

Common Responsibility for Climate and Development



COOPERATION WITH DEVELOPING COUNTRIES – PROTECTING THE CLIMATE AND ADAPTING TO THE IMPACTS OF CLIMATE CHANGE

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THE FIRST TO BE HIT

CLIMATE CHANGE AND THE DEVELOPING COUNTRIES



Climate change is an issue that affects every country, but despite their contribution to global warming being the smallest, it is the poorest regions of the world that are the most vulnerable. Climate change will exacerbate problems that already exist in many developing countries, such as drought, desertification, water scarcity and also flooding. One particularly striking aspect is the increase in frequency of extreme weather events. The Gulf of Bengal, the eastern coast of China and the Caribbean will continue to be hit by heavier and more frequent tropical storms, like Cyclone Nargis, which claimed the lives of 84,500 people in Myanmar in May 2008 and destroyed hundreds of thousands of homes whilst going virtually unnoticed by the rest of the world.

The melting of the world's glaciers is also having far-reaching consequences. Scientists fear that, in the long term, this will endanger the water supply in Asia and South America. The massive glaciers of the Himalaya range and the Tibetan plateau have been shrinking rapidly for decades. By 2050, it is expected that up to one third of these glaciers will have been lost, with half disappearing by 2090. It is a loss that will put at risk the great waterways of the Asian continent – the Ganges, Brahmaputra, Indus, Yangtze, the Yellow River and the Mekong. Far in excess of one billion people live within reach of the banks of these rivers, and could soon be threatened by seasonal water scarcity, since the meltwater from snow and ice together with the summer monsoon rains has been providing a constant supply of water throughout the year.

In Africa, many of the effects of climate change are concentrated as if in a crucible. According to the latest estimates, between 75 million and 250 million people on this continent will be affected by increasing water scarcity. Moreover, the livelihoods and lives of an estimated 60 million people who live in and around river deltas are at risk owing to rising sea levels. In other developing countries, too, freshwater resources are becoming scarce. Catastrophic storms and floods are causing major damage to infrastructure, with infectious diseases like malaria spreading and food production falling. This will heighten conflicts over the distribution of resources and increase migration due to environmental factors. In Uganda, for example, it is anticipated that the amount of land on which coffee can be cultivated will be significantly reduced. This will have dramatic consequences for coffee-growers, who form an important part of the national economy.

However, because of a lack of financial resources and weak political institutions, many developing countries are among the least able to protect themselves against the consequences of climate change. They are not in a position to improve disaster management, to put in place measures to provide for sustainable water supply or to introduce far-sighted economic structural changes. To do this they need effective support.

Climate change affects all of the world's economies – and the impact is tangible. According to the Review on the Economics of Climate Change by Sir Nicholas Stern, former Chief Economist at the World Bank, rising temperatures and the resulting consequences for the global economy will cost the world between 5% and 20% of global GDP, year after year. With his models Stern shows that not doing anything about climate change and simply carrying on as before would cost the global economy more than any consistent counter-measures, and, moreover, would have devastating consequences for many people across the planet.



There is much left to do worldwide.

Just one tonne of carbon dioxide per capita and per year

Drastic damage from climate change can only be avoided if the rise in temperatures can be limited to a maximum of 2°C compared with average levels in the preindustrial age, according to warnings from the Intergovernmental Panel on Climate Change (IPCC), which was awarded the Nobel Peace Prize in 2007. To achieve this target, according to calculations by the German Advisory Council on Global Change (WBGU), the per-capita emissions budget for 2050 has to be just one tonne of CO₂. In Germany the current level is ten times higher than this, and the global average is five tonnes per capita. The only countries that achieve this level today are those such as India, where the price paid is widespread poverty.

Yet the struggles to reduce poverty and to protect the environment are irrevocably linked, even if not all opportunities for climate protection are available to all developing countries – and such measures should not be at the forefront of all projects. Nevertheless, development cooperation designed to combat poverty usually also makes a long-term contribution to maintaining basic natural environments. This is why projects and investment decisions are now planned to lead poor countries on to a low-carbon path to development, too.

Developing countries need high levels of economic growth in order to reduce poverty, as do the major emerging markets of China, India and Brazil. Unfortunately, for this reason, these economies are now among those recording the most rapid rises in energy consumption. To satisfy this hunger for energy, many countries in Asia, for example, are set to make increasing use of coal in the future, with a corresponding impact on their CO₂ emissions. The challenge for development cooperation, therefore, lies in unifying the legitimate call for economic growth and more energy with the goal of protecting the world's climate. This, after all, is in everyone's interest.

KfW – the largest financier behind renewable energy

The best form of climate protection is to avoid additional consumption of energy. For this reason, KfW Entwicklungsbank supports its partners in developing countries in improving efficiency in the areas of energy production, transmission and distribution as well as on the demand side, for example in industrial plants or residential buildings. To find clean methods of satisfying the remaining hunger for energy, KfW Entwicklungsbank also promotes the use of renewable power sources. This massive commitment makes KfW Entwicklungsbank the largest financier of renewable energy projects in developing countries.

The funding instruments that KfW Entwicklungsbank deploys are subject to continual revision and redevelopment, and are each tailored to the requirements of the partner country. For example, while the first wind farms were built out of grant funds, it is now common practice to finance these technologies using low-interest loans. The reasons for this include the significantly lower costs and the technical advances made in the construction of such facilities. In addition, this leads to the increased use of private capital in developing countries, generating a greater leverage effect of the promotional funds. KfW Entwicklungsbank has joined forces with partner banks in developing countries to create new lending programmes, in order to counter financing bottlenecks for private investors.



Building wind turbine plants creates jobs and benefits the climate.

The purpose of these programmes is to finance renewable energies and energy efficiency-enhancing measures in residential and industrial settings. KfW Entwicklungsbank provides its partner banks with low-interest refinancing options as well as expert advice and support in the design and management of their lending programmes.

Given their size and dynamic growth, emerging countries have both great need and huge potential for environmental and climate protection measures, particularly in their large urban regions. The 360 cities with one million-plus populations, which are forecast to exist in 2015, are not only drivers of economic development, they also have a massive impact on the environment. KfW Entwicklungsbank makes available its experience, its technical and financial expertise and low-cost loans to resolve the urgent problems. These include improving industrial environmental protection, counteracting the wasteful approach to water and energy, promoting environmentally friendly urban development and also energy-efficient traffic and transport systems.

At the same time, it is KfW Entwicklungsbank's goal to protect poor countries from the potential consequences of climate change, thus countering continued exacerbation of the global discrepancy in distribution and opportunity, and to reduce the potential for conflict. To this end, KfW Entwicklungsbank works on behalf of the Federal Government to support projects that bring sustainable use of resources to agriculture and forestry, create biosphere reserves, implement integrated water resource management and protect against flooding. In this way, KfW Entwicklungsbank is already helping to mitigate the effects of climate change, as part and parcel of its efforts to combat poverty.

STRONG AND MODERN

KFW ENTWICKLUNGSBANK'S COMMITMENT TO CLIMATE PROTECTION



KfW is serious about climate protection, both in Germany and abroad. For this reason KfW, on behalf of the German Government, plays an active role when it comes to slowing down the process of global warming to manageable levels and to helping people adapt to changing circumstances, working in various sectors – first and foremost in developing countries – such as energy and water supply, urban development, and mobility as well as in biodiversity, agriculture and waste management. We set great store by a constant review of our efforts and methods, and we continue to search for new, improved ways to press ahead, both in climate protection and in poverty reduction.

Through its involvement, KfW Entwicklungsbank's goal is to bring sustainable improvements to the economic and social wellbeing of the people in developing countries, by supporting programmes and projects that directly or indirectly alleviate poverty. An absolutely vital prerequisite for achieving this is also to protect the environment, with all of its essential resources, and the climate. This means that KfW Entwicklungsbank provides financial support and advice to partner countries to help them invest in renewable energy sources or in rural water supply programmes, and in the protection of natural resources and combating diseases. Supported by German Financial Cooperation, the partner governments are then able to construct and expand their social and economic infrastructure, establish effective financial systems and implement the political and legal frameworks needed to promote development in their countries.

The focus is always on the effects of our work. Intervention in places where the market has failed or is not working, making a positive contribution to the creation of viable structures and helping to put the partner governments on track to introduce reforms that will make sustainable development a success – these are the guiding principles that direct the actions of KfW Entwicklungsbank.

Keeping the partner countries in mind

KfW Entwicklungsbank combines decades of experience in international development policy with the professional expertise of a bank. This is what distinguishes it from other development organisations, and what makes it a valued advisor for its partner countries and the German Government alike. Working on behalf of the Federal Ministry for Economic Cooperation and Development (BMZ) and other ministries such as the Federal Foreign Office, the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) or the Federal Ministry of Economics and Technology (BMWi), KfW Entwicklungsbank is in charge of Financial Cooperation with developing countries. The funds are provided from the federal budget, and are increasingly complemented by resources raised on the capital market. In 2008, EUR 2.1 billion, or over half (58%) of the resources committed to development projects, were own funds. In this way, KfW Entwicklungsbank combines its financial potential as a lender with its development policy support mission. The funds are provided according to need, that is, dependent on the level of development of the partner country as well as the type of project, in the form of grants, low-interest credit with long maturities or loans granted at conditions close to market.

In order to reinforce its activities in the area of climate protection in particular, KfW Entwicklungsbank, in cooperation with the BMZ, launched a special facility called Initiative for Climate and Environmental Protection (IKLU) in 2008. Through this facility, the bank finances investments that advance climate protection, especially in emerging countries. In 2008 alone, low-interest loans amounting to EUR 700 million were committed under IKLU. KfW Entwicklungsbank also works with the BMU in the International Climate Initiative (IKI). Both low-interest loans (more than EUR 300 million in 2008) and grants (EUR 25 million in 2008) are made available for investment in climate protection.

KfW Entwicklungsbank's commitment to environmental projects, as with the rest of its work, is geared around the partner countries and integrated into their respective national development strategies. The initiative and general responsibility for the projects are in the hands of the partner countries. They plan their own programmes and projects, and also implement them. In line with its function as a development bank, KfW Entwicklungsbank assumes co-responsibility for the design of the projects it supports, the proper use of the funds and for their success in development and environmental policy terms. It advises and helps its partners throughout the entire project life-cycle, thus reinforcing the capacities and competences of the entities responsible for managing programmes and projects.

It carries out this work in consultation and close coordination with the other German, European and international development organisations. Thanks to an increasingly established division of labour according to the specific strengths of those involved, it is possible to deliver cooperation as set out in the Paris Declaration in the most efficient and effective way for the benefit of the partners. For example, Financial Cooperation and Technical Cooperation complement each other in common support approaches. Co-financing or joint financing measures with the European Commission and the World Bank or bilateral donor organisations such as the French development agency Agence Française de Développement (AFD) or the Japan International Cooperation Agency (JICA) allow wide-ranging, long-term programmes and reforms to be instituted jointly with partners.

Three factors are vital in order to make both a significant contribution to climate protection and to adapt to climate change – a widespread impact, new approaches and the presence of supportive economic, political and legal frameworks. For example, when working to ensure a reliable energy supply, KfW Entwicklungsbank does not simply fund the expansion of the energy supply systems. Rather, it advises the competent authorities on the reform of old legislation, establishing cost-recovery tariff systems and planning their next investment. Support is provided to energy suppliers to put in place good management and further educate their staff. Only once partner countries have implemented such fundamental structural change is it possible to ensure a lasting impact for future generations.



Climate change will exacerbate the water shortage in many regions.



In taking its promotional decisions, KfW Entwicklungsbank is always careful to ascertain that the approaches taken by the project can be replicated by others. For this reason, as yet untested pilot projects that open up new options are developed in cooperation with the partners and are monitored particularly closely.

Climate is a cross-cutting issue. In order to fully integrate climate-related aspects into its business operations, KfW Entwicklungsbank introduced a climate audit process in 2009, as an extension of its environmental impact assessment. All projects are systematically vetted to determine whether they make a contribution to climate protection or adaptation to climate change. In addition, instruments are being developed which allow partners to counter specific project risks related to climate change during the planning phase. This could mean, for example, modifying the location, size and operation of a power plant or landfill site on the basis of changing conditions.

Since the regional or local consequences of climate change are still largely uncertain in terms of timescale and geographic reach, KfW Entwicklungsbank initially focuses primarily on "no-regret" measures when it comes to adapting to climate change, so that developmental benefits can be derived irrespective of how the climate change process progresses. Such measures include, for example, plans to protect water catchment areas and projects aimed at preventing water loss and food shortages. On the basis of improved regional climate models and detailed sector analysis, a systematic, multi-layered "climate proofing" process is carried out as part of the climate audit, in which potential climate risks that could have an impact on the success of the project are analysed and then minimised, if possible.

Pursuing new avenues

Around the world, there is enormous potential for avoiding the production of greenhouse gases that can basically be tapped "at no cost" – in many sectors energy efficiency measures save more energy, and therefore money, than they cost. Private consumers win, as does the environment. Nevertheless, due to flawed incentives for the private sector much of this potential is currently unexploited, especially in developing countries. In addition, funding is targeted at measures that promise to have a large impact in reducing poverty in addition to any climate protection benefits. Traditionally, in order to make most efficient use of scarce resources for climate protection, KfW Entwicklungsbank has supported these "win-win" scenarios. Now the potential savings effect of each project is also analysed via an emissions saving approach as part of the systematic climate audit, and is optimised within the framework of defined, economically viable abatement costs.

When it comes to providing funding for climate protection and adaptation to climate change, KfW Entwicklungsbank is active in many sectors. From energy and water supply, urban development and mobility, through to biodiversity, agriculture and waste management, the bank provides its partners with reliable support. At the same time, it is important to constantly question approaches and methods and to continue to search for new ways of doing things. Twenty years ago, who would have thought that the design of landfill sites might have relevance for the climate? Today it is clear that working on the climate requires joined-up thinking – a principle that KfW Entwicklungsbank places at the core of its project design. When planning and



Still today the energy performance of new buildings is seldom optimised.

realising projects and programmes, KfW Entwicklungsbank not only contributes its financial expertise and experience in development issues, but also its own innovative ideas and know-how in climate and environmental protection. Moreover, it can take advantage of its good understanding of local conditions, acquired over years of long-standing relationships with its partner countries.

KfW Entwicklungsbank staffs its teams with economists, engineers, social scientists and experts from a variety of disciplines, all working together. They not only deal with sector policy and promotional concepts tailored to the target groups in each country, but also ensure, for example, that appropriate environmental standards are upheld. In the course of its many years of promotional activities in Germany and Europe, KfW has also made a name for itself as Germany's "environmental bank". KfW Entwicklungsbank is profiting from this experience and from the resulting synergies in its programme and project development work.

Clean and affordable

Rice husks instead of coal in India

India is growing fast, with not only the population but also the economy experiencing dynamic growth. Even so, more than 500 million people still have no electricity. The way the subcontinent satisfies the enormous "energy hunger" of its 1.15 billion inhabitants and expanding economy in the future will have a significant effect on the global climate.

In view of this situation, KfW is actively engaged in India. At "Oswal Woollen Mills Limited", for example, a leading Indian yarn manufacturer located near the city of Ludhiana in the Indian

state of Punjab, the KfW Carbon Fund is financing a 3.5 MW biomass power plant through the purchase of emission certificates. The power plant, which is being funded within the framework of the Clean Development Mechanism (CDM), provides the electricity required to operate the factory – electricity that had previously come from the unreliable public grid. Two low-pressure boilers have also been replaced by a single high-pressure one to increase energy efficiency.

Since the Punjab is India's breadbasket, the rice husks for the power plant can be sourced within a radius of 50 kilometres. Previously, this biomass potential was not utilised. Overall,

CO₂ emissions are being reduced by 22,000 tonnes per year as a result of this project.

The certificates from this and other similar projects are being used to make KfW Bankengruppe climate neutral and offset the emissions from official trips made by the German Government. Besides this special case, the Carbon Fund also buys emission certificates from CDM projects in developing and emerging countries. It then sells these primarily to small and medium-sized enterprises to enable them to fulfil their reduction obligations under the EU emissions trading scheme.

Getting rubbish off the streets

A new waste management system for the Turkish city of Denizli

Strong population growth, a growing number of industrial enterprises and a chaotic landfill system – in Denizli in south-western Turkey, a city with a population of 400,000 not far from the world-famous travertines in Pamukkale, the situation had become untenable. Rubbish was left lying on the streets, there was no reliable refuse collection, and waste was often simply burnt in bonfires. There was no landfill site corresponding to Western standards, and the city authorities were simply unable to cope with the mountains of rubbish.

It was not until KfW Entwicklungsbank provided the city with a Financial Cooperation loan of EUR 8.3 million in 1999 that the local authorities began to tackle the problems systematically. Refuse management was reorganised, an infrastructure for proper waste disposal was put in place, and a cost accounting system as the basis for a new fee system introduced. Meanwhile, the people employed in refuse collection and waste separation have organised themselves into a

cooperative. They are now the city's contractual partners responsible for the collection and separation of recyclable waste. At the new landfill site the methane gas is contained and then treated in an incineration plant to make it harmless. This equates to average annual savings of 150,000 tonnes of CO₂ equivalent. Over the full service life of the plant, these savings will add up to three million tonnes, thereby making a significant contribution to climate protection.

In addition to the city's population, who can now rely on a proper waste disposal system that is also environmentally sound, a further 13 neighbouring communities, which are home to some 120,000 inhabitants, are also benefiting from the new, properly organised landfill site. Denizli has succeeded in getting to grips with its rubbish. The city has become a cleaner, more pleasant place to live, and has set a real example for others to follow.

Waste management and climate change mitigation are closely correlated.



CLIMATE PROTECTION PAYS OFF

PROMOTING PRIVATE SECTOR COMMITMENT



The Kyoto Protocol offers the public and private sectors in industrialised countries the option of meeting a portion of their emissions obligations through the implementation of climate protection projects in developing countries, through certification under the Clean Development Mechanism (CDM). This is an efficient means of contributing to climate protection, since the abatement costs per tonne of CO₂ equivalent are usually significantly lower than the costs that would otherwise be incurred in the industrialised countries themselves. This means that climate protection can be profitable for investors in several respects. Emissions credits from such projects both cut the costs of a company's own reduction obligations and create investment incentives for the use of climate-friendly technologies in developing countries. By selling the credits, the projects are able to obtain additional revenue without which they would never have been able to get off the ground.

KfW Entwicklungsbank was early to spot this opportunity, creating the KfW Carbon Fund to set up programmes for buying certificates from climate protection projects in developing countries. We pay particular attention to ensuring that the projects meet sustainable development criteria in the host countries and fulfil recognised environmental standards to an equal extent.

Since 2009, the Carbon Fund has been under the organisational management of KfW Entwicklungsbank. This allows for an even more efficient acquisition of emissions credits from projects. By exploiting synergies from financing for host countries, it is intended to expand and diversify the potential for funding climate protection projects around the globe.

Certificates for German and European businesses

Companies that participate in a KfW Carbon Fund certificate purchase programme can meet their obligations under the European emissions trading scheme at low cost. The German National Allocation Plan alone provides its private sector participants with a total of 90 million certificates, enabling them to meet their obligations in the second trading period through to 2012.

Since the KfW Carbon Fund was set up in 2005, emissions credits amounting to more than 25 million tonnes have been purchased from over 50 projects, especially in the fields of renewable energy and energy efficiency. Through the programmes, agreements amounting to over EUR 200 million have been concluded with purchasers, primarily from the private sector. Since spring 2008, the "Post-2012 Carbon Fund" has been operated by KfW and the European Investment Bank (EIB). This fund is already specifically acquiring emissions credits that will not be generated until after 2012 and for which there are not yet any international regulations in place. Here, together with its partner banks, KfW Entwicklungsbank is making a major contribution to stabilising market expectations in an uncertain environment, and offering projects a reliable outlook.

KfW operates the "PoA Support Center Germany" on behalf of the German Government. The PoA Support Center works with partners on-site to develop Programmes of Activities (PoA) in the context of the CDM. By packaging a range of smaller, individual measures, it is possible to achieve substantial reductions in emissions. This approach also generates incentives for sustainable changes in the behaviour of both domestic and commercial consumers. KfW Entwicklungsbank is therefore driving the continued development of this internationally important environmental policy instrument forward.

The expertise of KfW Entwicklungsbank is complemented by the special competence of Deutsche Investitions- und Entwicklungsgesellschaft mbH (DEG), which is dedicated to promoting climate protection in line with the needs and interests of the private sector. DEG is particularly active in infrastructure, processing industries and agriculture. Being a development finance institution specialised in private sector financing, it advises on and funds entrepreneurial initiatives that aim at achieving sustainable and climate-friendly growth in developing and transition countries. To do so, it provides private enterprise with long-term capital for investment in these countries, and focuses in particular on funding for renewable energy and renewable resources, improving energy efficiency and management of certifications with the aim of reducing emissions. If the right approach is taken, climate protection can be profitable for private enterprise in developing countries, too.

JOINED-UP THINKING

ADAPTING TO CLIMATE CHANGE, COMBINED WITH DEVELOPMENT



Canal construction in a dry savannah

The effects of global warming will become increasingly tangible and impact many people's lives. Climate change will have an adverse effect on the availability of water, food production, health and infrastructure (energy, industry and transport), and will threaten entire ecosystems. Adapting to these changes, for example by preparing for large fluctuations in precipitation, presents a core challenge for the entire world, including its poorer regions.

Due to their geographic location, low levels of income and elevated economic dependency on highly climate-sensitive sectors such as agriculture and forestry, the developing countries are particularly at risk. The poor of the world are also those who are most exposed to the effects of climate change, so that the task of adapting to climate change is also inextricably linked to achievement of the millennium goals.

KfW Entwicklungsbank's key focus with regard to adaptation measures is, therefore, on increasing the capacity of poor populations to resist and adapt. This can be done by introducing suitable technologies, improving framework conditions, creating social safety nets and supporting targeted measures in relation to water management, agriculture, disaster management and municipal infrastructure. The point is to design the financing packages so that analysis of the consequences of climate change is taken into account alongside investment solutions designed to combat these consequences. The estimated annual amount of funds required to finance the adaptation measures is in the tens of billions. In view of the historical responsibility of industrialised countries for climate change, developing countries are demanding additional, predictable long-term funding. Overall it can be anticipated that the resources for adaptation measures will come primarily from state coffers in the foreseeable future.

However, as the financing of adaptation measures can hardly be detached from development finance, it is important to use proven structures and instruments rather than institute new ones. Reusing existing structures will allow for more

rapid action and greater penetration. Work on adaptation plans for the least developed countries (LDCs) has shown that attempts to conduct development and climate policy in parallel result in inefficiencies. Adaptation to climate change must therefore be integrated into development planning – not only does it make good sense, it is also the fastest solution.

Promoting the adaptation plans of partner countries and financing the corresponding investments are the order of the day. In addition, it is vital that model adaptation projects in particularly relevant sectors be implemented rapidly. This will allow us to gather experience and set benchmarks for the future, as it will soon no longer be possible to ignore the consequences of climate change.



For many children, water scarcity has always been a part of life.

Cutting down wastage

Conserving water resources in Jordan

Water is scarce in Jordan. The country ranks among the world's driest regions. Overuse of this valuable resource caused by population pressure, urbanisation, agriculture and industry means that the country's water balance is negative every year. Groundwater levels are falling rapidly, wells are running dry and the Dead Sea is shrinking in size year after year. Even in the capital city, running water is available for only a few hours per week. Climate change, with high rises in temperature and severe droughts, will only exacerbate the water problem in the Middle East.

This is why KfW Entwicklungsbank, through several programmes, is working to promote the systematic reduction of water wastage in the urban distribution networks. For the people concerned, the result is a more reliable supply of water, yet such measures also help to protect what is a scarce resource. To ensure that the

water is of a good enough quality, in several Jordanian towns KfW Entwicklungsbank is financing sewage treatment plants, too. But this is not all. KfW is also supporting the reuse of the treated sewage in agriculture. To date, agriculture has used up most of the fresh water that is needed so urgently in the towns. In tandem with this programme, GTZ is supporting the creation of management capacities in the sector, with the Federal Institute for Geosciences and Natural Resources (BGR) working to set up protected areas around important water sources.

These measures help to make more efficient use of the limited water resources, whilst protecting them more effectively and therefore alleviating water stress. German involvement also plays a role in settling the different interests of the various water users, thereby avoiding potential conflicts.

A GREEN BRIDGE INTO THE FUTURE

CONSERVING THE FOREST TO COMBAT RISING TEMPERATURES

The destruction of 13 million hectares of forest every year releases more greenhouse gases into the atmosphere than the entire EU economy. More than 95% of deforestation occurs in the tropics. Recent studies show, however, that Reducing Emissions from Deforestation and Degradation (REDD) programmes can avoid deforestation whilst contributing to much more ambitious global reduction targets and a significantly lower rise in temperatures. REDD can build a green bridge into the future, since beyond protecting the carbon dioxide sink, it can also preserve the habitats of people, animals and plants as well as valuable ecosystem services such as the provision of drinking water.

Fast action and secure financing are crucial. Protecting the forests requires approximately EUR 3 billion for the preparatory "readiness" process (inventory of forest stocks, creation of institutions and monitoring systems) and, over the medium term, around EUR 15 to 25 billion in investments every year to curb deforestation.

Halting the destruction of forests is an efficient way to help protect the climate since between 350 and 900 tonnes of carbon dioxide emissions are avoided for every hectare that is saved, whilst reforestation measures only reduce emissions by around 10 tonnes of carbon dioxide per hectare per year.

The tropical forest countries urgently need sufficient and reliable financing. Available options include financing through emissions trading or funds, or project-based financing in the form of grants or loans. Since the 1990s, KfW has been working on projects devoted to biodiversity with funding of more than EUR 1.4 billion, laying a solid foundation for the conservation of the forests as part of wider efforts to tackle climate change.



Tropical forests are vital climate stabilisers.

What is new about REDD is that the programmes make provision for monitoring from the outset, ensuring that reliable quantitative results are provided. The aim is to make payments in exchange for emission reductions. This enables the partner countries to pursue conservation of the forests as a long-term economic alternative that will generate far higher returns than the majority of the land use options based around destroying the forest.

KfW contributes to the readiness process, for instance by financing satellite-based monitoring and field stations and by developing national emissions registers. It also helps with the large-scale implementation of REDD plans, covering such areas as fighting forest fires, monitoring illegal felling, protected area networks, sustainable forestry management and land rights. Funding can also be provided for the development and implementation of financial incentive schemes – such as grants for forest conservation and payments for environmental services – designed to reach the local population as they are the ones who are directly dependent on their environment being protected. They cannot live without the forest.

At the 2008 Convention on Biodiversity in Bonn, the German Federal Government announced an additional EUR 500 million in funding for the period from 2008 to 2012, with EUR 500 million to be provided annually as of 2013 to help conserve the forest and biodiversity. KfW Entwicklungsbank is expanding its commitment to the protection of the forests on this basis, thereby making a vital contribution to international climate protection.

Large-scale action

Sustainable conservation of Brazil's forests

The Amazon rainforest in Brazil is home to some 23 million people, whose existence and culture are under threat from increasing deforestation. Designating protected areas is a key element of policies aimed at protecting the tropical rainforests that gets the local population involved. The protected areas help to maintain biodiversity, form an important barrier against uncontrolled deforestation and stabilise local and regional ecosystems. KfW is involved in the Brazilian Government's Amazon Region Protected Areas (ARPA) programme, alongside the WWF and other international organisations. A total of just under 20 million hectares has been designated as protected areas under this programme. The goal is to have 50 million hectares of protected

forest – an area one and half times the size of Germany. And given that natural conservation areas often lack good management, a protected area fund was also set up to complement the ARPA programme.

The action taken by the Brazilian Government to tackle illegal deforestation is now having an impact. Annual deforestation rates have fallen by more than 60% since 2004. Thanks to the ARPA protected areas up to 5.1 billion fewer tonnes of carbon dioxide will be emitted by 2050, which is more than five times Germany's total annual greenhouse gas emissions.

Sustainable conservation of forests needs the support of the local population.



DIAGNOSIS AND TREATMENT

EFFECTIVE CLIMATE PROTECTION NEEDS COMMON ACTION



Using hydropower, avoiding emissions – such as in Nepal (Middle Marsyangdi)

There is a far-reaching consensus among the international community of states that greenhouse gas emissions must be cut dramatically by the end of the century to avoid serious, if not catastrophic, repercussions from the world's changing climate. Nevertheless, current predictions show that emission levels are still moving in the wrong direction. By 2030, for example, the energy sector's emissions of carbon dioxide alone will have increased by more than half.

Global progress on cutting emissions is tending towards the sluggish. There are many reasons for this. In particular, individual countries have little incentive to reduce their emissions, as this would cost them money. On the other hand, the potential benefits – in other words less climate change – would be to the advantage of the entire world. This is where state-backed international cooperation comes in. KfW Entwicklungsbank, working on behalf of the German Government, is helping to plug this gap

by providing targeted support for cooperation with the developing countries. Additionally, the KfW Carbon Fund, by using the market-based instruments of the Kyoto Protocol, also brings in the private sector, the involvement of which is essential.

Whilst responsibility for climate change that has already occurred lies with the industrialised world, the emerging and developing countries will play just as important a role with regard to future changes in the climate. Given their economic growth these countries will be responsible for the largest share of global emissions in one or two decades' time, none more so than China and India. Many of them still rely on outdated and inefficient power plants and factories, and new installations frequently fail to comply with German efficiency standards. There is enormous potential for cooperation in the area of climate change mitigation.

This is why climate protection is one of the priorities of our work in many areas of Asia. The countries concerned need an increasing supply

of energy to maintain the impressive upturn of recent years and, in this way, to create jobs and alleviate poverty. The living conditions of broad groups of the population have already improved significantly over the past few years. In terms of energy supply the Asian countries face several challenges at once. They not only need to meet their growing energy requirements in full; they also have to reach even more people and provide them with access to electricity in the first place. Increasing mobility in the world also uses up energy. However, without a transition to more environmentally sound sources, a devastating rise in carbon dioxide emissions will be more or less inevitable.

Tapping into geothermal sources

Electricity from renewable energies for Kenya

The Rift Valley in East Africa represents an infinite source of energy for countries such as Kenya, Ethiopia, Uganda and Tanzania. In Kenya alone, around 2,000 MW of geothermal power could be produced, almost twice the country's current capacity. To date, however, only around 11% of Kenya's energy needs have been met with geothermal power, as the costs and risks associated with tapping this source are high. The process of finding geothermal sources, just like for oil, requires expensive exploratory drilling in order to determine the ideal site for a power station.

Barely one hundred kilometres to the north-west of Kenya's capital, Nairobi, steam at a temperature of up to 300 °C is piped from 2,000 metres below the ground into Africa's largest geothermal power plant, Olkaria II, where it drives turbines to generate electricity.

This power plant was supported, among others, by the German Government via KfW Entwicklungsbank and has been a huge success. Indeed, its economic success has been such that private investors are now prepared to take over the construction and operation of the follow-on project. It will supply some 430,000 people with electricity and also provide a reliable supply of power for manufacturing industry, fulfilling a key prerequisite for more growth and employment. KfW Entwicklungsbank is providing approximately EUR 11 million to help fund the expensive exploratory drillings, clearing the way for subsequent investment by the private sector. In a second phase, DEG will support the operator by providing long-term loans and by arranging the total requisite debt financing of over USD 100 million. Kenya's neighbours – Ethiopia, Tanzania and Uganda – could also follow this example, using the same model to tap into the geothermal potential of the Rift Valley.

A model geothermal power plant in Kenya





Clean energy has excellent prospects all over the world.

Power of the wind

Renewable energies for China

Wind farms are now being built and operated on a commercial basis in China on a large scale. Back in 2002 DEG – a part of KfW Bankengruppe – financed a wind farm with a capacity of 16 MW in the province of Shandong via a long-term loan at conditions close to market. This support builds on wind energy projects carried out in China by KfW Entwicklungsbank in the 1990s. Together with the Chinese partner company Qingdao Dongyi Industrial Corporation, the German Nordex Energy GmbH provided the wind turbines. The project was developed by the German company InfraVest. This first wind energy project by private investors has provided a model for others in China to copy.

At 15,000 billion KW hours of produced electricity, the People's Republic of China is now the second-largest consumer of energy, behind the USA. It is estimated that the country's energy consumption will increase sixfold by 2050. Currently, three quarters of this energy is produced from coal, but this is not without its problems. Already, many Chinese towns and cities lie beneath a thick cloud of smog, with the poor air quality triggering many cases of respiratory illnesses among the inhabitants.

Promoting wind energy is an important way of encouraging the diversification of energy production in China. This is a goal worth working towards, as China can reduce its dependency on coal, a limited resource, and simultaneously contribute to cutting greenhouse gas emissions.



Setting the proper stage for climate protection in the transport sector: from road to rail

Faster and cleaner

New railway line in China

For an emerging market like China, the transport sector is key. The transport infrastructure will have to be improved if less well developed provinces in Western and Central China are to make progress. At the same time energy consumption needs to be cut and the environment needs to be protected.

KfW Entwicklungsbank, with the involvement of Österreichische Kontrollbank AG, has co-financed the construction of a new high-speed rail link between Hefei (capital of Anhui province) and Wuhan (capital of Hubei province) that forms part of the Shanghai–Wuhan–Chengdu railway. This railway is part of the Chinese Government's strategic plan for the development of Central and Western China, and links the provinces of Sichuan, Chongqing, Hubei and Anhui with the more developed coastal provinces in the east of the country. Several million people will now have access to rail travel for the first time, and the project also shortens the journey from Hefei to Wuhan by 200 kilometres. Even taking into account the fact that German/Austrian

support only made up around 10% of the total financing, the impact is considerable. The much shorter journey time (less than two hours compared with eight hours previously) will mark a major improvement for the areas concerned and is an essential aspect in generating economic growth in the interior provinces of China. Shorter transport routes and the shift away from the roads and air transport also mean that energy consumption will fall and CO₂ emissions will be reduced, by around half a million tonnes per year as a result of this project alone.

This is achieved by using modern, environmentally friendly, energy-efficient and safe Western technologies, which have also become the benchmarks for others to follow. The project to electrify the Chinese railways is based to a large extent on German standards, and companies are benefiting from follow-up orders placed by Chinese clients.

COMPETENT AND PRAGMATIC

COOPERATION BETWEEN KfW AND WWF



Kim Carstensen,
Leader of the Global Climate
Initiative, WWF International in
Copenhagen

Testimonial from Kim Carstensen

WWF has many years of experience in working together with KfW. We are cooperating on issues such as the establishment of national parks, sustainable forest management and protection of biological diversity in a wide range of places like the Caucasus, Madagascar and the Amazon. And we work well together because we share a hands-on pragmatic approach with a strong focus on practical solutions, which can work in the specific conditions of each individual country.

Now we share a new experience: climate change is a reality, which affects our work all over the world. It threatens all of the results we at WWF have achieved over the years and therefore we need to act to make sure that the results we achieve are also strong and robust in the face of present and future climate change. KfW is an important partner for us in this regard, and we appreciate the sharing of experience and ideas that is an important part of our collaboration.

We also need to act to ensure that the social and economic development that springs from our joint activities is indeed climate friendly. In this context we are glad to note that within a few years KfW has grown into the world's largest financier of renewable energy and energy

efficiency in developing countries. We at WWF would like to see KfW evolve into a full-fledged climate and environmental bank, ready to provide advice and financing for climate projects and programmes around the globe.

Significant amounts of money will be needed to enable developing countries to take the necessary action against climate change. And a lot of different actors need to be mobilised in this fight. Here KfW is well-placed because of its strong ability to embrace the private sector and civil society in addition to its government partners.

We look forward to being one of these partners in a joint effort to find creative and innovative solutions to the climate challenge.

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