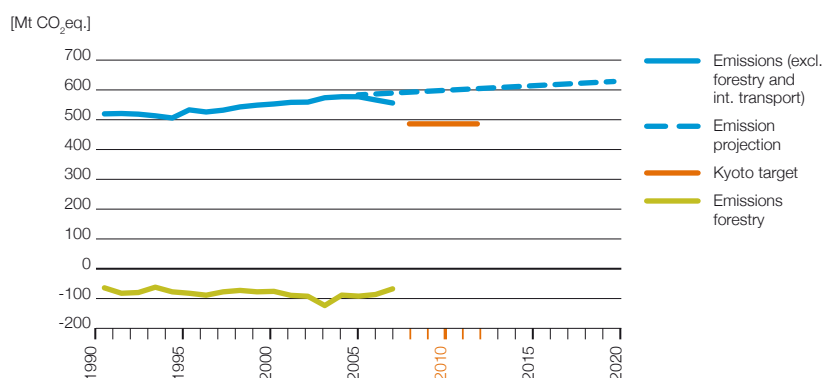
## SUMMARY EVALUATION

- » Emission rates are average/low compared to the industrialized countries' average due to economic structure
- » Emissions are considerably above Kyoto target and are projected to increase further
- » Overall climate policy approach is weak
- » No use of nuclear power since 1987, but decisions have been made for its reintroduction



## EMISSIONS AND ENERGY

## EMISSION TRENDS



Past emission trend  
from 1990 to 2007

**+7.1%** ●

Current (2007)  
distance to the  
Kyoto target

**+13.6%-points** ●

Increase of the  
share of renewable  
energy sources

**+2.8%-points** ●

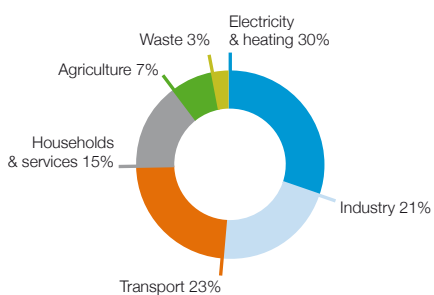
Emissions  
per capita

**9 tCO<sub>2</sub>eq./cap** ●

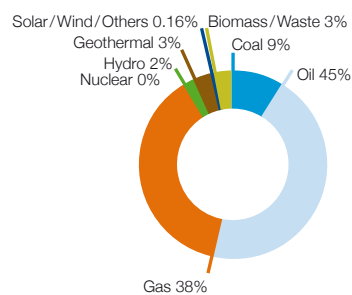
Emissions  
per GDP

**328 tCO<sub>2</sub>eq./M\$** ●

## EMISSIONS BY SECTOR



## ENERGY SOURCES



CO<sub>2</sub> per kWh  
electricity

**404 gCO<sub>2</sub>/kWh** ●

Energy efficiency in industry

**1.3** ●

Emissions  
in transport  
per capita

**2.2 tCO<sub>2</sub>eq./cap** ●

Emissions in households  
and services  
per capita

**1.4 tCO<sub>2</sub>eq./cap** ●

## G8 Climate Scorecard

## Italy - Rank 4

## CLIMATE POLICIES

## GENERAL

- » Ratified UNFCCC on 15.04.1994, ratified Kyoto Protocol on 31.05.2002
- » Agreed to EU targets for 2020: to unilaterally reduce GHG emissions 20% below 1990 levels and 30% if other countries commit to similar efforts, to reduce energy consumption by 20% and increase renewables to a national 17% share

<b>Leadership in climate negotiations</b>	Insufficient implementation of its Kyoto target; has been blocking progress within the EU's internal decision-making on the energy and climate package
<b>Electricity/nuclear</b>	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 jeopardizes efficient policy in curbing CO <sub>2</sub> emissions; no use of nuclear power currently but a decision has recently been made to reintroduce nuclear power; clean energy strategy is missing; only class A electrical appliances can be sold after 2010 and no stand-by allowed after 2010; no incandescent bulbs after 2011
<b>Industry</b>	Half of industry emissions covered by EU Emission Trading Scheme; tradable energy efficiency certificates (white certificates), with new targets for the 2010-2012 period; negotiated agreements; tax rebate for high efficiency motors and inverters; CO <sub>2</sub> tax not weighted on real carbon content of energy sources; energy consumption per GDP increased
<b>Households and services</b>	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 progress but still not in place, with implementing decrees still under approval (recently the government abolished the obligation to enclose the energy certificate when a building is sold or leased)
<b>Transport</b>	Mandatory EU emission limit value for new cars of 130 g/km to be phased in from 2012 to 2015; incentives for the purchasing of low-emission vehicles; biofuels tax exemption then transformed in green certificate obligation; measures for economic recovery include major funds for new roads
<b>Renewables</b>	Renewable certificates, new feed-in tariff; old feed-in system (CIP6) still in place, which has been criticized for using government revenue to support fossil fuels; tax credit for geothermal energy and biomass; small plants (up to 1 MW) have choice between being granted green certificates and receiving feed-in tariff; renewable incentive scheme hampered by administrative barriers

**MARIAGRAZIA MIDULLA, HEAD OF CLIMATE AND ENERGY, WWF ITALY** » ITALY LACKS ADEQUATE CLIMATE POLICIES AND STRATEGIES. ADDITIONALLY THE COUNTER-PRODUCTIVE INVESTMENTS INTO NUCLEAR ENERGY AND COAL RATHER THAN INTO CLEAN TECHNOLOGIES AND ENERGY EFFICIENCY RAISE DOUBTS ABOUT THE REAL LEADERSHIP ROLE THAT ITALY SHOULD BE ABLE TO SHOW AS PRESIDENT OF THE G8. «

## G8 Climate Scorecard

## Japan - Rank 5

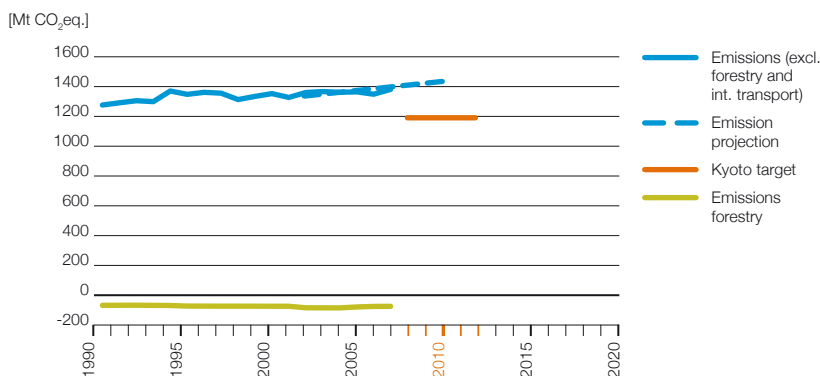
## SUMMARY EVALUATION

- » Relatively low emission rates compared to the industrialized countries' average due to high efficiency and use of nuclear power, which WWF does not consider a viable policy option
- » Stable annual emissions but still a wide distance to Kyoto target
- » No major changes in policy: good use of 'top runner' efficiency standards, but no other mandatory emission reduction scheme
- » National emission target for 2020 is incompatible with the 2°C threshold



## EMISSIONS AND ENERGY

## EMISSION TRENDS



Past emission trend  
from 1990 to 2007

**+8.2%** ●

Current (2007)  
distance to the  
Kyoto target

**+15.1 %-points** ●

Increase of the  
share of renewable  
energy sources

**0 %-points** ●

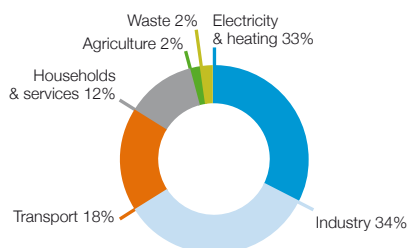
Emissions  
per capita

**12' tCO<sub>2</sub>eq./cap** ●

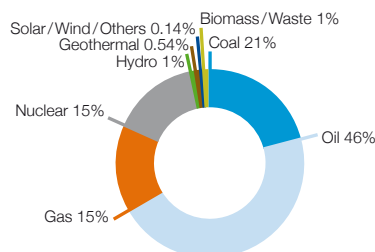
Emissions  
per GDP

**367' tCO<sub>2</sub>eq./M\$** ●

## EMISSIONS BY SECTOR



## ENERGY SOURCES



CO<sub>2</sub> per kWh  
electricity

**516' gCO<sub>2</sub>/kWh** ●

Energy efficiency in industry

**1.1** ●

Emissions  
in transport  
per capita

**1.9 tCO<sub>2</sub>eq./cap** ●

Emissions in households  
and services  
per capita

**1.3 tCO<sub>2</sub>eq./cap** ●

<sup>1</sup> WWF does not consider nuclear power to be a viable policy option. The results for the indicators "emissions per capita", "emissions per GDP" and "CO<sub>2</sub> per kWh electricity" for all countries have therefore been adjusted as if the generation of electricity from nuclear power had produced 350 gCO<sub>2</sub>/kWh (emission factor for natural gas). Without the adjustment, the original indicators for Japan would have been lower, e.g. 418 gCO<sub>2</sub>/kWh.

## 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; however, the reduction potential in forestry sinks is less than expected and a shortfall is likely
- » Long-term goal of reducing 60 to 80 % of its current level of emissions by 2050, not in line with 2°C threshold
- » 'Japan Action Plan for Achieving a Low-carbon Society' is still effective under new government
- » National emission target for 2020 of 15 % below 2005 levels (8 % below 1990 levels) with domestic reductions (10 June 2009), which is incompatible with the 2°C threshold

<b>Leadership in climate negotiations</b>	National policy weak except for good use of 'top runner' efficiency standards; national emission target for 2020 is incompatible with the 2°C threshold; position in international climate negotiations sometimes unclear, e.g. the Japanese proposal on a sectoral approach was first misunderstood
<b>Electricity/nuclear</b>	Voluntary agreement with industry association; target -20 % CO <sub>2</sub> emissions per unit of output in 2010, but CO <sub>2</sub> 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; tough standards for selected electrical appliances Plan to increase nuclear power; partial feed-in tariff under discussion
<b>Industry</b>	Voluntary agreement with industry association, linked to voluntary emissions trading system; target to reduce GHG emissions below 1990 levels by 2010; obligatory energy management system; experimental emission trading system under implementation Planned development of renewable energy-related technologies; planned promotion of CCS
<b>Households and services</b>	Obligatory energy management system for commercial buildings; tax credits for households to apply CHP; enhanced measures for energy efficiency in large buildings and tax incentives for private households; comprehensive building codes missing
<b>Transport</b>	'Top runner' standards for vehicles and fuel economy labels; obligatory energy management systems for emitters; clean vehicles programs for highly efficient vehicles; good development of public transport infrastructure (rail network); fuel efficiency standard for passenger cars and heavy vehicles to be introduced by 2015; low-fuel consumption aircraft; high-efficiency ships; improved traffic and goods distribution efficiency through Intelligent Transport Systems (ITS); support technologies for the use of biomass Planned development of next-generation vehicles
<b>Renewables</b>	R&D programs and grants; very weak target on renewable energy; new subsidy for photovoltaics (70,000 yen/kW) totaling 9 billion yen, partial feed-in tariff under discussion

**NAOYUKI YAMAGISHI, LEADER CLIMATE CHANGE PROGRAMME, WWF JAPAN** »GIVEN THAT JAPAN IS THE HOST COUNTRY OF THE KYOTO PROTOCOL, ITS PERFORMANCE IS NOT PARTICULARLY IMPRESSIVE. THIS FACT CLEARLY INDICATES THAT THE COUNTRY NEEDS TO DELIVER MORE THAN WHAT IT HAS BEEN DOING AND HAS TO MOVE BEYOND ITS RELIANCE ON VOLUNTARY ACTIONS ON TO MANDATORY POLICIES SUCH AS STRINGENT CAP AND TRADE. «



G8 Climate Scorecard

# Russia - Rank 6

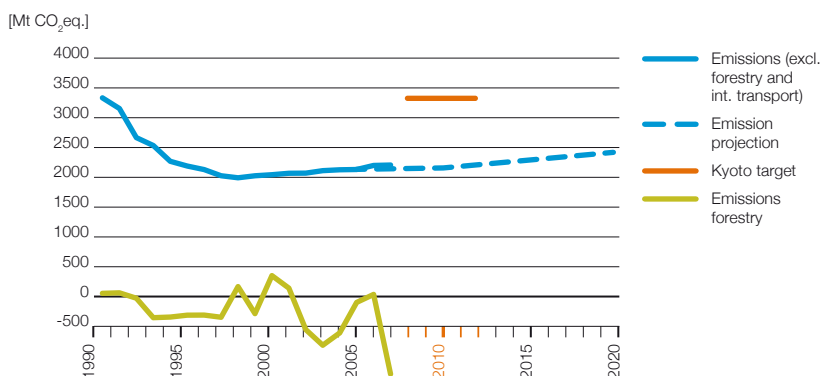
## SUMMARY EVALUATION

- » 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
- » Very few climate related policies



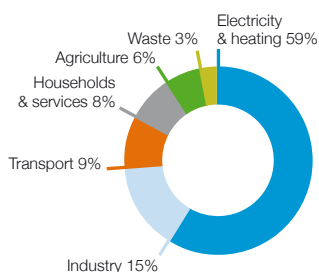
## EMISSIONS AND ENERGY

### EMISSION TRENDS

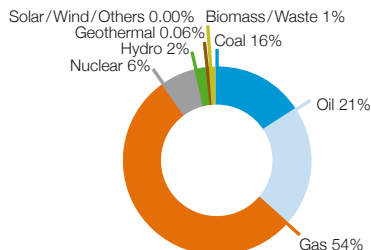


Past emission trend from 1990 to 2007	-33.9%	●
Current (2007) distance to the Kyoto target	-33.8%-points	●
Increase of the share of renewable energy sources	+0.4%-points	●
Emissions per capita	16 tCO <sub>2</sub> eq./cap	●

### EMISSIONS BY SECTOR



### ENERGY SOURCES



Emissions per GDP	1140 tCO <sub>2</sub> eq./M\$	●
CO <sub>2</sub> per kWh electricity	384 gCO <sub>2</sub> /kWh	●
Energy efficiency in industry	2.5	●
Emissions in transport per capita	1.4 tCO <sub>2</sub> eq./cap	●
Emissions in households and services per capita	1.2 tCO <sub>2</sub> eq./cap	●

## G8 Climate Scorecard

## Russia - Rank 6

## CLIMATE POLICIES

## GENERAL

- » Ratified UNFCCC on 25.03.1994, ratified Kyoto Protocol on 18.11.2004
- » Decree of the President for a 40 % reduction in energy intensity of GDP by 2020 (in toe per unit of GDP in PPP)
- » Decree of the Prime Minister for increasing the share of renewable sources (except large hydro) in energy balance from less than 1 % to 4.5 % by 2020
- » Recognizes huge untapped potential for efficiency and the need to diversify economy

<b>Leadership in climate negotiations</b>	No comprehensive national plan; ratified Kyoto Protocol very late and only under pressure; not very active in the preparatory negotiations, and often an obstacle at the last minute
<b>Electricity/nuclear</b>	Program to phase out subsidies to fossil based energy production; energy efficiency program announced, but practically no concrete measures implemented yet; intends to increase reliance on nuclear power; increasing domestic demand for electricity is already leading to reintroduction of old inefficient generating capacity even if previously retired Planned policy to divert gas for export and thus replace its domestic consumption with more carbon intensive coal, which would push up emissions
<b>Industry</b>	President's Decree (June 2008) to improve energy efficiency of economy by 40 % compared to the 2007 level by 2020 could positively impact on industry, but practical measures to support this have not commenced; law on energy efficiency is still under development
<b>Households and services</b>	Policies in domestic sector are still limited to a few regions and large cities
<b>Transport</b>	Plan to use gas and electricity for public transport, but concrete measures are limited to a few regions and cities
<b>Renewables</b>	Decree of the Prime Minister (January 2009) to increase the share of renewable energy – excluding large hydropower installations – from less than 1 % to 4.5 % by 2020 could improve the situation; however, practical measures to support this have not commenced; law on renewable energy is still under development

**ALEXEY KOKORIN, CLIMATE CHANGE PROGRAMME COORDINATOR, WWF RUSSIA** »RUSSIA IS INTENDING TO DEVELOP NUCLEAR AS A LOW-CARBON ENERGY. THIS IS ABSOLUTELY THE WRONG WAY FORWARD. TOTAL CARBON CAPACITY AND TOTAL COST OF NUCLEAR INDICATE THAT IT IS NOT A SUITABLE POLICY AT ALL. THE SCORECARDS SHOW THAT INSTEAD, RENEWABLE ENERGY DEVELOPMENT IS A POWERFUL TOOL, NOT ONLY IN OIL AND GAS IMPORTING COUNTRIES, BUT IN RUSSIA AS WELL. «

## G8 Climate Scorecard

## United Kingdom - Rank 2

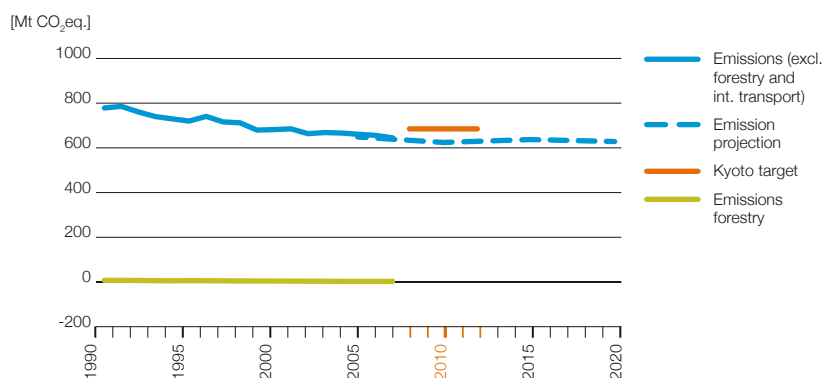
## SUMMARY EVALUATION

- » Emissions are already below Kyoto target
- » Proactive in taking innovative measures and driving international debate
- » Legally binding long-term target of at least -80% by 2050 and plan for its implementation, but in mid-term not prepared to go beyond level of ambition for the UK in the EU agreement
- » Very small share of renewable energy



## EMISSIONS AND ENERGY

## EMISSION TRENDS



Past emission trend  
from 1990 to 2007

**-17.3%** ●

Current (2007)  
distance to the  
Kyoto target

**-5.2%-points** ●

Increase of the  
share of renewable  
energy sources

**+1.5%-points** ●

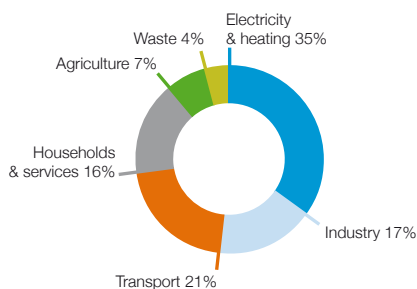
Emissions  
per capita

**11 tCO<sub>2</sub>eq./cap** ●

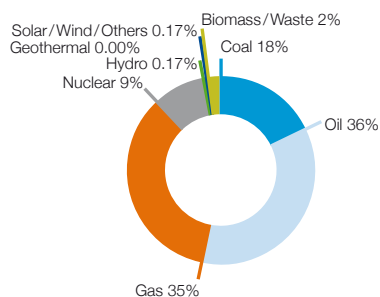
Emissions  
per GDP

**334 tCO<sub>2</sub>eq./M\$** ●

## EMISSIONS BY SECTOR



## ENERGY SOURCES



CO<sub>2</sub> per kWh  
electricity

**572 gCO<sub>2</sub>/kWh** ●

Energy efficiency in industry

**1.9** ●

Emissions  
in transport  
per capita

**2.2 tCO<sub>2</sub>eq./cap** ●

Emissions in households  
and services  
per capita

**1.7 tCO<sub>2</sub>eq./cap** ●

## G8 Climate Scorecard

## United Kingdom - Rank 2

## CLIMATE POLICIES

## GENERAL

- » Ratified UNFCCC on 08.12.1993, ratified Kyoto Protocol on 31.05.2002
- » Climate Change Act 2008 introduced legally binding long-term target to cut greenhouse gas emissions by at least 80% by 2050 and at least 34% by 2020 compared to 1990 levels, rising to a higher target in the context of a new international agreement; carbon budgeting system caps emissions over 5 year budgets with 3 budgets set at a time; limits set on the purchase of credits for each budgetary period
- » Legally bound to report every 5 years on the risks of climate change and how these will be addressed
- » Agreed to EU targets for 2020: to unilaterally reduce GHG emissions 20% below 1990 levels and 30% if other countries commit to similar efforts, to reduce energy consumption by 20% and increase renewables to a national 15% share
- » New coal power plants planned and causing significant controversy, Government now consulting on options to require some CO<sub>2</sub> capture and storage from the outset for all new stations. New nuclear power also planned.
- » Planned integration of international aviation and shipping emissions in the Climate Change Act to Parliament by 31 December 2012; explanation will have to be provided in case of non-inclusion.

●	<b>Leadership in climate negotiations</b>	Initiated debate on climate change within the G8; drives debate in international fora, leadership by example by developing innovative and comprehensive national policies
●	<b>Electricity/nuclear</b>	Participation in the EU ETS; relatively stringent allocation for 2008 to 2012; obligation on electricity and gas suppliers to increase energy efficiency in homes (Carbon Emissions Reduction Target, ends March 2011); Climate Change Levy with exemption for combined heat and power: plans to build new coal and nuclear stations, now consulting on medium-scale demonstration scheme for CO <sub>2</sub> capture and storage
●	<b>Industry</b>	Half of industry emissions covered by the EU ETS with moderate allocations; negotiated modest energy efficiency targets with industry-sector associations; exemption from Climate Change Levy if negotiated agreement is met; mandatory trading scheme for most industry that is not covered by the EU Emission Trading System or not covered by a negotiated agreement (Carbon Reduction Commitment, commences April 2010)
●	<b>Households and services</b>	Building standards for houses based on CO <sub>2</sub> emissions; tax exemption for houses meeting zero carbon standards; ambitious standards announced in 2006 to reduce CO <sub>2</sub> emissions of new houses by 25% in 2010, 44% in 2013 and 100% (zero carbon) in 2016; modest grants program for microgeneration on buildings; large commercial and public sector organizations must participate in the Carbon Reduction Commitment; new non-domestic buildings to be zero-carbon by 2019
●	<b>Transport</b>	Mandatory EU emission limit value for new cars of 130g/km to be phased in from 2012 to 2015; biofuels tax exemption; modest tax relief for low emission cars; annual increase in road fuel taxation abandoned in 2001, and further increases repeatedly deferred (although modest future increases were recently announced); controversial debate over plans for significant expansion in airport capacity and aviation emissions; introducing incentives for roll-out of electric vehicles and associated infrastructure
●	<b>Renewables</b>	Overall, slow penetration of renewables given substantial resource (notably wind and marine); obligation on electricity suppliers to supply percentage of renewable energy 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, but targets were lowered by the government in December 2008- 3.25% for 2009/10 (previously 3.75%), 3.5% for 2010/11 (previously 5%), 4% for 2011/12, 4.5% for 2012/13, 5% for 2013/14; Renewable Energy Strategy to be published in July 2009 (consultation closed Sept 2008)

**KEITH ALLOTT, HEAD OF CLIMATE CHANGE, WWF UK** » THE UK HAS SHOWN A DEGREE OF LEADERSHIP, MOVING THE INTERNATIONAL DEBATE ON CLIMATE CHANGE FORWARD THROUGH GROUNDBREAKING LEGISLATION SUCH AS THE CLIMATE CHANGE ACT. HOWEVER, TO MAINTAIN ITS CREDIBILITY ON THE INTERNATIONAL STAGE THE UK REALLY NEEDS TO SHOW THAT IT ACTUALLY WILL DELIVER A LOW-CARBON ECONOMY AT HOME, BY REJECTING HIGH-CARBON PROJECTS SUCH AS UNABATED COAL-FIRED POWER STATIONS AND NEW RUNWAYS, AND CREATING A SUSTAINABLE FUTURE BY INVESTING IN RENEWABLES AND ENERGY EFFICIENCY INSTEAD. «

## G8 Climate Scorecard

## United States - Rank 7

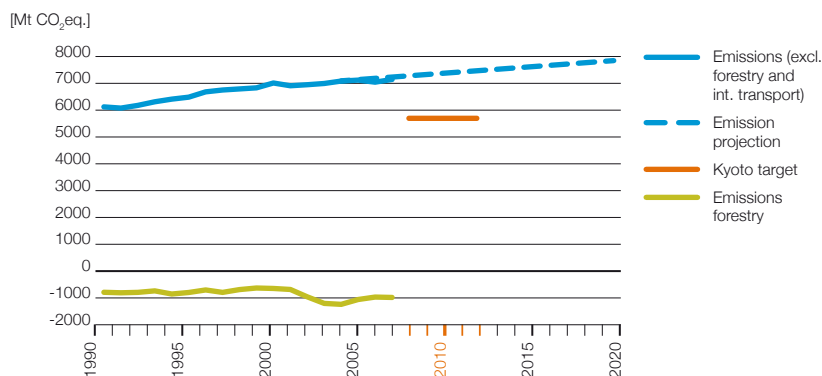
## SUMMARY EVALUATION

- » The new Obama administration has a very positive and encouraging attitude towards climate policies, plans for significant new policies and legislative initiatives are underway; projections were corrected downwards as a result of the agreed economic stimulus package. The new automobile standards have not yet been incorporated into the new projections and would further reduce them.
- » Country with the highest absolute emissions in the G8. Emission rates are among the highest in the world, strong dependence on coal and oil
- » Kyoto protocol was not ratified and target is unattainable, national targets under discussion but are less ambitious in the short-term



## EMISSIONS AND ENERGY

## EMISSION TRENDS



Past emission trend from 1990 to 2007 **+16.8%**

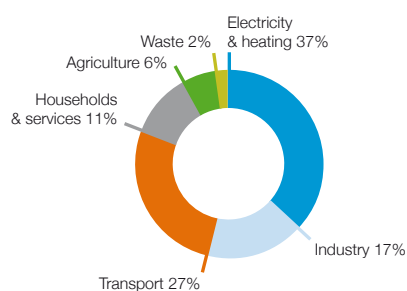
Current (2007) distance to the Kyoto target **+23.8 %-points**

Increase of the share of renewable energy sources **-0.2 %-points**

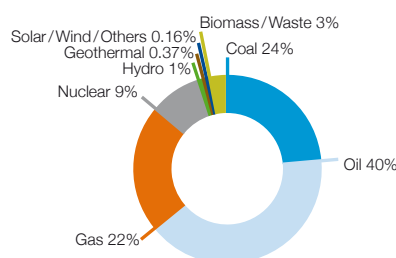
Emissions per capita **25 tCO<sub>2</sub>eq./cap**

Emissions per GDP **567 tCO<sub>2</sub>eq./M\$**

## EMISSIONS BY SECTOR



## ENERGY SOURCES



CO<sub>2</sub> per kWh electricity **625 gCO<sub>2</sub>/kWh**

Energy efficiency in industry **1.6**

Emissions in transport per capita **6.3 tCO<sub>2</sub>eq./cap**

Emissions in households and services per capita **2.6 tCO<sub>2</sub>eq./cap**

## G8 Climate Scorecard

## United States - Rank 7

## CLIMATE POLICIES

## GENERAL

- » Ratified UNFCCC on 15.10.1992, rejected Kyoto Protocol
- » Economic stimulus package included significant support for renewables and energy efficiency
- » Draft 'Clean Energy and Security Act of 2009' released, legislation is undergoing Congressional review.
- » Planned national emission targets: 3 % below 2005 levels in 2012, 17 % below 2005 levels in 2020, 42 % below 2005 levels in 2030 and 83 % below 2005 levels in 2050
- » Planned setting of emission standards on sources that are not covered by the allowance system
- » Planned U.S. assistance to encourage widespread deployment of clean technologies to developing countries
- » National greenhouse gas emissions reporting requirements planned for 2011

<b>Leadership in climate negotiations</b>	The Obama administration is engaging in international climate negotiations and willing to take on a quantified emissions reduction target; possible reduction targets are lower than what is needed to maximize chances of limiting global warming to below 2 degrees C; targets for international commitments likely to depend on agreement on national policies; continuation of the Major Economies Forum as a supporting discussion platform
<b>Electricity/nuclear</b>	Development program for future clean technologies; programs for increased building efficiency and energy-saving appliances (federal efficiency standards and Energy-Star label); mandatory cap and trade scheme currently operating in several states; energy efficiency goals or standards in at least 19 states; planned national market-based program covering electric utilities, oil companies, large industrial sources; planned facilitation of the deployment of a smart grid and new transmission lines for electricity generated from renewable sources; planned program of financial incentives to retailers selling high volumes of 'Best-in-Class' appliances
<b>Industry</b>	Voluntary partnerships between government and industry, NGOs and industry to reduce emissions; "Climate Wise" and "Industry for the Future" programs; mandatory cap and trade scheme in several states; tax credits for energy efficiency investments; planned market-based program for electric utilities, oil companies, large industrial sources; planned implementation of energy efficiency resource standard to enlist electricity and natural gas distribution companies; planned establishment of standards for industrial energy efficiency; planned award program for innovation in increasing the efficiency of thermal electric generation process
<b>Households and services</b>	Substantial support for energy efficient buildings in the recovery package (energy efficiency measures in low income homes; tax credits for energy efficiency investments; retrofits of federal buildings); existing minimum energy efficiency standards for new buildings in several states; mandatory standards for new federal buildings (30 % below industry standards); program to facilitate development of zero energy homes by 2020 and zero energy commercial buildings by 2025; voluntary Energy Star program for buildings; energy efficiency reduction targets in many states; planned promotion of energy efficiency in new buildings helping states to adopt advanced building codes; planned funding for retrofitting existing buildings; planned procedures for rating building energy efficiency; planned rebates to low-income families residing in pre-1976 homes for purchases of new efficient homes; planned efficiency standards for lighting; effectively ban on incandescent lamps by 2014
<b>Transport</b>	New fuel efficiency standards for cars and trucks were announced recently, which will have an effect on projected emissions. Research and development grants for clean fuels and vehicle efficiency; voluntary initiatives between the government and the automotive industry to reduce emissions; target to reduce gasoline consumption by 20 % between 2006 and 2011; existing and planned financial support for electric vehicles; planned harmonization of national and federal fuel standards; planned requirement for states to establish goals for reducing global warming pollution from transportation sector
<b>Renewables</b>	Federal tax incentives increased with recovery package (production tax credit, accelerated cost recovery system); Renewable Portfolio Standards (RPS)- minimum targets for renewable electricity - in 28 states and D.C.; Federal legislation underway for mandatory RPS at a national level. Solar Energy Technologies Program to make solar energy cost-competitive with conventional electricity by 2015, target: at least 5-10 GW new solar electric capacity; clarification and effort to facilitate review and permit of renewable energy development offshore and on public lands

**RICHARD MOSS, VP & MANAGING DIRECTOR, CLIMATE CHANGE, WWF USA** »PRESIDENT OBAMA HAS DONE MORE TO SUPPORT A CLEAN ENERGY ECONOMY IN THE LAST FOUR MONTHS THAN HAS BEEN DONE IN THE LAST THREE DECADES TOGETHER IN THE US. IF CONGRESS PICKS UP ON THIS LEADERSHIP AND PASSES A STRENGTHENED CLEAN ENERGY BILL, THE US RANKING WILL CHANGE QUITE DRAMATICALLY IN THE COMING YEARS. «

# Comment

**BY DR. ARMIN SANDHÖVEL**  
**[CEO ALLIANZ CLIMATE SOLUTIONS]**  
**ON THE G8 CLIMATE SCORECARDS REPORT**



Global clean technology and renewables markets have observed impressive growth rates during the past five years, although growth experienced a strong dent in 2008 due to the financial crisis. Global clean energy investments increased from 35 billion USD in 2004 to 155 billion USD in 2008.

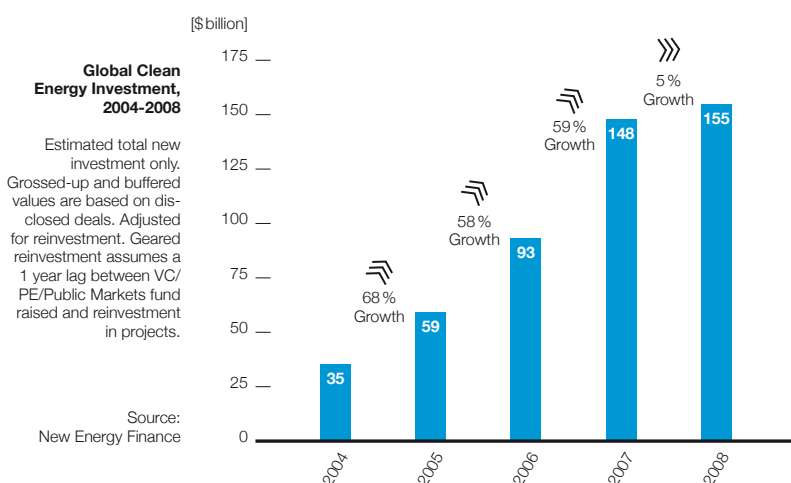
Nevertheless industrialized nations still face a large untapped potential for action as only Germany has attained an increasing relative share of renewables in its energy mix. Promoted by national targets clean technologies are successfully being implemented, including wind power developments in Western Europe and China, photovoltaic

installations in the Mediterranean area or carbon project developments under the Kyoto Protocol in emerging markets like Brazil and India. We have to be aware that these positive developments can only be the start of much stronger, concerted and dedicated action to achieve the global goal of a temperature increase of less than 2 degrees.

Allianz is active in these key markets and is offering a suite of tailored solutions for clean energy activities including carbon projects and renewable energy insurances. For several years Allianz has directly invested into renewables and considers this asset class a promising engagement. The Group holds wind power assets worth over 500 million EUR and plans to expand its renewables portfolio by another billion EUR of combined wind and photovoltaic investments until the end of 2012. We are also actively expanding carbon market related activities and services for our clients.

The threats posed by global warming need global, immediate and decisive action to keep the impacts of climate change at a manageable level. Current levels of climate finance are by far not sufficient to meet the necessary investments into renewable energy, energy efficiency and clean technology transfer. Given that the large majority of additional climate-related finance and investments will have to be provided by the private sector, it is for governments to set the right regulatory and political signals for markets to act.

Markets require confidence in the long-term predictability and the value of climate investments whereby encompassed risks need to be reflected in corresponding returns. In the future, public and private sector finance will need to cooperate more closely, for example through global funds, guarantees and insurance vehicles which could catalyze additional climate finance, render climate projects economically more attractive and keep risks at manageable levels.



# G8 performance in carbon markets

The instruments of the carbon market, emission trading schemes (ETS) 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. This section provides an overview on how countries support the development of the carbon market and how much they use it. Performance on carbon markets is part of the overall assessment of the countries' climate policies.

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<b>UNITED KINGDOM</b>	●	<ul style="list-style-type: none"> <li>» Participates in and supports the internal EU ETS with relatively stringent allocations</li> <li>» Developed a pilot national trading scheme before EU ETS</li> <li>» Agreed on national carbon budgets</li> <li>» Implementing national trading scheme for most industry not covered by the EU ETS</li> <li>» 570 registered CDM and 0 registered JI projects</li> </ul>
<b>GERMANY</b>	●	<ul style="list-style-type: none"> <li>» Participates in and supports the internal EU ETS with moderate to stringent allocations; introduced many exceptions</li> <li>» Uses allocation revenues from the ETS to support climate friendly development in developing countries</li> <li>» 98 registered CDM and 9 registered JI project</li> </ul>
<b>FRANCE</b>	●	<ul style="list-style-type: none"> <li>» Participates in and supports the internal EU ETS with moderate allocations</li> <li>» No additional activities to support CDM/JI</li> <li>» 36 registered CDM and 1 registered JI project</li> </ul>
<b>JAPAN</b>	●	<ul style="list-style-type: none"> <li>» Japan's Voluntary ETS (JVETS)</li> <li>» Proactive support for the development of JI and CDM</li> <li>» Allocated about US\$ 730 million (2008 incl. future payments) to funds to purchase emissions credits from developing countries</li> <li>» 209 registered CDM and 0 registered JI projects</li> </ul>
<b>ITALY</b>	●	<ul style="list-style-type: none"> <li>» Participates in and supports the internal EU ETS with moderate allocations and no limit for new entrants</li> <li>» 41 registered CDM and 0 registered JI projects</li> </ul>
<b>USA</b>	●	<ul style="list-style-type: none"> <li>» No national ETS (but several state initiatives for emission trading systems, not considered in ranking)</li> <li>» Planned federal market based program for electric utilities, oil companies and large industrial sources</li> <li>» Planned offsetting of up to 2 billion tons per year, split evenly between domestic and international offsets</li> </ul>
<b>CANADA</b>	●	<ul style="list-style-type: none"> <li>» No national ETS</li> <li>» An ETS for large emitters is proposed to begin 1.1.2010</li> <li>» No government intent to purchase credits from CDM/JI</li> <li>» 40 registered CDM and 0 registered JI projects</li> </ul>
<b>RUSSIA</b>	●	<ul style="list-style-type: none"> <li>» No national ETS</li> <li>» 93 registered JI projects (host) generating 43167 ktCO<sub>2</sub>eq</li> </ul>

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# G8 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.

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## JAPAN

- » Achieved relatively high average efficiency through policies since the 70's
- » Increase of energy efficiency has been offset by increasing use of cars, electrical 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, to date no effective policies or standards to improve overall energy performance of buildings but promotion of this is planned
- » Transport: 'Top runner' energy efficiency standards for cars, planned implementation of infrastructure for electric cars and use of bioethanol
- » Power/industry: no absolute reduction target but voluntary action; no policies to encourage combined heat and power generation (CHP)

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## ITALY

- » Average energy efficiency level in power, industry, buildings and transport
- » Buildings: reasonably effective for new buildings, partly effective for renovated buildings; recently the Government abolished the obligation to enclose the energy certificate when a building is sold or leased; 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 bulbs from 2011
- » Transport sector: fragmented policy and not very effective; no standards
- » Power/industry: EU emission trading scheme needs to become effective; CHP policy has effect
- » With financial laws introduced in 2007 and 2008, important energy efficiency tax rebates were created for domestic and commercial sector

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## FRANCE

- » Average energy efficiency level in power, industry, buildings and transport
  - » Buildings: reasonably effective for new buildings, but not effective for renovated buildings; incentives for energy efficiency, including improved insulation and use of renewable energy sources; lacking efficiency standards for electrical appliances
  - » Transport: additional taxation for used cars emitting more than 200 gCO<sub>2</sub>/km and new cars emitting more than 160 gCO<sub>2</sub>/km tax credit below 130 gCO<sub>2</sub>/km; CO<sub>2</sub> emissions labels on new cars; insufficient policies in the freight sector
  - » Power/industry: EU 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
  - » Adoption of energy efficiency law postponed
  - » Buildings: reasonably effective for new buildings; partly effective for renovated buildings, but large emission reduction potentials in the building sector remain; lacking efficiency standards for electrical appliances
  - » Transport: tax system based on CO<sub>2</sub> emissions as of June 2009 but no standards; tax exemption for biofuels abandoned; quota for biofuel blending has been decreased due to sustainability considerations; action plan for electric vehicles; automotive industry is regularly protected by government
  - » Power/industry: EU 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: EU emission trading scheme needs to become effective; CHP policy too weak to push development and off track for target
- 
- USA** ●
- » Currently very low average energy efficiency level in power, industry, households and transport
  - » Newly planned federal activities need to be determined and implemented
  - » Buildings: non-public building codes not ambitious; standards for equipment not ambitious or not existing
  - » Transport: updated fuel economy standards, plug-in electric vehicle market likely to develop quickly in the next decade
  - » Power/industry: fiscal instruments (energy pricing/taxes) and tradable permits have not been utilized; reliance on ineffective voluntary partnerships
- 
- CANADA** ●
- » Average energy efficiency very low in power, industry, households and transport
  - » No national, economy-wide commitment to energy efficiency improvement
  - » Buildings: codes and energy performance requirements not ambitious or lacking
  - » Transport: weak national vehicle fuel efficiency standards; effectiveness of voluntary agreement unclear; some provinces are endorsing California's car standards
  - » Power/industry: caps, fiscal instruments (energy pricing/taxes) and tradable permits not utilized
  - » Expanding energy-intensive oil production from tar sands; planned intensity reduction measures will allow sectoral emissions to double or triple
- 
- 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
  - » President approved a law (June 2008) introducing a target to improve energy efficiency by 40% (2020 compared to 2007)
  - » Increasing domestic demand for electricity is also leading to the reintroduction of old inefficient generating capacity that had previously been retired
-

# G8 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 the policies at a federal level in each country to support the development and deployment of renewable energy technologies, repeating the data provided in the scorecards. Performance on renewable policy is part of the overall assessment of the countries' climate policies.

- 
- GERMANY** ●
- » National target from the EU renewable energy sources (RES) Directive: 18% by 2020
  - » Guaranteed tariffs for delivered electricity from renewable sources through feed-in law, which has led to a considerable increase in renewable capacity
  - » The national target of 12.5% of electricity from RE by 2010 was already exceeded in 2007 (14% renewable electricity)
  - » Quota for biofuel blending has been decreased due to sustainability considerations
- 
- FRANCE** ●
- » National target from the EU RES Directive: 23% by 2020
  - » National RES electricity target in 2010 is 21% of gross electricity consumption, but current share is declining
  - » National targets for biofuels: 5.75% by 2008, 7% by 2010 and 10% in 2015
  - » Fiscal incentives for renewable energy sources and guaranteed tariffs for delivered electricity
- 
- UNITED KINGDOM** ●
- » Overall, slow penetration of renewables given substantial resource (notably wind and marine)
  - » National target from EU RES Directive: 15% by 2020 but current share is not much higher than 2% at present, despite natural resources
  - » UK Renewable Energy Strategy which will be published in Spring 2009 (consultation closed Sept 2008) is to address meeting the EU-wide RE target
  - » National RES electricity target in 2010 is 10% of gross electricity consumption, likely to be missed
  - » Obligation on electricity suppliers to supply percentage of renewable energy, linked to tradable certificates
  - » The government has completed a consultation on differentiated levels of support for different renewable technologies and intends to implement this
  - » Exemption of renewable energy from Climate Change Levy
  - » Biofuel targets under the RTFO were lowered by the government in December 2008; 3.25% for 2009/10 (previously 3.75%); 3.5% for 2010/11 (previously 5%); 4% for 2011/12; 4.5% for 2012/13; 5% for 2013/14
-

- 
- USA** ●
- » Financial incentives at the state and federal levels for renewable energy investments (including federal production tax credit and accelerated cost recovery system)
  - » 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 of at least 5-10 GW new solar electric capacity by 2015
  - » Planned new low-carbon transportation fuel standard to promote advanced biofuels and other clean transportation fuels
  - » Existing renewable electricity requirements in 28 states, and D.C., with targets ranging from 10% by 2015 to 20% by 2010
  - » Planned requirement for electricity suppliers to provide 6% renewable electricity in 2012, gradually rising to 25% by 2025
- 
- ITALY** ●
- » National target from RES Directive: 17% by 2020
  - » National RES electricity target in 2010 is 25% of gross electricity consumption
  - » RES target of biofuels increase to 10% by 2020.
  - » 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 green certificates or receiving feed-in tariff
  - » Renewable incentive scheme hampered by administrative barriers
- 
- CANADA** ●
- » Some incentives but overall strategy still weak
  - » No additional funds for ecoENERGY for Renewable Power Program in 2009
  - » Biofuels program (2008-2017) will invest up to CAD \$1.5 billion to support biofuel production
  - » Several other renewable energy programs, e.g. tendering schemes at provincial level (not considered in ranking)
- 
- JAPAN** ●
- » Only very weak target on renewable energy
  - » R&D programs and grants
  - » New subsidy for photovoltaics (70,000 yen/kW) totaling 9 billion yen
  - » Planned implementation of photovoltaic systems in schools and other public facilities around Japan and use for environmental education
  - » Plan to set ambitious goals for the introduction of renewable energy
  - » Plan to provide strategic support for photovoltaic power generation by introducing a 'feed-in tariff'
  - » Plan to promote the use of small hydroelectric power plants and biomass energy
- 
- RUSSIA** ●
- » Decree of the Prime Minister (January 2009) to increase the share of renewable energy, excluding large hydropower installations, from less than 1% to 4.5% by 2020 could improve performance; however, practical measures to support the Decree have not commenced; law on renewable energy still under development
-

## Climate Scorecard

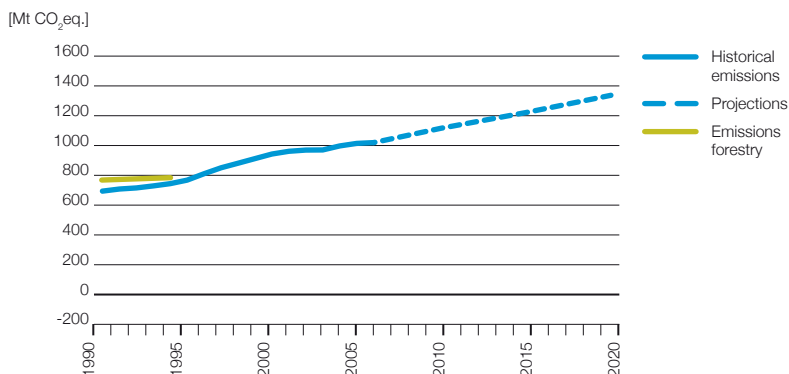
## Brazil

## SUMMARY EVALUATION

- » Very low emission intensity for electricity generation due to extensive use of hydropower
- » 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; very ambitious national plan to decrease deforestation

## EMISSIONS AND ENERGY

## EMISSION TRENDS



Past emission trend  
from 1990 to 2006 **+47.4%**

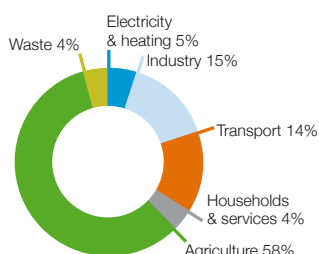
Increase of the  
share of renewable  
energy sources **-3.8%-points**

Emissions  
per capita **5 tCO<sub>2</sub>eq./cap**

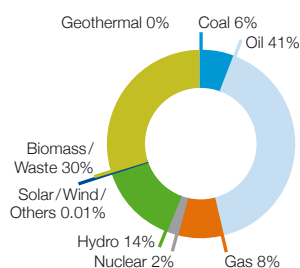
Emissions  
per GDP **628 tCO<sub>2</sub>eq./M\$**

CO<sub>2</sub> per kWh  
electricity **81 gCO<sub>2</sub>/kWh**

## EMISSIONS BY SECTOR



## ENERGY SOURCES



Energy efficiency  
in industry **1.6**

Emissions in  
transport  
per capita **0.7 tCO<sub>2</sub>eq./cap**

Emissions in households  
and services  
per capita **0.2 tCO<sub>2</sub>eq./cap**

Access to electricity **95%**

## Climate Scorecard

## Brazil

## CLIMATE POLICIES

## GENERAL

- » Ratified UNFCCC on 28.02.1994, ratified Kyoto Protocol on 23.08.2002
- » 158 CDM projects currently registered with the UNFCCC
- » National Plan on Climate Change (PNMC) published in 12/2008 which includes targets for a few sectors and general actions for others, but still lacks an overall long term goal deviating from "business as usual"
- » National Plan for the Prevention and Combat of Deforestation
- » Plan to reduce deforestation (70% by 2017 in the Amazon region); afforestation and reforestation shall be increased (elimination of net loss of forest coverage by 2015)
- » National Policy Framework on Climate Change with several proposals under discussion in the National Congress and State Policy under development in some states such as São Paulo, Acre, Amazonas, Rio de Janeiro and others.

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**Leadership in climate negotiations**      Developed a national climate change plan; active in international negotiations, in particular on reducing deforestation

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**Electricity**      Promotion of natural gas imports and use in cogeneration plants; National Program for Electricity Conservation (PROCEL) since 1991; large hydroelectric projects highly encouraged by government policies; increase of nuclear capacity from 2007 MW installed capacity to 3087 MW by 2013  
Planned reduction of electricity consumption by ~10% by 2030; plan to maintain high share of renewables (89%)

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**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  
Planned replacement of refrigerant gases

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**Households and services**      Voluntary labeling for electric appliances and mandatory labeling for gas-powered stoves and ovens; tax reduction for efficient light bulbs  
Planned promotion of solar heating (2000 GWh by 2015)

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**Transport**      Tax incentive for efficient car engines, labeling policies for light vehicles

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**Renewables**      National program (PROÁLCOOL) to support the use of ethanol as substitute for petrol, regular gasoline contains 25% bioethanol; blend of at least 2% of biodiesel into commercialized diesel by 2008, at least 3% after 2008 and 5% by 2010; today sugar cane ethanol generates more energy than hydroelectricity; recent official long-term energy plan forecasts a share of 7% in 2020 and 12% in 2030; program (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  
Planned support for increasing use of biofuels; planned support of sustainable international market for such fuels; planned increase of wind, PV and biomass.

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**KAREN REGINA SUASSUNA, OFFICER CLIMATE CHANGE, WWF BRAZIL** » IN ROWING THE CHALLENGE IS TO KEEP ALL ROWERS SYNCHRONIZED, TO MOVE FAST AND IN THE SAME DIRECTION. A LOW CARBON DEVELOPMENT WILL ONLY BE POSSIBLE IF WE ADOPT A COHERENT CLIMATE PACKAGE FOR ALL SECTORS OF THE BRAZILIAN ECONOMY. BRAZILIAN FORESTS ARE NOT JUST CARBON SINKS, THEY ARE ONE OF OUR MOST PRECIOUS NATURAL CAPITAL AND SHALL BE AT THE CENTER OF OUR SUSTAINABLE DEVELOPMENT. «

## Climate Scorecard

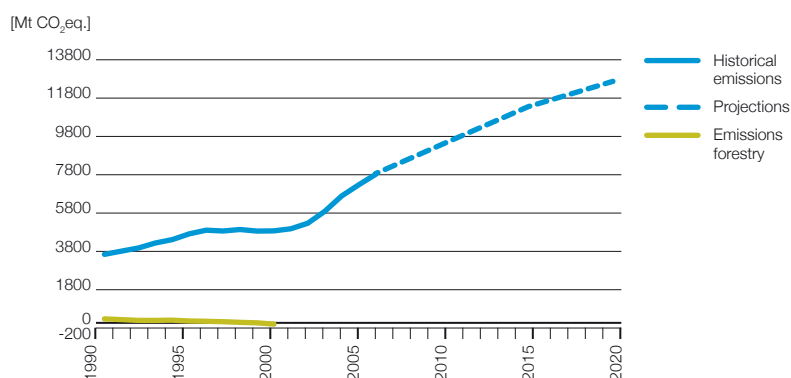
## China

## 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 diversify to e.g. natural gas and renewables
- » Ambitious renewables and energy efficiency targets, implementation yet lacking behind

## EMISSIONS AND ENERGY

## EMISSION TRENDS



Past emission trend  
from 1990 to 2006 **+116.1 %**

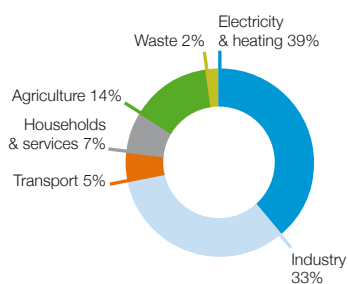
Increase of the  
share of renewable  
energy sources **-10.1 %-points**

Emissions  
per capita **6 tCO<sub>2</sub>eq./cap**

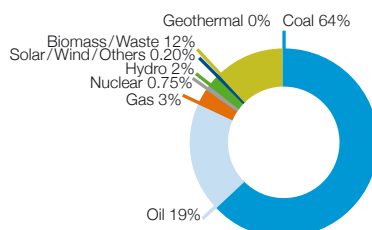
Emissions  
per GDP **1337 tCO<sub>2</sub>eq./M\$**

CO<sub>2</sub> per kWh  
electricity **771 gCO<sub>2</sub>/kWh**

## EMISSIONS BY SECTOR



## ENERGY SOURCES



Energy efficiency  
in industry **1.9**

Emissions in  
transport  
per capita **0.3 tCO<sub>2</sub>eq./cap**

Emissions in households  
and services  
per capita **0.4 tCO<sub>2</sub>eq./cap**

Access to electricity **99 %**

## Climate Scorecard

## China

## CLIMATE POLICIES

## GENERAL

- » Ratified UNFCCC on 05.01.1993, ratified Kyoto Protocol on 30.08.2002
- » 433 CDM projects currently registered with the UNFCCC (est. annual reduction: 147 MtCO<sub>2</sub>eq.)
- » Ambitious energy intensity target: -20% primary energy per GDP between 2005 and 2010, but implementation not yet on target
- » 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
- » Reduce reliance on export of energy-intensive goods
- » National Climate Change Program (NACCP) from 6/2007
- » Planned internal discussion on goals for the coming Five-Year Plan (2011-2015); planned discussion on carbon intensity target

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**Leadership in climate negotiations** Taking significant national action on energy efficiency and renewables; requesting support for further national action

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**Electricity** Continuation of market-oriented electricity power system reform; mandatory closure of small inefficient power plants as condition for building new plants; feed-in tariffs for renewable energy sources and production quotas for wind and hydro-power for the 5 large utility companies  
Planned new power generation dispatch system that favors environmentally friendly low-carbon electricity production over fossil fuel-based production

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**Industry** Energy intensity targets for main industrial processes and products; mandatory closure of small inefficient units in certain sectors (e.g. cement, iron and steel) to build new production facilities; negotiated energy reduction targets for 1000 most energy-intensive enterprises

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**Households and services** Mandatory standards for energy-efficiency of appliances and labeling program for certain household appliances; energy conservation code for new buildings; increase contribution of (low carbon) service sector to GDP

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**Transport** Standards to limit energy consumption of cars and trucks; introduction of higher fuel tax to replace road tolls; efforts to enlarge mass-transit system in key cities; favorable policy to encourage the development and application of electric vehicles in key cities and key projects  
Planned strengthening of fuel efficiency standards for cars; planned internal consideration of higher fuel/carbon tax

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**Renewables** Commitment to using 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; renewable energy quotas (wind, hydro) for the 5 large utility companies

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**DONGMEI CHEN, CLIMATE AND ENERGY DIRECTOR, WWF CHINA** »CHINA IS MAKING REMARKABLE PROGRESS IN ADDRESSING CLIMATE CHANGE THROUGH NEW POLICIES TO IMPROVE NATIONAL ENERGY EFFICIENCY AND THROUGH SUBSTANTIAL INVESTMENTS IN RENEWABLE ENERGY. FOLLOWING THE PRINCIPLE OF COMMON BUT DIFFERENTIATED RESPONSIBILITIES, WWF CHINA CALLS ON DEVELOPED NATIONS TO COMMIT TO REDUCING GREENHOUSE GAS EMISSIONS BY 40% BY 2020 AS PART OF THE COPENHAGEN AGREEMENT. WWF CHINA ALSO CALLS FOR PROPER MEASURES AND ASSISTANCE TO DEVELOPING COUNTRIES TO ALLEVIATE AND ADAPT TO CLIMATE CHANGE THROUGH TECHNOLOGY AND FINANCIAL SUPPORT FROM DEVELOPED COUNTRIES. «



## Climate Scorecard

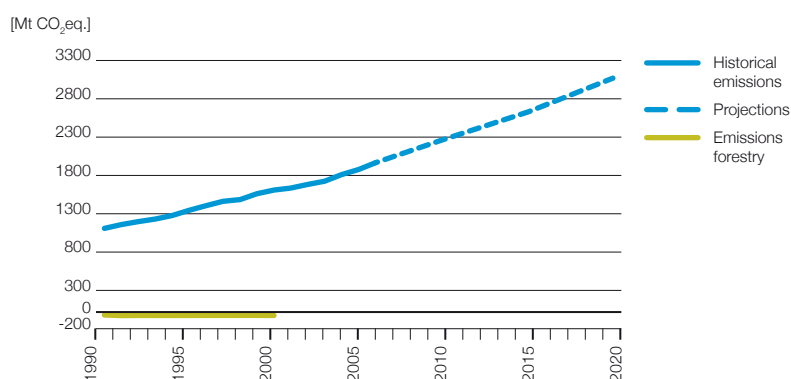
## India

## 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 and diversify energy mix, including increasing the share of renewables
- » Energy intensity per GDP is declining, some initial efforts made to slow emission growth
- » 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 2006 **+78.2%**

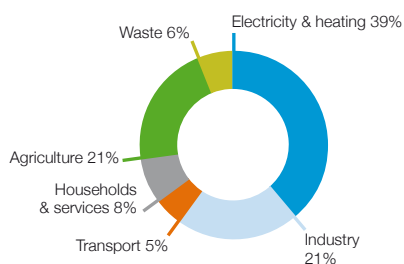
Increase of the  
share of renewable  
energy sources **-13.5%-points**

Emissions  
per capita **2 tCO<sub>2</sub>eq./cap**

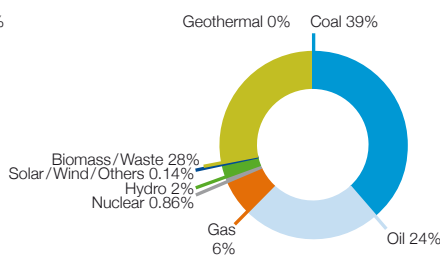
Emissions  
per GDP **742 tCO<sub>2</sub>eq./M\$**

CO<sub>2</sub> per kWh  
electricity **944 gCO<sub>2</sub>/kWh**

## EMISSIONS BY SECTOR



## ENERGY SOURCES



Energy efficiency  
in industry **1.7**

Emissions in  
transport  
per capita **0.1 tCO<sub>2</sub>eq./cap**

Emissions in households  
and services  
per capita **0.1 tCO<sub>2</sub>eq./cap**

Access to electricity **43%**

## Climate Scorecard

## India

## CLIMATE POLICIES

## GENERAL

- » Ratified UNFCCC on 01.11.1993, ratified Kyoto Protocol on 26.08.2002
- » 420 CDM projects currently registered with the UNFCCC (est. annual reduction: 32.1 MtCO<sub>2</sub>eq.)
- » National Action Plan on Climate Change (NAPCC) on mitigation and adaptation and strategic knowledge integration released on 6/2008
- » Ambitious government objectives of reducing energy intensity by 20% per unit of GDP between 2007–08 and 2016–17 as mentioned in the 11th Five Year Plan (2007-2012).
- » Planned expansion of forests by afforestation of 6 million hectares to reach the national target of 33% land area under forest and tree cover

**Leadership  
in climate  
negotiations**

First actions to slow emission growth; announced that per capita GHG emissions will not exceed the average per capita emissions of the developed countries

**Electricity**

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; ultra-super critical technologies and IGCC; higher electricity tariff for large scale electricity users; Decentralized Distributed Generation (DDG) based on renewables, for off-grid rural electrification to improve energy access and supporting the existing grid through feed-in

**Industry**

Energy Conservation Act (2001) provides legislative and regulatory framework for implementation of energy efficiency across nine key energy intensive sectors; obligation for industries to report energy efficiency improvements to facilitate identification of existing potential; industries have started voluntary steps towards reducing ecological footprint including voluntary carbon disclosure  
Planned including a system for companies to trade energy-savings certificates

**Households  
and services**

Standards and labeling for household appliances on a voluntary basis; voluntary energy conservation code for residential and non-residential buildings; public investment for development of a natural gas infrastructure; demand side management in households and agriculture; efficiency labeling for electrical appliances; replacement of all incandescent light bulbs with compact fluorescent lamps and promoting next generation of energy saving lighting devices  
Planned further increase in energy efficiency; planned use of incentives, including reduced taxes on energy-efficient appliances

**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; expansion of ethanol-blended gasoline  
Planned further development of urban public transport; transport pricing reform; planned higher regulatory standards

**Renewables**

Strong incentives from the government for enhancing the renewable energy production capacity; incentives for renewable power generation including integration of generation-based incentive (i.e. feed-in tariff), renewable energy portfolio standards and trading of renewable energy certificates  
Planned further expansion of solar power generation and off-shore wind energy; planned long-term aim to make solar competitive with fossil-based energy

**SHIRISH SINHA, HEAD CLIMATE CHANGE AND ENERGY PROGRAMME, WWF INDIA** » INDIA'S POLICY ACTION ON CLIMATE CHANGE IS BROADER THAN CARBON EMISSIONS REDUCTION AND INCORPORATES A VISION OF FOLLOWING AN ECOLOGICALLY SUSTAINABLE DEVELOPMENT PATHWAY. IT AIMS AT ENHANCING THE COUNTRY'S ENERGY SECURITY AND MEETING ITS SOCIAL AND ECONOMIC DEVELOPMENT OBJECTIVES, WHILE ALSO YIELDING CO-BENEFITS OF ADDRESSING CLIMATE CHANGE EFFECTS. «

## Climate Scorecard

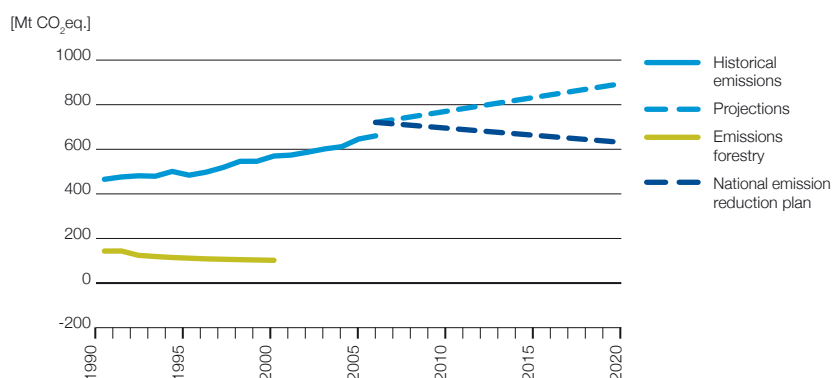
# Mexico

### 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
- » Ambitious long-term target to reduce national emissions by 50% below 2002 level by 2050
- » Developing comprehensive policy to slow emission growth and to reach long-term target

### EMISSIONS AND ENERGY

#### EMISSION TRENDS



Past emission trend  
from 1990 to 2006 **+42.3%**

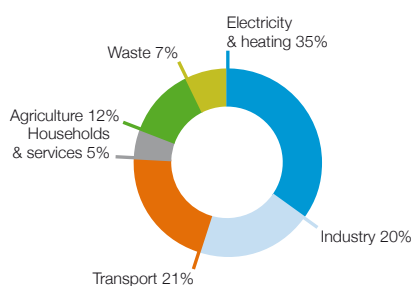
Increase of the  
share of renewable  
energy sources **-1.8%-points**

Emissions  
per capita **6 tCO<sub>2</sub>eq./cap**

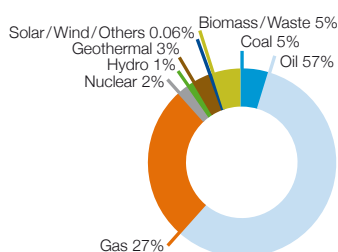
Emissions  
per GDP **549 tCO<sub>2</sub>eq./M\$**

CO<sub>2</sub> per kWh  
electricity **541 gCO<sub>2</sub>/kWh**

#### EMISSIONS BY SECTOR



#### ENERGY SOURCES



Energy efficiency  
in industry **1.7**

Emissions in  
transport  
per capita **1.3 tCO<sub>2</sub>eq./cap**

Emissions in households  
and services  
per capita **0.4 tCO<sub>2</sub>eq./cap**

Access to electricity **95%**

## Climate Scorecard

# Mexico

### CLIMATE POLICIES

#### GENERAL

- » Ratified UNFCCC on 11.03.1993, ratified Kyoto Protocol on 07.09.2000
- » 113 CDM projects currently registered with the UNFCCC
- » Leading by preparing its fourth national report to the UNFCCC
- » Published a national strategy on climate change (2008-2012) in 2007 and a draft Special Program on Climate Change (PECC) for public review in 3/2009
- » Target to reduce national emissions by 50 % below 2002 level by 2050 announced in 12/2008
- » Planned national cap and trade scheme for large producers under discussion

<b>Leadership in climate negotiations</b>	Currently preparing comprehensive climate plan and announced ambitious long-term goal; active in negotiations e.g. with a comprehensive proposal on international climate financing and by preparing regular national reports
<b>Electricity</b>	Program to reduce gas leakages; Energy Law including expansion of compact fluorescent lamp retrofit, CHP and renewables Planned reduction of emissions from oil and gas; planned consideration of climate change for evaluating projects in the Electric Sector Investment Program (POISE)
<b>Industry</b>	Program 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) Planned enhancement of GHG accounting and reporting, benchmarking; planned increase of regulation of equipment, energy generation systems and consumption; planned identification and reduction of SF <sub>6</sub> leakage
<b>Households and services</b>	Up to date energy efficiency standards for electrical appliances, gas boilers and thermal insulation; fiscal incentives, investment subsidies and soft loans for energy-efficiency improvement in services and households; Green Mortgage Program; enhancing natural gas use by opening gas transport and distribution to private sector Planned efficiency in building standards
<b>Transport</b>	Pilot project for use of hybrid buses in public transport; fiscal incentives, investment subsidies and soft loans for energy efficiency improvement
<b>Renewables</b>	Target: 25 % of total energy demand by 2012 Planned development of National Renewable Energy Program

**JORGE RICKARDS, CONSERVATION DIRECTOR, WWF MEXICO** »WWF MEXICO CONGRATULATES THE MEXICAN GOVERNMENT FOR ITS LEADERSHIP ON CLIMATE CHANGE ISSUES. MEXICO'S PRODUCTION OF ITS SPECIAL PLAN FOR CLIMATE CHANGE IS OUTSTANDING. WWF MEXICO ENCOURAGES THE GOVERNMENT TO STRENGTHEN ITS COMMITMENT EVEN FURTHER TO TURN THE PROPOSED GOALS INTO TANGIBLE RESULTS AND REACH ITS LONG-TERM VISION.«

## Climate Scorecard

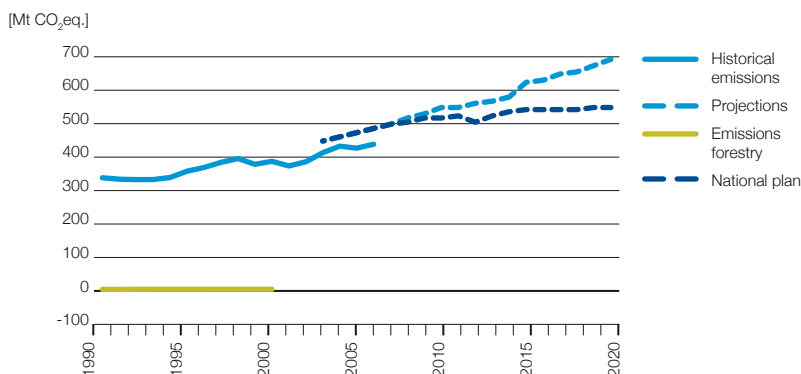
## South Africa

## SUMMARY EVALUATION

- » Emissions per capita only slightly below average of industrialized countries, well above developing country average, increasing trend
- » Very strong dependence on coal
- » Provided the most comprehensive plan of the G5 countries on options to reduce emissions in the future
- » Approximately 27% of people are without access to modern energy

## EMISSIONS AND ENERGY

## EMISSION TRENDS



Past emission trend  
from 1990 to 2005 **+29.9%**

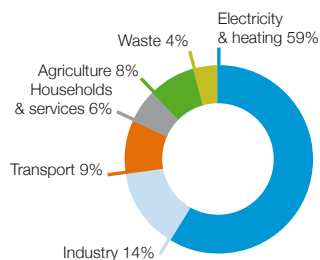
Increase of the  
share of renewable  
energy sources **-0.7%-points**

Emissions  
per capita **11 tCO<sub>2</sub>eq./cap**

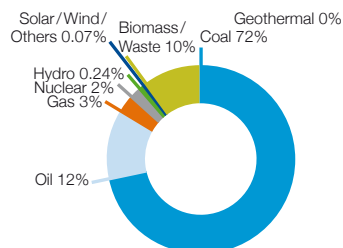
Emissions  
per GDP **1079 tCO<sub>2</sub>eq./M\$**

CO<sub>2</sub> per kWh  
electricity **869 gCO<sub>2</sub>/kWh**

## EMISSIONS BY SECTOR



## ENERGY SOURCES



Energy efficiency  
in industry **2.5**

Emissions in  
transport  
per capita **0.9 tCO<sub>2</sub>eq./cap**

Emissions in households  
and services  
per capita **0.6 tCO<sub>2</sub>eq./cap**

Access to electricity **73%**

## Climate Scorecard

## South Africa

## CLIMATE POLICIES

## GENERAL

- » Ratified UNFCCC on 28.08.1997, ratified Kyoto Protocol on 31.07.2002
- » 15 CDM projects currently registered with the UNFCCC
- » Developed a comprehensive national strategy on Long-Term Mitigation Scenarios (7/2008)
- » Multi-sector policy on Vision, Strategic Direction and Framework for Climate Policy, including feed-in tariffs, taxes, grants, enhancement of existing policies, monitoring and a regulatory reform
- » Planned Long-Term Mitigation Scenarios include clear action to be implemented

**Leadership  
in climate  
negotiations**

National action plan and the process for its preparation serves as an example to other countries; very active and constructive in the international debate, e.g. with a proposal on registering developing country action

**Electricity**

Energy efficiency strategy for energy production sectors; legal and economic framework development for future substitution of coal-based fuel by natural gas, e.g. the Gas Act  
Planned exploration of CO<sub>2</sub> tax or alternative market mechanisms; planned diversification of energy mix

**Industry**

Energy efficiency accord including targets for 32 large companies

**Households  
and services**

Energy efficiency standards for buildings and appliances; appliance labeling; compact fluorescent lamps program

**Transport**

Support for production of efficient motors; 2c/kWh levy on non-renewable electricity and a carbon tax component in new vehicle sales  
Planned promotion of public transport, hybrids and electric vehicles; planned expansion of solar traffic lights program

**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 program (PV); feed-in tariff  
Planned new targets for renewables

**RICHARD WORTHINGTON, MANAGER, CLIMATE CHANGE PROGRAMME, WWF SOUTH AFRICA**

» SOUTH AFRICA HAS SO FAR PLAYED A POSITIVE ROLE IN INTERNATIONAL NEGOTIATIONS, CLEARLY COMMITTED TO A BINDING MULTILATERAL AGREEMENT THAT HONORS THE PRINCIPLES AND INTENT OF THE CONVENTION (UNFCCC). AT THE NATIONAL LEVEL THE IMPLEMENTATION OF EXISTING POLICIES (E.G. ON RENEWABLE ENERGY AND EFFICIENCY) IS INSUFFICIENT. «

# Technical annex

## GREENHOUSE GAS EMISSIONS

Unless otherwise specified, emissions refer to greenhouse gas emissions from CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs and SF<sub>6</sub> in Mt CO<sub>2</sub> 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 April/May 2009, [www.unfccc.int](http://www.unfccc.int). Brazil, China, India, Mexico, South Africa: The emissions data for CO<sub>2</sub> are taken from IEA (2008) *CO<sub>2</sub> Emissions from Fuel Combustion (2008 edition)*; process CO<sub>2</sub> emissions from cement production are based on CDIAC (2008) Global, Regional, and National Fossil Fuel CO<sub>2</sub> Emissions. In Marland, G., T.A. Boden and R. J. Andres (Eds.), *A Compendium of Data on Global Change 2005* values were also used for 2006; data for non-CO<sub>2</sub> gases according to USEPA (2006) *Global Anthropogenic Non-CO<sub>2</sub> 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 for Brazil, where the national communication was used (Brazil's initial national communication, <http://unfccc.int/resource/docs/natc/brazilnc1e.pdf>).

## KYOTO TARGETS

The difference between emissions in 2007 and the Kyoto target is calculated as a percentage of base year emissions. Generally the base year for the emissions is 1990 with the exception of the base year for F-gases which is 1995 for Germany, Japan, Russia and UK. If these countries had chosen 1990 as the base year for F-gases, the distance to the Kyoto target would have differed by 0.3%, 1%, 0.1% and -0.4% respectively.

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 MtCO<sub>2</sub>/y which would be 7% of the base year emissions, France: 3.2 MtCO<sub>2</sub>/y (0.6%), Germany: 4.5 MtCO<sub>2</sub>/y (0.4%), Italy: 10.2 MtCO<sub>2</sub>/y (2%), Japan: 48 MtCO<sub>2</sub>/y (3.8%) Russia: 121 Mt CO<sub>2</sub>/y (4%) UK: 1.4 Mt CO<sub>2</sub>/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 more recent 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](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](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:** "An Updated Annual Energy Outlook 2009 Reference Case Reflecting Provisions of the American Recovery and Reinvestment Act and Recent Changes in the Economic Outlook" of April 2009 by the US Energy Information Administration (<http://www.eia.doe.gov/oiaf/servicerpt/stimulus/index.html>) for energy CO<sub>2</sub>, all other emissions from 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:** Projections are taken from the World Energy Outlook 2008 of the International Energy Agency (IEA 2008) for CO<sub>2</sub> from fossil fuel combustion (using regional growth rates for Brazil, Mexico and South Africa), constant 2005 values for CO<sub>2</sub> emissions from industrial processes from CDIAC (2008) Global, Regional, and National Fossil Fuel CO<sub>2</sub> Emissions and USEPA (2006) Global Anthropogenic Non-CO<sub>2</sub> Greenhouse Gas Emissions: 1990 – 2020. Appendix A-D. for non-CO<sub>2</sub> gases.

**South Africa:** Projections are taken from national work on emission scenarios: Winkler, H (ed) 2007 Long Term Mitigation Scenarios: Technical Report, Prepared by the Energy Research Centre for Department of Environment Affairs and Tourism, Pretoria, October 2007. The figure shows the “current development plans” and the “scale up” scenario.

**Mexico:** Projections are taken from national work on emission scenarios: “Progama Especial de Cambio Climático 2008-2012” SEMARNAT, <http://www.semarnat.gob.mx>.

**Emissions by sector:** For the year 2006, except for Canada, France, Germany, Italy, Russia, UK, USA (2007). All emissions from electricity use are included in “electricity and heat”. They are not allocated to the end use sectors, as there is no generally accepted dataset on this allocation. “Industry” includes energy, process and fugitive emissions but excludes emissions from electricity generation. “Households and services” also excludes emissions from electricity generation, hence emissions from electrical heating (particularly high in France) are accounted for under “electricity and heat”. “Transport” includes only domestic transport and excludes international aviation and shipping. “Agriculture” includes only non-CO<sub>2</sub> emissions. The sector “Land-Use Change & Forestry” is excluded from the figure.

**Energy sources:** For the year 2006. Total primary energy supply as provided by IEA (2008) Energy Balances, Paris, France. Primary energy ultimately determines emissions. Other statistics show the shares in final energy consumption, which does not show the losses (and emissions) for energy conversion.

**Increase in share of renewable energy sources:** Change in share of renewable energy sources in primary energy consumption between 1990 and 2006 based on IEA (2008) Energy Balances, Paris, France. Also includes large hydro, due to lack of disaggregated data. WWF only supports hydropower that is consistent with World Commission on Dams guidelines. We used primary energy as it

ultimately determines emissions. Other statistics for renewable targets use final energy consumption, which does not show the losses (and emissions) for energy conversion.

**Emissions per capita:** For the year 2006/2007. Population in 2006/7 is based on World Bank World Development Indicators (World Bank 2008) (<http://publications.worldbank.org/subscriptions/WDI>). WWF does not consider nuclear power to be a viable policy option, due to its costs, radiotoxic emissions, safety and proliferation impacts. We therefore also adjusted the values for the G8 countries as if the generation of electricity from nuclear power would had produced 350gCO<sub>2</sub>/kWh (emission factor for natural gas).

**Emissions per GDP:** For the year 2006/2007. Gross Domestic Product is taken from World Development Indicators (World Bank 2008), retrieved on February 2009 in purchase power parities, US\$ of 2005. Last year’s version of the scorecards used US\$ of 2000, which may lead to significant changes in this indicator compared to last year. WWF does not consider nuclear power to be a viable policy option, due to its costs, radiotoxic emissions, safety and proliferation impacts. We therefore also adjusted the values for the G8 countries as if the generation of electricity from nuclear power had produced 350gCO<sub>2</sub>/kWh (emission factor for natural gas).

**CO<sub>2</sub> per kWh electricity:** For the year 2006. Based on IEA (2008) CO<sub>2</sub> emissions from fuel combustion and IEA (2008) Energy Balances, Paris, France. The dataset was used as it provides values for all countries based on a common methodology. The values consider electricity and heat generated. WWF does not consider nuclear power to be a viable policy option, due to its costs, radiotoxic emissions, safety and proliferation impacts. We therefore adjusted the values for the G8 countries as if the generation of electricity from nuclear power had produced 350gCO<sub>2</sub>/kWh (emission factor for natural gas). Due to both these reasons, values in this report may differ from nationally published estimates derived with a different methodology, e.g. 624 gCO<sub>2</sub>/kWh for Germany (Umweltbundesamt 2009, <http://www.umweltbundesamt.de/energie/archiv/co2-strommix.pdf>).

**Energy efficiency in industry:** Energy efficiency index aggregated for iron and steel, pulp and paper, cement, 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 2006/2007, 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 per capita:** For the year 2006/2007, 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://earth-trends.wri.org/> For South Africa: Digest of South African Energy Statistics 2006 <http://www.dme.gov.za/pdfs/energy/planning/2006%20Digest.pdf>

## 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**.

Only policies agreed or announced before 10 June 2009 were taken into account.

CDM projects in Brazil, China, India, Mexico and South Africa were retrieved from the UNFCCC CDM project database as of April 2009.

## AGGREGATION METHOD FOR G8 COUNTRIES

Values that define the middle of the climate meter are:

- » Past emission trend: -27% (value for 2007 of a linear interpolation for an 95% reduction from 1990 to 2050, which would be a consistent path towards 2°C)
- » Distance to Kyoto target: Being better than the Kyoto target as early as 2007 is rated green (+0.5 to +2.5), being more than 3 percentage points above is rated red (-0.5 to -2.5).
- » Increase in share of renewable sources: 1.8% (chosen so that any decrease in share is rated red, i.e. -2.5 to -0.5)

- » Emissions per capita: 11.5 tCO<sub>2</sub>eq/cap (chosen so that value for 2007 of a linear interpolation between the Annex I average in 1990, i.e. 14 tCO<sub>2</sub>eq., and a 95% reduction in 2050 is rated green, i.e. +0.5)
- » Emissions per GDP: 370 tCO<sub>2</sub>eq/M\$ (value as if developed countries emissions in 2007 were on a path from 1990 to a 95% reduction by 2050, divided by the total developed countries GDP in 2007)
- » CO<sub>2</sub> per kWh electricity: 435 g/kWh so that the value that can be achieved with natural gas (350 g/kWh) is rated green, i.e. +0.5.
- » Energy efficiency in industry: 1.3 (chosen as an achievable value, which is still 30% above best available technology. The maximum is set at 1, i.e. best available technology)
- » Emissions in transport per capita: 2 tCO<sub>2</sub>eq/cap
- » Emissions in households and services per capita: 1.6 tCO<sub>2</sub>eq/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%; CO<sub>2</sub> per kWh electricity and energy efficiency in industry are weighted at 5.5% each.

Leadership in international negotiations and policies in the area of renewables are weighted at 5% each 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 higher 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 year's ratings are provided in **Table 2**. The level of ambition compared to last year's ratings has increased, as it now aims at a 95% reduction of emissions by 2050 instead of 80%.

**Performance in carbon markets:** CDM and JI data taken from <http://cdm.unfccc.int> and <http://ji.unfccc.int> in April 2009

# Further reading

- » **Official national emission estimates reported to the UNFCCC:** Greenhouse gas inventory data of the UNFCCC secretariat, available at <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, available at <http://cait.wri.org>
- » **Emission trends in EU countries:** European Environment Agency's European Topic Centre for Air and Climate Change, 2008: "Greenhouse gas emission trends and projections in Europe 2008", EEA Report No 5/2008, available at [http://www.eea.europa.eu/publications/eea\\_report\\_2008\\_5](http://www.eea.europa.eu/publications/eea_report_2008_5)
- » **Climate Change Performance Index:** The Climate Change Performance Index published annually by Germanwatch and Climate Action Network Europe compares the climate protection performance of 57 industrialized countries and emerging economies – 2009 update. <http://www.germanwatch.org/klima/ccpi.htm>
- » **Climate friendliness of economic recovery packages:** Scorecards on the climate friendliness of the economic recovery packages are provided in the report "Economic/climate recovery scorecards - How climate friendly are the economic recovery packages?" of April 2009, [http://www.e3g.org/images/uploads/E3G-WWF\\_Economic\\_Climate\\_recovery\\_scorecards.pdf](http://www.e3g.org/images/uploads/E3G-WWF_Economic_Climate_recovery_scorecards.pdf)
- » **Fact sheets:** Fact sheets for 60 countries with more detailed data but without rankings are available in the Ecofys report "Factors underpinning future action – country fact sheets - 2008 update." [http://www.ecofys.com/com/publications/documents/Report\\_factors\\_underpinning\\_future\\_action\\_country\\_fact\\_sheets.pdf](http://www.ecofys.com/com/publications/documents/Report_factors_underpinning_future_action_country_fact_sheets.pdf)
- » **Information Toolkit for post-2012 climate policies:** Information on historical emissions and energy trends, emission pathways, stabilization scenarios, mitigation potential and costs, co-benefits and historical responsibility. <http://www.brinkman-climatechange.com/Toolkit.htm>

	Canada	France	Germany	Italy	Japan	Russia	UK	USA
Leadership in international negotiations	-2	-1	0	-2	-2	-2	0	0
Electricity	-1	-1	-1	-1	-1	-2.5	0	-1.5
Industry	-1	0	0	0	-1	-2	0	-0.75
Households and services	-1	0	0	0	-1	-2	0	-0.75
Transport	-1	-1	-1	-2	0	-2	-1	-1
Renewables	-1	0	2	-1	-0.75	-1	0	0

**Table 1**

Detailed values of G8 policy rating per country and sector

	Canada	France	Germany	Italy	Japan	Russia	UK	USA
Final rating 2009	-1.15	-0.19	0.07	-0.37	-0.57	-0.82	-0.03	-1.04
Last year's rating (2008)	-1.09	0.07	0.05	-0.26	-0.27	-0.89	0.09	-1.15

**Table 2**

Final ratings for the G8 countries



**WWF** *for a living planet*



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