Federal Environmental Agency Germany
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Umwelt Bundes Amt
Für Mensch und Umwelt

The Future in Our Hands – 21 Climate Policy Statements for the 21st Century

- summary -

(1)
Climate change has begun and is more dynamic than expected. The temperature over the past decade rose world-wide by an average of 0.7°C - first and foremost as a consequence of greenhouse gas emissions. Some of the resultant phenomena include more frequent extreme weather events, for instance, heat waves, and a significant retreat of glaciers.

(2)
If greenhouse gas emissions are to continue at the current rate, further warming by 1.4 to 5.8°C can be expected by the year 2100, along with serious consequences for mankind and the rest of nature, such as a rise in sea level by another 9 to 88cm. Even at the lower end of this temperature scale, there is a risk that most of Greenland's ice sheet will melt and that sea level rises by up to 7m in the long term.

(3)
Recent findings show that the climate system is more sensitive than originally believed to an increase in greenhouse gas concentration levels. In order to ward off dramatic damage, it is necessary to limit the increase in global temperature to a maximum of 2°C compared to pre-industrial levels. Above this range, experts expect wide-spread disturbance of biosphere and water balance, and abrupt climate changes will become more likely. In order to maintain this "2°C target", atmospheric greenhouse gas concentrations must eventually be stabilised at 400 parts per million (ppm) of CO_2 equivalents. This means: The increase in global emissions must be brought to a halt over the next 10 to 20 years. Following this, emissions will have to be reduced by 2050 to less that half of today's level - or one quarter of the "business as usual trend“ (i.e. an emission increase of close to 20% per decade). Fairness to the developing countries requires that emissions by industrialised nations would have to decline even more stringently by 80% by the year 2050 compared to the year 1990 as the reference level.

(4)
All nations have to protect themselves against the consequences of climate change by reducing damage already caused today by climate change to agriculture, forests, infrastructure and human settlements. Developing countries need the support of the industrialised nations who largely caused climate change. The budgets provided by various funds so far are insufficient for this task - adaptation must be integrated as a central aspect into general planning and co-operation on development. However, adapting to the consequences of the enhanced greenhouse effect will only alleviate rather than solve the problem of climate change.

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The community of nations has so far failed to stabilise global emissions and to reverse the rising trend. The Kyoto Protocol contains emission reduction obligations only for industrialised nations by an average of around 5% of their 1990 emissions. This important first step was hard fought for politically and is a major success for international environmental policy, however, it is not enough. The agreed emission reductions by industrialised nations of around 1 billion tonnes of CO_2 equivalents (by 2012) are already more than offset by a global increase in emissions by some 3 billion tonnes.

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In order to achieve the long-term goal of the United Nations Framework Convention on Climate Change, global emissions will have to decline from 2020 on at the latest. This requires the participation of all nations in the long term. Emissions by industrialised nations will have to decline by one third till the year 2020 compared to the 1990 levels. In their Conclusions in March 2005, the EU Heads of State or Government endorsed this by calling upon industrialised nations to consider emission reduction targets in the order of 15 to 30 percent by the year 2020. The involvement of the US as the currently largest emitter of greenhouse gases and the participation of the most important developing countries – such as China, India and Brazil where strong increases in emissions will continue in the years to come – will be particularly important in light of the global nature of this challenge.

(7)
Future international agreements and conventions on climate protection will have to adequately consider the different situations of the countries involved. Due to their higher greenhouse gas emissions – both past and present – and economic strength, industrialised nations are obliged to make a special contribution towards reducing greenhouse gas emissions. The principle of fairness – such as the polluter-pays principle, the ability-to-pay principle and development priorities – should guide the involvement of newly industrialised and developing countries in future international climate protection agreements.

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The Federal Environmental Agency (UBA) proposes involving developing countries in climate protection within the next two decades with a set of gradual obligations. Such an international policy architecture could involve a series of stages for participation with differing types of incentives and obligations, differentiated according to countries per capita greenhouse gas emission levels and per capita income. The long-term goal should be to reduce emissions by the end of the century to a level below 2 tonnes of CO_2 equivalents per capita of the population.

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Climate protection costs money. However, investment in climate protection pays off because it helps to avoid high economic, ecologic and socio-cultural losses that would result from the expected climate change consequences of inaction. If we fail to act, world-wide economic damage alone could reach a magnitude of several trillion euro per year by 2050, with about 100 billion in Germany alone. The expected cost of reducing emissions is much lower. Furthermore, active climate protection triggers investment and technical innovation.

(10)
Climate protection pays off in multiple ways. Less air pollution and fewer conflicts regarding water and oil resources are important ancillary benefits. Establishing and modernising energy systems in a climate-friendly manner can make a valuable contribution towards fighting poverty and promoting economic development. Some of the world's poorest countries already have a keen interest in using renewable energy. A change in energy supply will be necessary in the foreseeable future because fossil fuels will become more expensive as supplies dwindle. Renewable energy thus grows more and more competitive. For reasons of climate protection this change simply has to happen earlier than the dwindling fossil fuels suggest. Renewable energy and a policy persistently aimed at energy efficiency are the two cornerstones of sustainable energy use.

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Climate protection is not merely a task of environmental policy. Many measures in other political areas – development, finance, land use, economic and industrial policies, agriculture, forestry, regional, energy or transport policies – can potentially have serious implications for climate protection. This is why the goal of climate protection should be integrated to a much greater extent into these policies. Despite tight budgets, regional and local levels as well can do more for climate protection, for instance, through regional planning and by facilitating and initiating investment.

(12)
Without further measures, Germany will not reach its climate protection goals by the year 2010. Although the latest forecast on greenhouse gas emissions underpins the success of climate protection measures to date in Germany, these measures do not reach the goal set in the Kyoto Protocol, not to mention the 40% reduction of greenhouse gas emissions by 2020 against the 1990 reference year as foreseen in the German government's climate protection programme. The potential to reduce emissions

must be fully exhausted, particularly in those sectors not covered by emissions trading – including non-energy greenhouse gases (N_2O, CH_4, fluorinated greenhouse gases).

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An 80% reduction in greenhouse gas emissions by the year 2050 in Germany is both technically possible and economically viable. Promoting renewable energy and significantly increasing energy efficiency contribute greatly towards this. Thanks to climate-friendly technology, fluorinated greenhouse gases are to a large extent unnecessary. Affordable measures are at hand, so that the intermediate goal of a 40% CO_2 emission reduction by the year 2020 against 1990 can be reached without additional costs for the national economy. These measures include, for example, refurbishing existing buildings and boosting power station efficiency.

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In the interest of more balanced economic incentives to save energy among companies, private households and in the transport sector, taxes must be orientated more towards clear, environmental criteria. Environmental Finance Reform also includes a subsidy policy that pays tribute to environmental protection. Short-term measures necessary to this effect include taxation of kerosene fuel for aircraft, if possible, on an international level, abandoning German special allowances for home buyers and commuters, and a further reduction of electricity and mineral oil tax exemptions for industry, agriculture and forestry. Furthermore, environmental and climate protection aspects must be systematically integrated into public budget and procurement systems in order to achieve sustainable public expenditure and programmes.

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Emissions trading can become the central instrument of climate protection. In the European Union (EU) it started in 2005. The EU should develop this instrument further by defining ambitious goals for subsequent trading periods, harmonising national rules for the implementation of emissions trading, involving all major emitters in emissions trading, exempting facilities with minor emission levels from emissions trading, and reducing administrative and technical processes even further. The European emissions trading scheme is linked to the project-based mechanisms of the Kyoto Protocol – in Germany this is done with the Project Mechanisms Law [Projekt-Mechanismen-Gesetz (ProMechG)]. Emissions trading can also be considered for sectors not covered up to now by the Kyoto regime, such as international aviation and shipping. A research project by the Federal Environmental Agency (UBA) already submitted proposals for the aviation sector.

(16)
The primary energy consumption in Germany is to be halved by the year 2050. This will require efficiency improvements in energy conversion as well as lower total final energy consumption. Energetic refurbishment of existing buildings could cut German CO_2 emissions by as much as 5 to 7%. Improving energy efficiency – including avoidance of no-load and standby power consumption - can reduce electricity consumption in Germany by more than 12% by 2020 as compared to business as usual projections.

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The forthcoming upgrading of power stations by the year 2020 should be used for investing in efficiency and reducing the share of coal in power generation. Declining energy demand as a result of energy-saving technology and better management in industry, private households and public administrations will save investment and fuel costs. State-of-the-art natural-gas cogeneration stations as well as plants generating electricity from renewable energy sources must be given preference over coal-fired power stations in order to cover any excess demand. CO_2 emissions caused by coal are around twice as high per unit of energy. Economically feasible processes for carbon capture and storage (CCS) are unlikely to be available to the desired extent over the next 20 years.

(18)
By the year 2050, renewable energy is to account for 50% of energy supply. All renewable energy sources must be developed further. Wind (onshore using larger turbines at existing sites and offshore using new sites), biomass and thermal solar energy are to be the focus of development until 2020. Geothermal energy and solar power generation must already be introduced to the market today if they are to be developed to their full potential after 2020 at a reasonable cost.

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Compared to the past 60 years, CO_2 emissions from road traffic in Germany fell for the first time ever since the turn of the century. However, greenhouse gas emissions from transport as a whole continue to increase. CO_2 emissions by the transport sector could be significantly reduced by a host of measures and instruments. In order to reach this goal, vehicle fuel consumption must be reduced, climate-friendly driving behaviour supported, environmentally compatible transport systems strengthened, the use of climate and environment-friendly fuels promoted, as well as traffic growth and the effect of air traffic on climate limited, to mention but a few.

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Organic farming and improvements in conventional agriculture contribute greatly towards climate protection. Important elements here include more widespread use of biogas, optimised fertilisation methods for greater nutrient efficiency in order to reduce N_2O emissions, and greater use of the enormous potential in agriculture and forestry for cultivating energy plants.

(21)
Communicating successful models helps to show how we can sustain a high standard of living whilst protecting the climate. The Federal Environmental Agency (UBA) is determined to provide opinion-makers, in particular, with concepts for attractive and climate-friendly lifestyles. The Federal Government's self-commitment to reduce CO_2 emissions in its operative sphere has an exemplary function that should be implemented as quickly as possible in building management, vehicle fleet management, and in procurement. The Federal Environmental Agency is determined to set an example here.

The full study can be found at: http://www.umweltbundesamt.de/klimaschutz/