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Climate Financing by Germany

Contents

1. Bilateral co-operation 3

1.1 Cross-sectoral initiatives 4

1.2 Financing and technology transfer in the area of reduction 6

Energy 6

Transport 8

Forest conservation 8

1.3 Adaptation to climate change 9

Agriculture 9

Water 10

1.4 Integration of climate aspects in planning and development of measures in German development cooperation 10

1.5 Tabular overview of climate-relevant bilateral development co-operation 10

2. Multilateral co-operation in the framework of the Global Environment Facility (GEF) 11

2.1 Least Developed Countries Fund (LDCF) 12

2.2 Special Climate Change Fund (SCCF) 12

3. Project examples 13

3.1 Examples of projects for adaptation to climate change 13

Egypt: Water-resources management 13

Ethiopia: Agriculture 13
Indonesia: Adaptation, and reductions in the context of urban growth 14
Mozambique: Disaster preparedness 14
Peru: Adaptation strategy 14
Tunisia: National adaptation strategy 15
3.2 Examples of projects for reducing greenhouse-gas emissions 15
Egypt: Wind energy 15
Bangladesh: Solar energy 16
Brazil: Forest conservation 16
China: Buildings 17
Honduras: Forest conservation 17
India: Energy efficiency and renewable energies 18
Cameroun: Forest conservation 18
Morocco: Solar energy 19
Mexico: Waste management and energy 19
Nepal: Bioenergy 20
Tunisia: CDM capacity building 21
Uganda: Energy efficiency 21
3.3 Examples of projects for promotion of technology transfer 21
3.4 Examples of private-sector projects with public financing 21
India: Seawater desalination plant 22
Peru: Hydroelectric power stations 22
Brazil: Wind farm 22

Germany's fifth national communication[1] indicated that from 2004 to 2008, the Federal Government again sharply increased financial support for developing countries for the purposes of reducing emissions of greenhouse gases (GHG), adapting to climate change and engaging in technology transfer. With that support, the Federal Government is fulfilling its obligations, under the UN Framework Convention on Climate Change and the Bali Action Plan, to provide new and additional funding.

Support for adaptation, emissions reduction and technology transfer in developing countries is integrated within overarching development-policy strategies and programmes. In relevant implementation, the Federal Government is oriented to resolutions taken by the Parties to the UN Framework Convention on Climate Change, as well as to the principles of the Paris Declaration and the Accra Agenda for Action (calling for, inter alia, own responsibility on the part of partner countries, reliance on partner institutions and their procedures, co-ordination of donors' efforts, orientation to effectiveness and joint accountability on the part of partners and donors).

In the area of climate and development, the Federal Government makes use of a broad spectrum of instruments and institutions for international co-operation:

- Bilateral financial and technical co-operation,
- Multilateral co-operation in the framework of the UN Framework Convention on Climate Change, and especially via the Global Environment Facility,
- Multilateral co-operation, especially via multilateral development banks and UN organizations.

1. Bilateral co-operation

The Federal Government supports financing, and transfer of technical equipment, know-how and experience, for purposes of reduction of greenhouse-gas emissions and for adaptation to the impacts of climate change, in numerous different areas:

In financing of real investments, such as investments in acquisition and construction of plants and equipment that support GHG reduction or adaptation to climate change, partner countries receive support in the framework of Financial Co-operation (FC). Via FC, grants, low-interest loans and low-cost development loans for investments can be provided to national and semi-national institutions in co-operating countries. As of the end of 2007, over some 40 % of all ongoing projects in the portfolio of the KfW development bank were aimed at preventing GHG or at adaptation to the impacts of climate change.

[1] Germany (2010). Fifth National Report of the Government of the Federal Republic of Germany (Fifth National Communication), 297 pp.

To ensure that technological investments lead to lasting reductions of climate-harming greenhouse gases, and to mitigation of the negative impacts of climate change, the German development-co-operation sector strongly emphasizes capacity building. For the group of least developed countries (LDCs) in particular, which have the least means and resources to conduct climate-protection policy and adapt to climate change, such support provides an important basis for fulfillment / use of the obligations arising from the UN Framework Convention on Climate Change and the Kyoto Protocol.

Technical Co-operation (TC) efforts provide a broad range of instruments for capacity building in partner countries: know-how transfer, organizational development, advising and training and further training for local specialists and managers (for example, for decision-makers in the political and industry realms, and with regard to environmental management issues). In addition, the Federal Government supports partner countries in establishing and developing technology centers, research institutes and economic-promotion institutions. Pilot and model projects can be used to introduce new technologies, thereby enabling relevant demand to reach the critical levels at which such technologies can become profitable in partner countries.

The Federal Government also promotes measures for creating enabling environments, with the aim of motivating the developing countries' private sectors to increase their investments in climate-friendly technologies adapted to climate change. Such efforts extend to standards and economic incentives for energy-efficient technologies and renewable energies, socially compatible reduction of subsidies for fossil fuels, strengthening of institutions responsible for monitoring compliance with environmental laws and advising of companies in the area of energy management. Development co-operation can contribute to such efforts via economic and sector-policy advising.

1.1 Cross-sectoral initiatives

Via a range of cross-sectoral initiatives, the Federal Government is supporting financing and transfer of technology, know-how and experience for developing countries, with the aims of helping such countries to reduce greenhouse-gas emissions and adapt to climate change:

- The "Special Facility Initiative for Climate and Environmental Protection" ("Sonderfazilität Initiative für Klima- und Umweltschutz"; IKLU) was established in 2008 by the Federal Ministry for Economic Cooperation and Development (BMZ) and the KfW development bank. In the IKLU framework, and from 2008 to 2011, a total of EUR 2.4 billion is being provided, in the form of low-interest loans and grants, for climate-oriented and environmentally relevant investments in developing countries. The IKLU support areas include:

  - Renewable energies: Investments in expansion of use of renewable energies, including wind energy, biomass, solar energy, geothermal energy and hydroelectric power.

  - Energy efficiency: Investments aimed at increasing energy efficiency – for example, in energy production, energy transmission and distribution and in energy use in industry, commerce and private households.

- Industrial environmental protection: Investments for environmental protection in small and medium-sized enterprises (SMEs) and in industrial zones.
- Energy-saving mobility: Investments in energy-efficient transport systems, such as railway and bus systems.

- Since 2008, the International Climate Initiative (ICI), an effort of the BMU, has been financing climate protection projects in developing and threshold countries and in transition countries of central and eastern Europe. The relevant support focuses include the G5 countries – Brazil, China, India, Russia and South Africa.

In the area of climate-friendly industry, the initiative is supporting a range of efforts, including improvement of energy efficiency, expansion of use of renewable energies and reduction of climate-harming greenhouse-gas emissions. Support comprises investment measures as well as know-how transfer and advising of policy-makers in partner countries.

In the area of adaptation, suitable National Adaptation Programmes of Action (NAPAs) are being implemented in selected partner countries that are especially vulnerable to climate change. Via an integrated approach, as many adaptation issues as possible are covered, including water-resources management, optimized land use, sustainable biomass production, restoration of devastated areas, health care, disaster prevention and migration management.

In the area of climate-relevant biodiversity protection, projects are promoted for protection of carbon sinks, especially for protection of forests and other relevant ecosystems, such as wetlands. Activities in this area are helping to improve synergies between climate protection and biodiversity protection.

In each of the years 2008 and 2009, the International Climate Initiative has available funding of EUR 120 million from sale, in the framework of EU emission trading, of emission allowances to companies. The great majority of funds available under the International Climate Initiative are being implemented in bilateral projects. Projects of multilateral organizations are also supported, however.

- Via the Climate Protection Programme for Developing Countries (CaPP), an effort under the UN Framework Convention on Climate Change, and which is being carried out by GTZ (Gesellschaft für Technische Zusammenarbeit) under commission to the BMZ, the Federal Government is supporting developing countries in fulfilling their obligations under the Framework Convention and in making use of the resulting development opportunities. In addition, the Climate Protection Programme is supporting developing countries' active participation in developing international climate agreements for the period after 2012. The Climate Protection Programme advises partner countries with regard to ways of including climate change as a focus of efforts to achieve sustainable development. In the process, conceptual and institutional integration of climate protection and adaptation measures within policy formulation, planning and funding allocations is being supported. In co-operation with partners, the programme identifies action options for affected people, economic sectors and ecosystems.

- The climate protection programme supports developing countries in building structures for the Clean Development Mechanism (CDM). In the CDM context, companies from industrialized countries invest in projects, in developing countries, for reducing greenhouse-gas emissions via use of renewable energies, enhancement of energy efficiency or prevention of methane emissions from landfills. For developing countries, the CDM also presents opportunities for modernization of energy supply systems. The climate protection programme supports partner countries in various ways – for example, in preparing national CDM strategies, sector studies and CDMproject planning. In addition, it helps provide the institutional and organizational basis for identifying, preparing and efficiently approving and managing CDM projects. The actual project financing for emissions-reduction certificates comes from the private sector. No funding comes from the development-co-operation sector.

- In 2004, in order to help mobilize private funding for sustainable development in developing countries, KfW Bankengruppe established the KfW Carbon Fund, a climate protection programme for purchase of certificates from the CDM and from the Joint Implementation Mechanism (JI; for certification of emissions reductions in transition countries). At the same time, the Fund facilitates purchases, by private companies in industrialized countries, of climate protection certificates from relevant projects. Projects in the areas of renewable energies and energy-efficient measures play an important role in the effort. The Fund is funded by the private sector, and not with any funding from public-sector development co-operation.

- At the end of 2008, KfW established the PoA Support Center Germany. That effort is aimed at building a portfolio of implementable Programmes of Activities (PoA) within the framework of the flexible Kyoto mechanisms, CDM and JI. In each Programme of Activities, numerous small climate protection measures are combined to form a single project. For example, programmes for large-scale purchase of energy-saving lightbulbs can be financed via PoAs.

- Proklima, a Framework Convention project of the GTZ, supports environment ministries, in over 30 partner countries, in efforts to introduce substitutes for ozone-depleting substances such as CFCs, halons and methyl bromide in developing countries. Since some of these substances have strong greenhouse-gas effects, the programme also supports global climate protection efforts. Proklima advises directly affected companies in selecting the most suitable technologies, and it organises the formalities relative to such investments. The project co-operates with technology providers, including suppliers of refrigeration and air conditioning equipment and plastics manufacturers.

1.2 Financing and technology transfer in the area of reduction

Energy

In its support for efforts to reduce greenhouse-gas emissions, the Federal Government's main focus is on the area of energy. The main aim of relevant activities is to improve energy supply systems in developing countries in lasting ways. In the same framework, such systems' greenhouse-gas emissions

and dependence on fossil fuels are to be reduced. For this reason, in partner countries, Germany is supporting efforts to use renewable energies, improve energy efficiency and disseminate sustainable and decentralized technologies via both a) investment measures and b) know-how transfer and advising of policy-makers. In the framework of its development co-operation, Germany has reached agreement with a total of 16 developing countries on having energy be a central co-operation focus. All in all, relevant energy-oriented projects are being carried out in over 50 countries. In recent years, the Federal Government has launched numerous new initiatives in the energy sector and provided extensive pertinent funding:

- From 2003 to 2005, in the framework of the special programme Nachhaltige Energie für Entwicklung (Sustainable Energy for Development), which promotes development of sustainable energy systems and replacement of climate-/environmentally harmful energy systems, the Federal Government has supported a total of 90 new energy projects, with total funding of EUR 1.1 billion. Via the action programme "Climate and Development" ("Klima und Entwicklung"), the number and scope of these projects were further increased. All in all, new commitments totalling about EUR 3 billion were made for bilateral energy projects between 2003 and 2008.

- Since 2005, in the framework of the Special Facility for Renewable Energies and Energy Efficiency (4E), the Federal Government has supported investments, in developing countries, aimed at boosting the spread of renewable energies and at improving energy efficiency. The types of renewable-energy systems being supported include wind energy and hydroelectric systems, biomass systems, geothermal energy systems, photovoltaic systems and solar-thermal systems. In the interest of improving energy efficiency, efficiency-oriented measures are being supported in the areas of electricity production, loss reduction in power transmission and efficient demand-side energy use. From 2005 to 2007, low-interest loans totalling over EUR 500 million were made available for financing resources-conserving and environmentally friendly investment projects. In 2007, as a result of the resulting strong demand from partner countries, the available loan volume in the Special Facility for Renewable Energies and Energy Efficiency was doubled, to EUR 1 billion. With that move, a total of EUR 1.5 billion are available, through 2012, for low-interest loans to state and semi-national institutions in co-operating countries, for investment purposes. In individual cases, private companies from co-operating countries are also eligible for support.

- Many developing countries lack the necessary expertise for introducing new technologies in the area of renewable energies. For this reason, the Federal Government supports partner countries in technology and know-how transfer. Since 2005, KfW Entwicklungsbank (Development Bank), working under commission to the Federal Government and the United Nations Environment Programme, has been carrying out the programme "Exploring and Motivating Sustainable Power Markets" (EMPower). EMPower is directed at market introduction of commercial photovoltaic systems and solar-thermal power stations for the power grids of developing and threshold countries. In the process, the effort is also helping to publicize the opportunities inherent in the

technologies. In co-operation with energy providers, suitable sites for short term or medium term implementation are identified.

- Via energy partnerships, the Federal Government integrates private industry in climate protection measures in developing countries. Via contacts between companies in industrialized countries and developing countries, projects can be carried out in which entrepreneurial commitment and development-policy benefits go hand-in-hand (Public-Private Partnerships; PPP). With such aims in mind, dialogue with various industry associations has been intensified. In recent years, for example, private-sector projects have been supported, in Laos, Ghana, Mali, Senegal, South Africa and Tanzania, for installation of solar power systems in rural areas. Deutsche Investitions- und Entwicklungsgesellschaft (DEG) finances private-sector investment projects, including projects in the area of renewable energies.

Transport

Economic development and poverty mitigation cannot succeed in the absence of a functioning transport system. Greenhouse-gas emissions have been growing sharply in the transport sectors of many developing countries, however. For this reason, German development co-operation is also aimed at improving transport-sector energy efficiency and at promoting cleaner types of transport systems. In developing and threshold countries, the Federal Government is supporting establishment and development of public transport systems – especially rail systems – along with improvements of transport planning in urban areas and relevant training and further training measures.

- Since 2008, working in the framework of the "Special Facility Initiative for Climate and Environmental Protection" ("Sonderfazilität Initiative für Klimaund Umweltschutz"; IKLU), the Federal Government has provided some EUR 2.4 billion in the form of low-interest loans and grants for climate-friendly and environmentally relevant investments, including investments in energy-efficient transport systems, such as rail and bus systems.

Forest conservation

Forests have great significance as both sinks and sources within the global carbon cycle. Each year, more greenhouse gases are released via forest destruction than are produced by the entire EU. The emissions involved amount to about one-fifth of global, anthropogenic greenhouse-gas emissions. Without efficient protection for tropical forests, it will not be possible to keep global warming from exceeding 2°C. In this light, the Federal Government's international forest policy is aimed at slowing deforestation and further forest degradation and at preserving forests as greenhouse gas sinks.

- In 2008, the Federal Government, working in the framework of bilateral development-policy co-operation, provided a total of EUR 120 million for forest and biodiversity conservation. A large portion of that funding also supports climate protection.

- International Climate Initiative (ICI), the Federal Government supported some EUR 45 million worth of measures for conservation of biodiversity and of carbon sinks.

- In a number of partner countries, the Federal Government is supporting REDD pilot measures. Those pilot measures are to provide experience relative to the design of a future mechanism, agreed on under the umbrella of the UN Framework Convention on Climate Change, for Reduction of Emissions from Deforestation and Degradation (REDD).

- In addition, the Federal Government is supporting the Forest Carbon Partnership Facility (FCPF) of the World Bank. It has committed a total of EUR 40 million, from development-co-operation resources, to that effort.

1.3 Adaptation to climate change

Developing countries are particularly vulnerable to the adverse impacts of climate change. On the one hand, a majority of the population of developing countries depends directly on agriculture and is thus directly dependent on climate and weather conditions. On the other hand, many countries lack the technical, staff and financial resources necessary for adaptation to changed climatic conditions. Support for developing countries in adaptation to climate change has thus been integrated within many projects in the framework of German development co-operation.

Agriculture

Soil degradation and desertification are already presenting major challenges for developing countries. Climate-related changes of temperature, evaporation and precipitation will likely exacerbate desertification in many areas. As a result, agricultural yields and income can be expected to decline, and food security is likely to be threatened. To help developing countries adapt their agricultural production to climate change, the Federal Government is supporting transfer of know-how relative to food crops, cultivation technologies and concepts for combatting desertification.

- Since 2007, and in the framework of the Advisory Service on Agricultural Research for Development (BEAF), the Federal Government has been supporting international agricultural research in the area of adaptation to climate change. In 2007/2008, projects with a total contract value of EUR 10.1 million were approved in the framework of that support. The international agricultural research institutes supported in this framework are carrying out research into cultivation methods adapted to climate change, as well as into suitable varieties of corn, rice, wheat, potatoes, cassava and other agricultural products. In addition, research is focusing on ways of improving natural resources management in agriculture, as well as on ways of enhancing sustainable management of tropical forests. BEAF also makes experts from Germany available to a network of international research centers. Findings from the institutes' research are publicly accessible.

- Via the Convention Project to Combat Desertification (CCD Project), the Federal Government is supporting the agriculture and forestry sectors in adapting to climate change. The project advices selected partner countries in preparation and implementation of national action programmes for combatting desertification.

Water

In many regions of the earth, global warming will lead to changes in water availability. The negative consequences of such changes will vary widely from region to region. More intensive rainfall is expected primarily in tropical regions and in those higher latitudes that already receive large amounts of precipitation. Such regions will thus face added floods and high-water periods. In other regions, such as some subtropical dry regions, precipitation will tend to decrease. What is more, sea levels are expected to rise as a result of thermal expansion of ocean water and of melting of glaciers and ice sheets.

Overall, changes in water availability will have adverse effects in numerous different areas, including agriculture, the drinking-water supply, wastewater management, fisheries, hydroelectric power generation and inland shipping. Furthermore, the effectiveness of environmental and resources conservation, and of efforts to protect ecosystems and biological diversity, depends significantly on water cycles. The water-resources sector will thus play a key role in adaptation to climate change.

All in all, Germany's is one of the world's largest bilateral-framework donors in the water-resources sector. German commitments and involvement in this area are based on the concept of integrated water-resources management (IWRM). They are focused especially on the following areas:

- Water-resources management (flood management, dams and disaster prevention and trans-boundary water-resources management),
- Water supply (especially with regard to supplies of drinking water and industrial / process water; basic sanitary services; and wastewater and waste management).

1.4 Integration of climate aspects in planning and development of measures in German development cooperation

In 2009, the Federal Ministry for Economic Cooperation and Development (BMZ) introduced a climate-based review process to ensure that climate change is taken into account in all strategies and programmes of German development co-operation. As part of this orientation, activities in partner countries are designed with a view to ensuring that projects' positive impacts are not at risk from the impacts of climate change. In addition, measures are planned and implemented in such a way as to develop available potential, wherever possible, for limiting and reducing climate harming greenhouse gases. In integration of climate aspects within development cooperation, the Federal Government orients its efforts to relevant international standards, such as the "Good Practice Guidance for Strategic Environmental Assessment in Development Cooperation", developed by the OECD DAC, and the "OECD Guidance on Integrating Climate Change Adaptation into Development Cooperation".

1.5 Tabular overview of climate-relevant bilateral development co-operation

The following tables present a list of Germany's climate-relevant bilateral development co-operation efforts, broken down by recipient countries and sectors, and covering the years 2004 to 2006.

The statistics provided are based on information provided to the OECD's Development Assistance Committee (DAC). They include all bilateral co-operation projects that have a main or significant focus on stabilizing greenhouse-gas concentrations in the atmosphere. These projects have been reported to the OECD/DAC under the Rio category "climate change". In the tables below, commitments from the years 2004 – 2006 are included, broken down in accordance with the following sectors:

- Energy generation and supply: Support area 230
- Transport: Support area 210
- Forestry (and tropical forests): Support area 312
- Agriculture: Support area 311
- Industry: Support area 321
- Waste management/disposal: Support area 14050

The list also includes an additional column, with a focus on adaptation to climate change:

- Water supply and sanitation: Support area 140, but without 14050

The sector "water supply and sanitation" was included for the reason that, to date, the Rio "climate change" category does not yet include the aspect of adaptation to climate change. This presentation is in keeping with the methods used in Germany's 4th National Report to the UNFCCC. It will be retained, for the time being, until new methods for statistical recording of projects for adaptation to climate change are approved in the OECD-DAC framework.

Tables: Germany's total bilateral support in climate-relevant sectors [in millions of USD]

Recipient country	1. Energy generation and supply	2. Transport	3. Forestry (and tropical forests)	4. Agriculture	5. Industry	6. Waste management/ disposal	7. Water supply and sanitation
Omitted							

2. Multilateral co-operation in the framework of the Global Environment Facility (GEF)

The Global Environment Facility (GEF), the financial mechanism of the UN Framework Convention on Climate Change, finances the additional costs of climate protection measures, with global environmental benefits, in developing countries. Germany has a seat, and voting rights, on the GEF Council. In the 3rd Replenishment Period (2002 - 2006), Germany committed US$ 294 million. Of those funds, a total of 33 % were allocated to the environmental funding area of "climate change". In the 4th Replenishment Period (2006 - 2010), Germany committed US$ 295 million. Of those funds, 33 % have again been earmarked for climate change (US$97.35 million).

With shares of 11 % (2002 – 2006) and 12 % (2006 – 2010), Germany is the third largest contributor to the GEF, after the U.S. and Japan.

Via the "Bonn Resolution" of July 2001, for implementation of the UN Framework Convention on Climate Change and the Kyoto Protocol, two new funds for climate protection measures were established within the GEF framework:

2.1 Least Developed Countries Fund (LDCF)

The LDCF finances measures in the area of adaptation to climate change in Least Developed Countries (LDCs; as per the UN definition). In 2003, Germany committed EUR 15 million to the LDCF, and in 2007 it committed EUR 25 million. The LDCF finances preparation of National Action Programmes for Adaptation to Climate Change (NAPAs), as agreed under international law, thereby helping LDCs to build capacities in the area of adaptation. Once such a NAPA has been prepared, the LDCF also finances its concrete implementation. In 2005, the fund began financing concrete project measures.

2.2 Special Climate Change Fund (SCCF)

Pursuant to a resolution of the 7th CoP, held in 2001, the SCCF finances projects and programmes in developing countries, in the following four areas:

- Adaptation to climate change,
- Technology transfer,
- Energy, transport, industry, agriculture, forestry and waste management,
- Economic diversification in countries that are strongly dependent on fossil fuels.

In contrast to the LDCF, the SCCF is open to all developing countries. It is thus more broadly aimed. Germany has been concentrating its support for the SCCF especially on the area of adaptation to climate change.

Germany has made the following funding commitments for the SCCF:

1st Replenishment, 2004: EUR 5 million

2nd Replenishment, 2006: EUR 5 million

3rd Replenishment, 2008: EUR 10 million

3. Project examples

3.1 Examples of projects for adaptation to climate change

Egypt: Water-resources management

Egypt's water resources are among the scantiest of all countries world-wide. And that problem will be exacerbated by climate change. As a result of Egypt's rapid population growth, amounting to two percent per year, and its economic development, demand for water in Egypt has been growing continually. Agriculture is far and away the thirstiest economic sector.

Germany's involvement is aimed at safeguarding irrigation agriculture in the Nile Delta, in the long term, and especially for small farmers. Efforts to that end are modernizing obsolete irrigation channels and renovating drainage networks, with the aim of facilitating ongoing, efficient irrigation.

These programmes are being complemented by a GTZ project for water-resources management in agricultural irrigation. That project is supporting the Egyptian government in coordinating and improving advising for farmers, with the aim of achieving sustainable, cost-effective water use. For example, special model projects are being carried out to show farmers how to reduce water use on their fields.

German contribution: EUR 96 million

Planned project period: 1995 to 2013

Ethiopia: Agriculture

A total of 50 million people – two-thirds of the Ethiopian population – live in the highland regions of Amhara, Oromia and Tigray. Agricultural yields in those regions are extremely poor as a result of extensive soil erosion, deforestation and inappropriate land use. Droughts, which have been growing more frequent as a result of climate change, exacerbate such problems.

Since 1995, Germany has been supporting Ethiopia in managing its natural resources and working toward food security. On the basis of experience gained in these efforts, a strategy has been prepared, in co-operation with the Ethiopian government, for improving living conditions in Amhara, Oromia and Tigray. As part of that strategy, soil erosion is to be reduced on steep slopes. To that end, farmers are being taught new methods of biologically oriented erosion protection and properly adapted techniques for working the soil. The natural conditions in highland regions are a rich resource that is now being used more effectively: Use of new, high5th yield plant and animal species is making it possible to intensify agriculture and boost yields. Cultivation of triticale, a wheat-rye cross, has been particularly successful. Planting of new types of trees – especially apple trees – has also been effective. To help reduce forest destruction, wide use of energy-saving ovens, and of other types of energy biomass, is being promoted.

German contribution: EUR 21.02 million (technical co-operation via the GTZ) and EUR 22.95 million (financial co-operation via KfW-Entwicklungsbank)

Planned project period: January 2005 to December 2015

Indonesia: Adaptation, and reductions in the context of urban growth

Indonesia's cities have been growing by leaps and bounds. Industry and transports have been increasing as well, thereby boosting demand for energy, along with CO2 emissions and environmental pollution. What is more, as a result of their lowland locations, many Indonesian cities are at risk from climate-related sea-level rises.

A GTZ programme is supporting Indonesian cities in planning and implementing strategies for climate protection and adaptation to climate change. The programme has been working with the industry and transport sectors of six selected cities, in efforts to lower their emissions. Technology transfer and access to the carbon market are understood to be the keys to success. In endangered regions, the GTZ has been training municipal staff in adaptation measures and has been showing them ways of responding to possible disasters.

Mozambique: Disaster preparedness

Flooding is a common problem in Mozambique. And floods can be expected to increase as a result of climate change. In 2000, some 700 people died as a result of floods; in 2001, an additional 100 people died in flooding along the Incomati, Limpopo, Save, Buzi and Zambezi rivers. Many thousands of people lost everything in these calamities.

Since 1998, disaster prevention and preparedness have been promoted in Mozambique via various programmes. In a project with the National Disaster Management Institute (INGC), under commission to Mozambique's Council of Ministers, the German government has been promoting transfer of experience gained to date, along with institutionalization of disaster preparedness in Mozambique.

The Munich Re Foundation has also been supporting disaster preparedness in Mozambique. Since 2005, it has been supporting relevant measures, especially measures for early warning, via project co-financing. The catastrophic flood of 2007 thus did not find Mozambique unprepared. A functioning disaster preparedness system, including early warning systems, emergency centers and co-ordination agencies, is now in place. The National Disaster Management Institute (INGC) is able to manage emergency response and assistance measures, in connection with disasters, competently and effectively.

Political sponsor: Instituto Nacional de Gestão de Calamidades (INGC)

Total project period: January 2007 to December 2008

Peru: Adaptation strategy

For the population in the Arequipa region, in the south of Peru, climate change is no longer just some future scenario. The region's citizens and authorities alike are growing more and more alarmed as they observe the melting of the nearby Coropuna glacier. According to a study of the UN Environment Programme (UNEP), 54 percent of the glacier has already melted away. In general, loss of the glacier is forecast to exacerbate water scarcity, and to adversely affect agricultural production – and, thus, the

food supply. Working under commission to the Federal Ministry for Economic Cooperation and Development (BMZ), GTZ has been advising partners in Arequipa in preparing and interpreting climate scenarios. In the effort, advising has also been provided to technicians and political decision-makers with the aim of facilitating optimal use and more equitable distribution of water resources. At the same time, the organization's experts have been reviewing public projects for relevance to climate issues. Finally, advising has also included provision of environmentally oriented information and education. In close co-operation with schools, for example, climate change has been made a standard subject in public school curricula.

Tunisia: National adaptation strategy

With over 1,300 kilometers of coastline, and over 300 sunny days per year, Tunisia is a popular tourist destination. On the other hand, Tunisia has been, and will be, strongly affected by climate change. The expected sea-level rise is only one example of the relevant impacts. Climate change is expected to threaten tourism, agriculture, human health and the environment. Continually rising temperatures, along with further dwindling of already scarce water resources, are expected to further exacerbate the situation.

The German government has been supporting Tunisia in analyzing the impacts of global warming and in developing a national strategy for adaptation of the country's agriculture and health sectors. Training events for decision-makers in relevant ministries have provided an important basis for enabling adaptation measures to find their way into the national agenda. Pilot projects and action plans have now been expanded to the areas of water, energy and tourism. National parks have been established with a view to protecting the country's species diversity, and measures to combat desertification are also helping to counter the impacts of climate change.

With the help of GTZ, the Tunisian government has now created the necessary legal and institutional structures needed for an adequate response to the many challenges of climate change. The main partners in the project include the competent Tunisian ministries, the UN Development Programme (UNDP) and the Global Environment Facility (GEF).

3.2 Examples of projects for reducing greenhouse-gas emissions

Egypt: Wind energy

Egypt generates 84 percent of its electric power in thermal power stations fired primarily with gas and to some extent with heavy oil. Combustion of fossil fuels contributes to global warming. The Federal Republic of Germany is supporting Egypt in the construction of a wind farm in Zafarana, about 200 kilometers south-east of Cairo. Wind speeds averaging 10 meters per second make that desert area, on the Red Sea, an ideal location for wind turbines. The wind farm is expected to generate about 600 gigawatt hours of electrical power per year. The power will be fed into the national grid. With that output, the wind farm will reduce carbon dioxide emissions in Egypt by more than 360,000 tons per year.

The Egyptian government has announced a goal of having Egypt generate 14 percent of its required energy from renewable sources, including wind, the sun and biomass, by 2020. Additional wind parks are currently being planned. Germany is supporting these efforts with low-interest loans totalling about EUR 120 million.

German contribution: EUR 270 million

Planned project period: 1997 to 2010 and beyond

Bangladesh: Solar energy

Some 80 percent of the population of Bangladesh live in rural areas – and less than one-fourth of all households are connected to the power grid. It would be enormously costly to extend the power grid into the country's remote, poorly accessible regions. For this reason, the government of Bangladesh is supporting installation of complementary decentralized electrical systems based on renewable energies. A key element of this strategy consists of programmes, supported by German financial and technical co-operation, for providing "Solar Home Systems" to some 160,000 rural households and small companies. Such solar systems provide both light and energy to households and small companies, thereby enhancing their information and communications resources. The programmes are being supported by Germany via investment grants and funding for microloans.

Each Solar Home System consists of a photovoltaic module, a charge regulator, a battery, wiring, installation equipment and lamps. Loan-financed sales, including relevant service, are being carried out by certified private companies and nongovernmental organizations. To a large extent, they are able to refinance their loans via the programme sponsor, the Infrastructure Development Company Limited (IDCOL).

German contribution: EUR 16.5 million from financial co-operation; EUR 10.245 million from technical co-operation and combined financial instruments

Planned project period: June 2006 to August 2010

Brazil: Forest conservation

In a project for tropical forest conservation in the Amazon region, Germany is pursuing a trans-boundary approach that brings all relevant interest groups together. The project partner is the Amazon Cooperation Treaty Organization (Organização do Tratado de Cooperação Amazônica, OTCA), whose members include Brazil, Bolivia, Ecuador, Guyana, Colombia, Peru, Suriname and Venezuela. An intergovernmental institution, the Organization has a political mandate to control the desired transboundary process.

The aim is to develop a common regional planning policy oriented to the ideal of sustainability. The policy would balance interests of commerce, infrastructure development and ecosystem protection. To assure the project's success, as many local, national and supra-regional stakeholders as possible are

being integrated, including representatives of state agencies, industry associations and civil-society organizations. In the project, the Federal Government is co-operating with the Dutch government.

German contribution: Technical co-operation: EUR 7 million; financial co-operation: EUR 10 million

Planned project period: 2007 to 2012

China: Buildings

China's buildings sector, accounting for a total of 23 percent of the country's greenhouse-gas emissions, is a significant contributor to global warming. At the same time, some 50 percent of the energy consumed by the country's buildings could be saved via thermal insulation measures. The German-Chinese project "Energy Efficiency in Modernization of Existing Buildings" ("Energieeffizienz bei der Modernisierung im Gebäudebestand"), which is being carried out in the province of Hebei, is developing and testing suitable modernisation procedures, standards and support policies. As part of the effort, special training is being offered for decision-makers; this ensures that measures are carried out properly and thus have lasting effects. Germany's contribution primarily involves technical / structural, socio-economic and political consultation; provision of international specialists; and supporting studies, exhibitions and conferences.

Last year, in the framework of a pilot project in the city of Tangshan, three residential buildings were modernized in keeping with German concepts for integrated energy oriented modernization. The project is supporting introduction of the relevant modernization concept, and it is functioning as a reference project, for political decision-makers, with regard to a reform of heating-charges allocation. And it is being closely watched by other provinces and cities in northern China.

A technical guideline for existing buildings is being adapted and revised in keeping with Chinese energy-saving policies and on the basis of relevant German experience. A team of experts from Germany is providing consultation over a period of several years. The guideline is providing the technical basis for development and planning of concepts for modernization and refurbishment, as well as for quality assurance in connection with conversion measures.

In the framework of a feasibility study, the project is also exploring whether the Clean Development Mechanism (CDM) could also be used for co-financing of energy oriented building modernizations.

Honduras: Forest conservation

La Mosquitia is is the largest contiguous tropical forest area remaining in central America. It extends from the Caribbean coast of Nicaragua to the eastern part of Honduras. The Río Plátano Biosphere Reserve is an important part of the region. In 1982, the reserve, which covers about 7 percent of the national territory of Honduras, was declared a World Heritage Site, in recognition of its extraordinary biological diversity, by the United Nations Educational, Scientific and Cultural Organization (UNESCO).

With the help of support via German financial and technical co-operation, the state forest administration plans to preserve the biosphere reserve's core zone as an intact ecosystem. In its buffer

zone and transition area, protection for the reserve is to be balanced with the interests of the local population.

As part of the project, a concept for the biosphere reserve's sustainable development was developed, in co-operation with stakeholders. Thanks to the improvements that have been achieved in the areas of forestry, pasture management, animal husbandry, forest agriculture and coffee cultivation, farmers no longer have to encroach on intact forest areas. Environmentally friendly tourism is to be promoted within the reserve. All in all, destruction of the Río Plátano Biosphere Reserve has been halted.

German contribution: EUR 21 million

Planned project period: February 1997 to (in all likelihood) the end of 2009

India: Energy efficiency and renewable energies

In April 2006, the Indian-German Energy Forum was established, a body that focuses on strategically relevant energy problems, including energy security, energy efficiency and promotion of renewable energies and environmentally friendly technologies. The Forum also studies the environmental policy challenges related to sustainable development. An energy programme is underway with the aim of helping electricity producers and consumers improve energy efficiency and climate protection.

Via consultation services, Indian partners in the effort are being supported in implementing an Electricity Act and an Act on Energy-Saving. In addition, private sector consultation services are being expanded, in co-operation with the Indian Energy Ministry. Energy-services providers are assisting companies in using energy more efficiently – in lowering their electricity consumption – and, thus, their costs. Investments in relevant services and in modernization of obsolete equipment are being encouraged, with the aim of enhancing energy efficiency.

Exemplary investments for modernization of coal-fired power stations are being prepared. In the process, the efficiency of thermal power stations is to be improved. Plant operators are planning to restructure relevant procedures and equipment in such a way as to enable power stations to reduce their energy consumption – and, thus, to reduce their pollution levels.

German contribution: EUR 106.6 million (financial co-operation: EUR 96 million; technical co-operation: EUR 10.6 million)

Planned project period: 2003 to 2008

Cameroun: Forest conservation

Cameroun's tropical forests are part of the Congo Basin, the world's second-largest contiguous rain forest. In the framework of a national forest programme (Sectoral Programme for Forests and the Environment; PSFE), Cameroun's government is working to counter uncontrolled logging. In co-operation with all stakeholders, resources use is to become sustainable. Programme participants include hunters, users of forest products, non-governmental organizations, private companies and central and

non-central administrations. Germany is supporting Cameroun in carrying out this strategy. The programme is designed to enable its various measures, ranging from measures with the local population to measures relative to government strategies, to complement each other. Via a co-operative effort, alternative sources of income are being created. With this approach, independent economic development in the country's municipalities and regions is going hand-in-hand with long-term climate protection and environmental protection. Special attention is being given to ensuring that non-governmental organizations and private companies participate in plan approval and co-ordination.

German contribution: About EUR 26 million

Planned project period: October 2003 to September 2011

Morocco: Solar energy

About half of the population of Morocco live in sparsely populated rural areas, many of which are quite remote. Any attempt to connect every house to the public electricity grid would be extremely costly and could never be carried out within the foreseeable future. On the other hand, with over 300 days of sun per year, the country has an ideal basis for generating electricity with solar systems. Such systems provide an environmentally friendly, reliable basic electricity supply. The Federal Republic of Germany is supporting Morocco in this area, within the framework of financial co-operation. Current relevant efforts are aimed at providing electricity to virtually all rural areas by the year 2010 – in part, via use of small photovoltaic systems. The electricity generated by such systems is stored in batteries that can power energy-saving lights, television sets and radios. As a result, they can meet the population's basic needs. Private firms deliver and install the small systems on a turnkey basis. The suppliers guarantee the systems for a total of ten years, and they provide all necessary repair and maintenance services. Users pay about half of the relevant investment costs.

After making a down payment, they pay off their share within ten years, in installments, thereby becoming full owners of the systems. Experience has shown that this approach meets with very high acceptance on the part of the population, since sustainable use of renewable energies improves living conditions of rural residents, most of whom are relatively poor.

German contribution: EUR 11.6 million (including a grant of EUR 5.1 million and a low-interest loan of EUR 6.5 million with interest subsidized with EUR 1.9 million in budget funds)

Planned project period: 2002 to 2009

Mexico: Waste management and energy

Mexico's population and economic growth has been creating ever-greater environmental pressures. The especially serious problems include uncontrolled disposal of household waste and hazardous waste. Only about 50 percent of municipal waste and of industrial hazardous waste is recycled or disposed of in a controlled manner. As a result, large amounts of climate-harmful methane are produced.

The focuses of German-Mexican co-operation in this area include preparation and implementation of waste-management plans and promotion of the RED GIRESOL network of multipliers. That network has assumed responsibility for advising and training the country's some 2,500 municipalities in the area of integrated waste management. Other focuses include preparation of suitable analysis instruments and building of technical capacities for clean-up of critically contaminated sites in Mexico.

Germany is also supporting Mexico in promoting use of renewable energies. The emphases of relevant consultation include policy and strategy development (including such development with regard to sustainable promotion of biofuels), restructuring of the legal framework for renewable energies and development of the market for such energies. For example, the Mexican energy efficiency agency CONAE is being supported in designing and implementing a nation-wide programme for disseminating solar collectors for water heating. That effort is aimed at quadrupling Mexico's total installed collector area by the year 2012.

Germany and Mexico have agreed to make the experience they have gained in relevant technical co-operation available to other Latin American countries, in the form of "triangle co-operation" programmes, and to co-operate in implementing projects with third countries. As a result, financial resources and know-how are being combined in the interest of solving the region's problems – for the benefit of all stakeholders. For example, Mexican experts, working with the help of German support, are establishing a network of environmental advisors in Guatemala for the waste-management sector. Additional such agreements were concluded with Ecuador and the Dominican Republic, and implemented in 2008.

Nepal: Bioenergy

In Nepal, firewood is still the most important fuel; a full three-fourths of the country's energy needs are met with this traditional energy source. And people in rural areas rely especially heavily on wood for cooking and heating. As a result, Nepal's forests have shrunk dramatically and erosion has increased. Farm households also use cow dung as a cooking fuel, but this leads to shortages of cow dung in agricultural fertilization. What is more, smoke from dung fires causes respiratory and eye ailments.

Since 1975, the Nepalese government has promoted construction of systems that produce biogas from cow dung. Such systems help improve the overall energy situation, conserve the country's forests and reduce the country's carbon dioxide emissions. Since 1997, the government has been supported in this regard by KfW Entwicklungsbank. The relevant funding is disbursed via the Alternative Energy Promotion Center (AEPC), which co-ordinates Nepal's policies for supporting alternative energy sources. Part of the funds are used for construction grants, while the remainder goes into a fund that supports issuance of loans for biogas-system construction. The biogas systems are built by Nepalese companies. Each system consists of an underground container (reactor) and a pipeline system that transports the produced gas to the sites where it is burned. The gas is used to fuel stoves and lamps. Just two or three cows provide enough dung to operate a small system. The sludge left over from the fermentation process is composted and can then be used as fertilizer. The farmers themselves commission and operate the systems. They take a 75 percent share in financing of the systems, via cash, loans or

personal contributions. To date, a total of some 189,000 biogas systems have been installed in the framework of the programme, and an additional 60,000 are to be installed by 2011. Nepal's total potential requirements for such systems are estimated to amount to over two million systems.

German contribution: EUR 22.4 million

Planned project period: 1997 to 2011

Tunisia: CDM capacity building

Working under commission to the Federal Ministry for Economic Cooperation and Development (BMZ), since 2006 GTZ has supported Tunisia in building staffing and institution capacities for entry into the CDM market. Such efforts include establishing a national CDM authority and providing advising relative to assessment of CDM5th project proposals. As soon as authorities, local project initiators and Tunisian consulting companies have the necessary CDM know-how, they can identify and tap into the country's potential for reducing GHG emissions. The number of projects approved by the national authority since the project's commencement has grown from two to 26, for a potential reduction of 46 million tonnes CO2 eq.. These efforts have made Tunisia an attractive and competent CDM partner in the global carbon market, as well as one of the leading CDM countries in Africa.

Uganda: Energy efficiency

In Uganda, Germany has been promoting use of renewable energies and enhancement of energy efficiency, with a view to improving the country's energy sector. One of the project's important components involves encouraging large numbers of end consumers to adopt relevant modern equipment. The programme is aiming to supply modern stoves to at least 220,000 households, primarily poor family households. The stoves are expected to reduce time requirements for cooking and wood collection by 30 percent and to reduce wood consumption by 50 percent. As a result, smoke-related diseases and burns are expected to decrease by 80 percent. The programme is also expected to enable social institutions and small and medium sized enterprises to be able to reduce their energy costs considerably. What is more, it is creating jobs, since the stoves are being produced and distributed by local companies. The programme is expected to have significant effects in the areas of environmental and climate protection: Via use of 100,000 modern stoves, a total of 100,000 tonnes of firewood can be saved each year. That figure corresponds to the preservation of 1,100 hectares of forest. It also translates into a reduction of 150,000 tonnes in carbon dioxide emissions.

German contribution: EUR 11 million

Planned project period: 2008 to 2017

3.3 Examples of projects for promotion of technology transfer

3.4 Examples of private-sector projects with public financing

In addition, to financing projects with development co-operation funding, the Federal Government also supports private-sector investments in climate protection in developing countries. Deutsche

Investitions- und Entwicklungsgesellschaft (DEG) makes long-term capital available to private companies for investments in developing countries.

India: Seawater desalination plant

In Chennai, India's fourth-largest city, one-third of the demand for drinking water is currently not being met. A seawater desalination plant is expected to improve this situation considerably. The plant, with a daily capacity of 100 million liters, is being built north of the city, on the Bay of Bengal. In 2008, DEG granted Chennai Water Desalination Ltd. (CWDL) a long-term loan of EUR 14 million. The total investment costs for the project amount to EUR 86 million. CWDL, an Indian-Spanish joint venture, was awarded the contract for the construction and operation of the plant via a tendering process. The plant itself, the first private desalination plant of its size and capacity, can serve as a model for other such projects.

DEG has provided CWDL with long-term capital, thereby making the project possible, a project of vital importance for Chennai's drinking-water supply. CWDL will meet about 10% of Chennai's drinking-water needs, thereby markedly improving the reliability of the overall supply. CWDL has committed itself to meeting the environmental standards of the World Bank Group. The technology being used is particularly energy-efficient; it provides energy savings of 30% in comparison to conventional seawater desalination plants.

Peru: Hydroelectric power stations

Poechos 1, a private hydroelectric power station with a capacity of 15.4 MW, is located in north-western Peru, on the border to Ecuador. Poechos 1 was financed in 2002 by DEG, in co-operation with Inter American Investment Corporation (IIC) and the Fonds Corporación Interamericana para el Financiamiento de Infraestructura (CIFI). In a first phase, the power station is supplying electricity to 20,000 people in the poor rural region in which it is located. The Poechos reservoir was built in 1975, for purposes of irrigation and for operation of then-planned small hydroelectric power stations. At the time, no funding for construction of hydroelectric power stations was available, however. In the 1990s, following liberalization of the electricity market, a small group of private investors revived the plan for construction of hydroelectric power stations. Sindicato Energético S.A. then constructed the Curumuy hydroelectric power station, with 12.5 MW output – Peru's first private hydroelectric power station. Poechos 1, a second, smaller power station, was built subsequently. It also uses the existing reservoir to generate electricity. The water that runs through the plant is returned to the area's rivers and used for agricultural irrigation. In the framework of a long-term purchase contract, the electricity is supplied to the regional energy supplier and fed into the national grid. The energy supplier has constructed distribution stations for the purpose of serving households in remote regions. In 2006, DEG co-financed a second hydroelectric power station, Poechos 2, which was then also built by Sindicato Energético S.A..

Brazil: Wind farm

North-east Brazil has especially favorable conditions for electricity generation with wind energy. There, Wobben Windpower Ceará Ltda., a Brazilian subsidiary of the German company Enercon GmbH, has

erected the first privately operated wind farm in Brazil. The wind farm, with 30 turbines, generates 42 million kilowatt-hours of power annually – enough to meet the needs of 8,000 households. DEG was the only lender for this investment, which also promoted technology transfer.