

# German Strategy for Adaptation to Climate Change

adopted by the Federal Cabinet on 17 December 2008

The Federal Government's central climate policy objective is to limit the increase in mean global temperature to less than 2°C above the pre-industrial level, with the aim of preventing the expected far-reaching consequences of even greater climate change. However, even if the efforts to limit the temperature rise are successful, the climate change that is already taking place can be expected to have effects. The Federal Government is therefore presenting a German Strategy for Adaptation to Climate Change. This follows up its intention, announced in the Climate Protection Programme 2005, of preparing a concept for a national strategy on climate change in accordance with Article 4 of the Framework Convention on Climate Change. This strategy creates a framework for national adaptation to the impacts of climate change and establishes a transparent and structured medium-term process which, in conjunction with the relevant actors, will progressively ascertain action needs, define appropriate objectives, identify and resolve conflicts of objectives, and develop and implement potential adaptation measures. With this strategy, the Federal Government is for the first time adopting an overall position on adaptation to the consequences of climate change and integrating the work already in progress in various ministries in a common strategic framework. This also creates transparency for other actors. The Adaptation Strategy pursues an integrated approach to assessing risks and action needs, supports sustainable development, and reflects Germany's international responsibility.

## (1) Framework and objectives of Germany's Adaptation Strategy

The long-term objective of the Adaptation Strategy is to reduce the vulnerability and maintain and improve the adaptability of natural, social and economic systems. This requires the following action objectives:

- Identify and communicate dangers and risks, i.e. ensure transparency of probabilities, damage potential and uncertainties
- Create awareness and raise the sensitivity of actors
- Provide a basis for decision making that enables the various actors to take precautions and to gradually incorporate the impacts of climate change in their private, business and public planning and activities
- Indicate action options, coordinate and define responsibilities, draw up and implement measures.

The Adaptation Strategy is based on the principles of openness and cooperation; knowledge, flexibility and precaution; subsidiarity and proportionality; integrated approach; international responsibility; sustainability.

## (2) The climate is changing!

On the basis of the latest Assessment Report by the Intergovernmental Panel on Climate Change (IPCC), the Adaptation Strategy gives an overview of the changes in climate parameters (temperature and precipitation) observed and predicted both worldwide and for Germany, and provides a comparative evaluation (based on work by the German Weather Service) of the results of four existing regional models for Germany. This ensemble evaluation makes it possible to arrive at reasonably robust statements about corridors of change. This leads to the recommendation that future planning work in which the federal authorities – and also other actors – have to assess expected opportunities and risks of climate change should not base such evaluations solely on individual scenarios or models,

but should take account of the entire spectrum of future climate developments as indicated by analysis of various emission scenarios and numerous climate models, including the relevant uncertainties. Thus the report deliberately refrains from satisfying the frequently voiced demand that the Federal Government put forward a single scenario which the various actors can take as a basis for developing their individual adaptation strategies and measures.

Depending on the global trend in anthropogenic emissions of climate-relevant gases, the temperature rise in Germany is expected to reach between 0.5 and 1.5°C during the period 2021-2050 and between 1.5 and 3.5°C during the period 2071-2100. This warming will be most noticeable in the winter months. Winter precipitation could increase by an average of up to 40%, and in some parts of the central upland areas of the federal states of Rhineland-Palatinate, Hesse and north-eastern Bavaria the increase could even be as much as 70%. Summer precipitation could decrease by up to 40% on a nationwide average, with the south-west of Germany being particularly affected. Any analysis of climate change consequences must take into account not only the expected impacts of these gradual changes in mean values, but also the consequences of a presumed increase in the frequency and severity of extreme events and the consequences of increasing climate variability.

### (3) What are the consequences? What can we do?

The report sets out possible impacts of the climate changes described and outlines adaptation options for 13 fields of life, environment and business and for population protection and regional planning.

A bundle of adaptation options are available to reduce vulnerability. Preference should be given to those that permit flexible follow-up control, take account of existing uncertainties and permit synergies with other policy objectives aimed at mitigating other stress factors (such as environmental pollution, climate protection, surface sealing).

For the fields of agriculture, forestry, fisheries, biodiversity, construction, human health, transport and transport infrastructure, water resources / water management / marine protection, soil, tourism, trade and industry, energy industry and finance, the report outlines action options in varying degrees of detail. In some cases it identifies first potential initiatives for which a start is to be made on implementation where they relate to the federal authorities. On a cross-sectoral basis, one important factor is the need for measures to improve the data and knowledge base and to support information, awareness raising and decision making on the part of the actors. For some areas there is a need for more detailed investigation of the possible impacts of climate change and relevant adaptation options. This applies particularly to the trade and industry sector with its very heterogeneous structure.

The report discusses regional policy, regional planning and physical development planning and population protection as cross-sectional fields relevant to adaptation, and briefly cites examples of integrated regional concepts (integrated coastal zone management; climate action plan for the Alps).

Vulnerability to the impacts of climate change varies from one region to another. A cross-sectoral analysis and evaluation reveals that the following key regions are especially sensitive to climate change:

Central parts of **eastern Germany**, the **north-east German plain** and the **south-east German basin** and hills could be increasingly affected in future by reduced water supply.

The **hill country on both sides of the Rhine** is expected to see a general increase in precipitation. This can be expected to have consequences for agriculture and forestry, and for flood control. Heatwaves in the **Rhine rift valley** could become more frequent and more intensive, and the risk of flooding could increase.

The **Alpine regions** are very sensitive from the point of view of biodiversity. The retreat of the glaciers would have an impact on water resources, while reduced chances of snow would adversely affect the attractiveness of winter sports regions. The risk of natural dangers, such as rock falls or mudslides, must be expected to increase.

The **coastal regions** could be increasingly at risk from the rise in sea level and changes in the storm climate. However, there is great uncertainty about the probable size of changes in sea level and the storm climate. The northern German coastal states are therefore busily engaged in determining potential dangers to the coastal region and implementing appropriate adaptation measures. One aspect of special importance is the potential danger to wetlands and low-lying areas and to regions with high damage potential, such as the port of Hamburg.

The final section provides an overview of government initiatives currently in progress in the field of research into the consequences of and adaptation to climate change.

#### **(4) Worldwide adaptation! The German contribution**

With the decisions on the Bali Action Plan (UNFCCC Decision 1/CP.13), if not before, adaptation to climate change acquired great importance for international climate policy. In addition it is necessary to take account of the possible implications for development, migration and security policy that could be associated with the impacts of climate change on developing countries especially affected by the adverse impacts of climate change. These impacts could have considerable negative implications for achievement of the millennium goals of poverty alleviation and sustainable development. This gives rise to a need for rigorous examination of development policy strategies, concepts and programmes to ascertain whether and to what extent they contribute to preventing climate change, are sufficiently robust in the face of possible impacts of climate change and can help to strengthen the capacity to adapt ("climate check"). Furthermore, development policy measures and approaches in other policy areas are increasingly to be geared to supporting adaptation strategies in the countries affected, partly with a view to preventing any worsening of migration and refugee situations arising from impacts of climate change. Germany is playing an active part in the development of relevant concepts, and in the negotiations under the Framework Convention on Climate Change it is making every effort to ensure that the Conference of the Parties in Copenhagen in 2009 steers the right course for vigorous adaptation. This also includes the development of suitable mechanisms for financing adaptation measures in developing countries.

#### **(5) The next steps**

The first Cabinet Report on the Adaptation Strategy lays the foundations and creates a framework for national adaptation to the impacts of climate change. The strategy nevertheless requires further specification on the basis of a broad discussion with the federal states and societal groups.

The Federal Government is therefore aiming to present an '**Adaptation Action Plan**' drawn up jointly with the federal states by the end of March 2011. This is to include the following aspects:

1. Principles and criteria for prioritising action needs
2. Prioritisation of federal measures

3. An overview of concrete measures by other actors
4. Information about financing, especially through integration of adaptation in existing assistance programmes
5. Suggested concepts for progress review
6. Further development of the strategy, and next steps.

The dialogue and participation processes set in motion during the preparation of the Adaptation Strategy, which have so far focused mainly on the federal and regional authorities and academic circles, are to be put on a broader footing by increasingly integrating industry, local authorities and other actors from the various fields of activities. To this end the Federal Government will play an active role in its various fields of competence (specialist discussions, specialist conferences, discussion of adaptation issues in consultative bodies and independent expert committees etc.).

An **inter-ministerial working group (IWG Adaptation)** with representatives from all ministries will be established to draw up the Action Plan. It will be headed by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety. In addition to drawing up the Action Plan, its mandate will also include coordinating the initiatives of the federal ministries and the dialogue and participation process under the Adaptation Strategy. It comprises regular updating of the Adaptation Strategy and the Action Plan, and also evaluation reports on their implementation.

Awareness raising and information, dialogue and participation, support for the various actors and improvements in the knowledge base [research initiatives by the Federal Ministry of Education and Research (BMBF) and departmental research] are important first steps targeted by Federal Government initiatives. Through research activities, the Federal Government will increase the breadth and depth of the scientific basis for the Adaptation Strategy. Key areas include improving knowledge about the climate, medium-term climate forecasting, determining the consequences of and vulnerability to climate change, economic aspects of climate change, developing and evaluating adaptation measures and concepts for monitoring the consequences of climate change, and evaluating adaptation strategies.

The following measures are planned to support the actors and the process of implementing and improving the Adaptation Strategy:

- Further provision and expansion of the offerings and services of the Competence Centre on Global Warming and Adaptation (KomPass) at the Federal Environment Agency (UBA); KomPass will collate and evaluate information and results from the various subject areas and ministries and communicate them via an Internet portal;
- The establishment of a **Climate Service Centre** at the Helmholtz-Gesellschaft Deutscher Forschungszentren (seed funding by the Federal Ministry of Education and Research, planned for early 2009), at the interface between climate system research and users of the data obtained from scenario and model calculations. The aim is user-oriented acceleration of knowledge dissemination and research processes in the field of climate modelling and scenario development.