



## Environmental Report 2007

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# Managing Director's preface

Dear Reader,

Protecting the Earth's climate and adapting to climate change are key to sustainable development and are gaining in importance worldwide. These are issues that have also attained high prominence in the public realm. The time is thus ripe for us to report on the diverse fields in which GTZ is working to improve the situation in this area, and to identify strengths and future challenges.

On behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ), GTZ implements the PROKLIMA programme geared to protecting the ozone layer. In addition, it engages in numerous further projects worldwide to mitigate climate change. For instance, GTZ is helping Tunisia to implement the Framework Convention on Climate Change. As a result, the country is in a position to carry out mitigation projects. In Kenya, we are fostering alternatives to gassing the fields with methyl bromide, a substance that is both toxic and harmful to the ozone layer. In the Andean region, climate change is already making itself felt. Water is becoming scarce, particularly for farmers. Hence GTZ is promoting sustainable water management in Peru. Jordan is the most water-poor country of the world and thus particularly affected by climate change. GTZ is helping the country to make more efficient use of its water resources. Furthermore, a pilot project in Madagascar is helping to conserve the rainforest. The Carbon Procurement Unit (CPU) steered by GTZ International Services forges links between German companies and climate protection projects in India, and brokers the emissions reduction certificates that these generate.

We work for numerous other public-sector clients in the field of climate and the environment: in Romania, for example, we are supporting the establishment of national and regional environmental agencies on behalf of the German Environment Ministry (BMU).

In our public-benefit business, too, we examine the specific environmental impacts of all programmes and projects, making use of environmental impact assessment (EIA) and strategic environmental assessment (SEA). Wherever expedient, additional activities are carried out or measures are taken to limit climate impacts.

At GTZ Head Office, technological measures taken to save energy are by now yielding impressive results. While the energy consumed to heat the buildings still figured almost seven gigawatt-hours (GWh) in 2003, that figure had been slashed to almost half by 2007 (four GWh). We have substantially outperformed the targets we set ourselves in this field.

Nonetheless, energy will remain a priority in our in-house environmental management. Now that the savings potential provided by energy-efficient technology has been largely tapped, potential remains in the behaviour of us all. We are preaching to the converted among our staff in this regard: an information event on switching to green electricity suppliers (GTZ Head Office and its Berlin office already use electricity from such sources) was very well attended, and many participants made the switch to electricity from renewable sources at home.

The GTZ Offices in the partner countries are our local points of contact. In India, the staff of all programme and project offices have for the first time produced audits of their environmental performance. Our Offices in Tunis (Tunisia), Yaoundé (Cameroon) and Nouakchott (Mauritania) have also conducted such audits. We are particularly pleased in this regard that our efforts are encountering great interest among partner ministries and EU delegations.

I wish you stimulating and informative reading!

Wolfgang Schmitt  
Managing Director



# Environmental policy and environmental management at GTZ

## GTZ profile

As an international cooperation enterprise for sustainable development with worldwide operations, the federally owned Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH supports the German Government in achieving its development-policy objectives. It provides viable, forward-looking solutions for political, economic, ecological and social development in a globalised world. Working under difficult conditions, GTZ promotes complex reforms and change processes. Its corporate objective is to improve people's living conditions on a sustainable basis.

GTZ is based in Eschborn near Frankfurt am Main. It was founded in 1975 as a company under private law. The German Federal Ministry for Economic Cooperation and Development (BMZ) is its major client. The company also operates on behalf of other German ministries, the governments of other countries and international clients, such as the European Commission, the United Nations and the World Bank, as well as on behalf of private enterprises. GTZ works on a public-benefit basis. All surpluses generated are channelled back into its own international cooperation projects for sustainable development.

## Sustainable development is both GTZ's task and its commitment.

GTZ employs some 12,000 staff in more than 120 countries of Africa, Asia, Latin America, the Mediterranean and Middle East regions, as well as Europe and Central Asian countries. More than 9,000 of these staff are national personnel. GTZ maintains its own offices in 92 countries. Some 1,500 people are employed at Head Office in Eschborn near Frankfurt am Main.

## Corporate environmental management

Environmental management has a firm and systematic place in the company. GTZ uses the EFQM excellence model for its quality assurance activities, which it has tailored to its specific requirements in the course of time. In the past, environmental management was integrated within overall quality management primarily via the self-evaluation process. The year 2007 brought changes to the EFQM process. As of this date, environmental management will be integrated into the annual objectives of GTZ's departments and units by means of explicit environmental targets, and evaluated together with those departments and units. These targets are in turn passed through to the divisions and groups, and are formulated as personal objectives for staff members.

The environmental affairs manager occupies an important role, serving to anchor environmental management firmly within the company. The environmental affairs manager is responsible for GTZ's corporate environmental management in Germany, and reports directly to Wolfgang Schmitt, the Managing Director responsible for environmental management. The officer's tasks include producing the annual environmental audit, engaging in environmental communication and continuously refining corporate environmental management. The officer is supported by working groups such as the mobility team or the energy efficiency group. In addition, contact persons for corporate environmental management are designated in all departments, units and country offices.

Anyone who has questions concerning the environmental assessment of projects and programmes (see also page 22) first turns to the officer for environmental impact assessment and strategic environmental assessment, who is in turn supported by a working group. The environmental affairs manager takes part in this working group in an advisory capacity. As a result, in-house and external environmental management are closely linked.

## GTZ's sustainable development and environmental mission statements

GTZ has been a member of the UN Global Compact since 2004. This commits companies with global operations to observe ten principles in the fields of human rights, labour and social standards, environmental protection and corruption control (for detailed information see [www.unglobalcompact.org](http://www.unglobalcompact.org)). We have since then intensified our efforts to implement these values throughout our work. In 2005 GTZ formulated a mission statement on sustainable development, which dovetails excellently with the previously formulated environmental mission statement. The two mission statements are cited here:

### Sustainable development – GTZ's concept

GTZ is an enterprise working in international cooperation for sustainable development. No matter what services GTZ renders for any client, it always adheres to this concept. It is an integral part of our own vision, our mission and our values. Sustainable development is both GTZ's task and its commitment. For us, sustainable development means:

- Successful economies for more prosperity
- Equal opportunities for rich and poor, North and South, men and women
- Natural resource use for the benefit of present and future generations

To implement these ideas in practical project activities, GTZ works according to the following principles:

- Our work is holistic. Working with many different stakeholders, we provide inputs wherever sustainable development can best be effected because there is willingness to engage in change. We also know our limitations: in deadlocked situations, even the best advice cannot effect change.
- Our work is process-oriented. For us, the principle of help towards self-help means sharing responsibility with our partners.

- Our work is value-oriented. We believe that diverse interests can be reconciled most effectively and fairly in democratic societies, under the rule of law and with a social and ecological market economy.

This theme is explored in greater detail in the GTZ Guideline "Sustainable Development".

Taking a responsible approach to the environment and to natural resources is, in GTZ's view, among the supreme principles of sustainable business management. To realise these aspirations in practice, GTZ makes use of systematic corporate environmental management.

### GTZ's environmental mission statement

In accordance with our corporate identity, we successfully foster international cooperation that contributes to sustainable development in the world. We believe that responsible use of our environment and its resources safeguards the development prospects of future generations.

We are thus convinced that we as a company have a commitment to society:

- To prevent or reduce our environmental impacts by means of systematic environmental management
- To make sparing use of scarce resources such as energy and water, for instance by deploying eco-efficient technologies and materials
- To implement our strategic concept of becoming a CO<sub>2</sub>-neutral company
- To carry out and plan all GTZ projects, in the most varied sectors, with minimum environmental impact
- To engage in participatory environmental communication with our staff in order to raise their awareness of environmental issues
- To seek open dialogue with our stakeholders

## Our environmental targets for operations in Eschborn

Our environmental targets follow from the environmental mission statement and from analysis of the annual environmental audits. Explicit targets have already been formulated for Head Office in Eschborn for the year 2009. These were first elaborated by the environmental affairs manager and then adopted by the environmental steering group. In a further step, specific environmental measures are derived from the environmental targets and implemented; the environmental audits document their effectiveness. The environmental steering group will examine in 2008 whether the targets set for 2007 have been attained and will ascertain where there is a need for further action or adjustment.

### Focal area 2007: Energy and climate

The issue surrounding energy and climate gained a high international profile throughout 2007. This was

driven particularly by the Fourth Assessment Report published by the UN Intergovernmental Panel on Climate Change (IPCC) in the spring of that year. The findings of the report informed both the German EU Council Presidency and the negotiations at the G8 Summit in Heiligendamm. Moreover, the UN Climate Change Conference took place on Bali, Indonesia, in December 2007.

As a company with worldwide operations in support of sustainable development, we take the view that GTZ has an obligation to reduce and offset its own global warming emissions. In order to gain a precise picture of where GTZ now stands in its own climate protection efforts, the environmental affairs manager placed the focus of the 2007 environmental report on the themes of energy and climate. The present report illustrates how GTZ lives up to its climate responsibility and what action it is taking to minimise and offset any adverse environmental effects of its work. We naturally also hope that this presentation will further raise awareness among our own staff, motivating them to make even more sparing use of energy at their workplace and at home. The



Environmental audit and environmental targets for operations in Eschborn

|  | 2003           | 2004       | 2005       | 2006       | 2007       | Target for 2009 |
|--|----------------|------------|------------|------------|------------|-----------------|
| <b>Electricity</b>   |                |            |            |            |            |                 |
| Electricity consumption (kWh per staff member)               | 3,004          | 2,961      | 2,506      | 3,287      | 3,155      | 2,553           |
| Change from 2003 (%)   | 0              | -1.3       | -16.7      | +9.3       | +5.0       | -15.0           |
| <b>Heating energy</b>  |                |            |            |            |            |                 |
| Heating energy consumption (kWh)                             | 6,796,125      | 6,757,176  | 5,060,006  | 5,442,103  | 4,100,270  | 4,757,288       |
| Change from 2003 (%)   | 0              | -0.6       | -25.5      | -19.9      | -39.7      | -30.0           |
| <b>Potable water</b>   |                |            |            |            |            |                 |
| Potable water consumption (l per staff member)               | 7,849          | 6,559      | 7,667      | 6,853      | 6,165      | 7,064           |
| Change from 2003 (%)   | 0              | -16.4      | -2.3       | -12.7      | -21.5      | -10.0           |
| <b>Non-potable water</b>                                     |                |            |            |            |            |                 |
| Non-potable water consumption (as % of total consumption)    | not determined | 54         | 52         | 49         | 57         | > 50            |
| <b>Wastes for final disposal</b>                             |                |            |            |            |            |                 |
| Wastes for final disposal (kg per staff member)              | 73             | 78         | 53         | 79         | 48,5       | 51              |
| Change from 2003 (%)   | 0              | +7         | -27        | +9         | -33        | -30             |
| <b>Paper consumption</b>                                     |                |            |            |            |            |                 |
| Total paper consumption (sheets)                             | 12,675,500     | 12,124,372 | 11,469,087 | 10,913,100 | 11,741,490 | 9,506,625       |
| Change from 2003 (%)   | 0              | -4         | -10        | -14        | -7         | -25             |
| Paper consumption per staff member (sheets per staff member) | 10,965         | 10,749     | 10,222     | 9,735      | 9,550      |                 |
| Change from 2003 (%)   | 0              | -2         | -7         | -11        | -13        |                 |
| <b>Recycling ratio (%)</b>                                   | <b>94</b>      | <b>97</b>  | <b>99</b>  | <b>99</b>  | <b>99</b>  | <b>100</b>      |

### Public Private Partnership in the Amazon forest

The NATURA cosmetics company is known in Brazil above all for its "Biodiversidade" line. NATURA works together with Amazon forest communities who, for instance, collect and process Brazil nuts for use by the company in perfumes. On behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ), GTZ advised a pilot community on how to join forces in a cooperative. Today, the cooperative acts as raw material supplier and is the sole negotiation partner of NATURA.

## Brazil



# Brazil

2008 environmental audit will report on tangible implementation activities and the success of the measures taken.

In our advisory business, too, the theme of global climate protection and adaptation to climate change is gaining importance. We have selected a number of projects to showcase the broad range of our advisory work in this field.

## Environmental management in GTZ's field structure

GTZ has set itself the task of producing environmental audits for at least thirty percent of its operations abroad by 2009 – after all, our work in the field also has an environmental impact: of just under 12,000 staff, some 10,500 work abroad.

As every GTZ Office operates in its own very special setting, the collection of environmental data must be tailored individually to each location.

Building upon the experience gathered with a number of pilot projects in Ecuador, Nicaragua, Peru and Chile, we have produced a guideline for carrying out environmental audits in the field structure. In addition to general information on procedures, required

resources and the conducting of environmental audits, the guideline also contains checklists on the theme of "Good Housekeeping" and template tables which facilitate the collection and calculation of data. This guidance allows a systematic search for savings potential, for instance in terms of resource consumption, and helps to formulate environmental targets and conduct measures for their attainment. In a first step, it aims above all to motivate staff to conduct an environmental audit. It is of course also to be hoped that the information gained through data collection is in fact utilised to recognise potential for improvement, formulate targets and carry out measures. The improvements achieved could then be reported at regular intervals of about two years.

The present environmental report now contains for the first time the key findings of environmental audits conducted at selected operations in the field, and examines the data collected in Tunisia, India, Mauritania and Cameroon.<sup>1</sup>

<sup>1</sup> Due to disparate reporting periods, the audits conducted abroad partly report data for 2006.

# Environmental audit

ENVIRONMENTAL  
AUDIT

Since 1999, an environmental audit has been produced annually for GTZ Head Office in Eschborn, and a detailed environmental report has been published every two years since 2004. The audit serves to systematically gather and monitor environmental indices.

The data thus collected are used to identify any potential for reducing environmental impact, boosting efficiency and cutting costs, and to initiate corresponding measures. An environmental audit was produced for the fifth time for the Berlin site in 2007.



## Cameroon

### Environmental audit of the GTZ Office in Yaoundé – Savings potential identified

As in all countries with a seasonally very hot and dry climate, the environmental audit of the GTZ office in Yaoundé, the second largest city of Cameroon, indicates high water consumption levels: 145 litres water per person per day in 2006, totalling 557

cubic meters. Potable water is also used to wash the cars and to water the garden in the dry period. An alternative would be to collect water in the rainy period which can then be used to wash the cars. Local staff are now exploring how such a “rainwater harvesting” system could be realised at low cost.

The office has a high level of paper consumption: 160,000 sheets in 2006, corresponding to 77 sheets per person per day. Energy consumption totalled 24,549 kWh, which means that each member of staff consumed 605 kWh in that year. This was joined by a total of 517 litres of diesel for the generator. Wastes are generally not segregated; paper is occasionally incinerated in the office grounds. Plastic bottles are collected and reused. CO<sub>2</sub> emissions generated by flights, office cars and travel to and from work by private cars totalled 70.9 tonnes in 2006.

## Operations in Eschborn

GTZ Head Office in Eschborn comprises four office buildings (Houses 1–4) and a kindergarten (House 5). Overall, the roughly 1,400 staff members use approximately 40,000 m<sup>2</sup> of office space. As a result of the refurbishment of House 1 carried out from 2004 to 2006, that building was only used for part of 2004 and 2006, and not at all in 2005. The staff members who had previously worked in House 1 used additional office space rented in House 3 and in the ABB building during that period. This circumstance has affected the collection and availability of data for environmental auditing over the past three years. Thus, for instance, no data on water and wastes were available for the ABB building. Staff members working in that building were factored out of the overall audit. Only the corresponding per-capita values provide a reference basis here. 2007 was the first year in which House 1 was used

again throughout the year. We no longer rent space in the ABB building since the refurbishment work has been concluded.

### Paper

#### The challenge:

Paper production generates an array of environmental problems along the value chain. These include timber logging and transport, consumption of process water, energy and chemicals such as chlorine, as well as liquid effluent and solid waste arisings. Further impacts result if timber from non-sustainable forest management practices is used, which leads to major changes in forest fauna and flora.

In order to protect the environment and reduce indirect resource consumption, it makes sense to use certified recycled paper products or those coming from sustainable forest management.

In a service-sector company with its typical office and administration activities, paper is one of the largest continuous material fluxes. Despite improvements in electronic data processing and continuing developments towards the vision of a paperless office, paper consumption has not yet dropped to the anticipated degree.

#### Our targets:

In 2003, GTZ's environmental steering group set the target of reducing absolute paper consumption by 25% to 9,506,625 sheets of paper by the year 2009. The second target was to increase the proportion of recycled paper to one hundred percent by 2009. It is already becoming apparent today, however, that we will probably not attain that target. With the current state of technology, special papers such as those bearing watermarks or photographic papers are not available in recycled form. A 100% recycled paper ratio will therefore not be realised as rapidly as planned.

#### What we are doing:

Duplex printers that can print on both sides of the paper are now available in many offices. We installed 107 further duplex printers in the reporting year. Staff can receive faxes via their e-mail programme and do not necessarily need to print them out. Furthermore, division heads and office managers are given tips on how to save paper, which they pass on to their staff.

In its new call for tenders for office materials in 2007, GTZ once again selected recycled paper prod-

ucts and those bearing the "Blue Angel" ecolabel or of equivalent quality. In the year 2008 we plan to conduct further awareness-raising activities in pursuit of the goal of a paperless office.

#### The results:

Staff at GTZ Head Office used 11,741,490 sheets of paper in the reporting year, which amounts to an increase of more than 7% compared to the previous year. We have thus unfortunately moved further away from our target of consuming 25% less paper by 2009 than in 2003. The satisfactory finding in the previous two years had been that overall paper consumption was dropping.

The increase in 2007, however, only refers to absolute figures and does not take account of the enormous growth in GTZ staff during the reporting year – per capita paper consumption has thus in fact dropped further. The proportion of recycled paper in total consumption remains constant at 99%.

#### Outlook:

The strong personnel growth of GTZ could not be anticipated in 2003; this is an aspect that will need to be taken into account when evaluating environmental targets for 2008.

Furthermore, a completely paperless office does not seem achievable with current knowledge. Further savings potential does, however, remain in several areas. GTZ will therefore intensify its efforts to save paper in 2008.

|  | 2003       | 2004       | 2005       | 2006       | 2007       | Target for 2009 | Target attainment |
|--|------------|------------|------------|------------|------------|-----------------|-------------------|
| <b>Paper consumption (sheets)</b>                  | 12,675,500 | 12,124,372 | 11,469,087 | 10,913,100 | 11,741,490 | 9,506,625       | -29.47%           |
| of which photocopies (sheets)                      | 3,763,883  | 3,706,570  | 3,711,839  | 3,621,007  | 3,581,811  |                 |                   |
| <b>Paper consumption (sheets per staff member)</b> | 10,965     | 10,749     | 10,222     | 9,735      | 9,550      |                 |                   |
| of which printouts (sheets per staff member)       | 7,709      | 7,463      | 6,914      | 6,505      | 6,636      |                 |                   |
| of which photocopies (sheets per staff member)     | 3,256      | 3,286      | 3,308      | 3,230      | 2,914      |                 |                   |
| <b>Recycled paper (as % of total)</b>              | 94.0       | 97.0       | 99.5       | 99.4       | 99.1       | 100.0           |                   |



Paper consumption at the Eschborn site from 2003 to 2007

## Solid waste

### The challenge:

Land consumption, potential water pollution and greenhouse gas release are among the most severe environmental impacts associated with solid wastes and their disposal to landfills. When the energy contained in wastes is harnessed by firing them in incineration plants, this causes emissions to the surrounding air – on the other hand, the energy content is then used to generate electricity and supply district heat. Positive environmental aspects such as reduced resource consumption and emissions can be achieved by recycling wastes.

As a service and administration company, GTZ primarily generates office wastes, such as paper and other wastes with a make-up similar to domestic refuse, i.e. wastes remaining for final disposal.

The circumstance that no waste data were available for office space rented in the ABB building during the refurbishment of House 1, together with the fact that some of the construction wastes arising in that period were included in data collection, make it difficult to compare waste data with arisings in the period from 2004 to 2006. Nonetheless, we can make statements on the trend in specific waste arisings per capita.



Solid waste arisings  
at the Eschborn site  
from 2003 to 2007

|   | 2003          | 2004          | 2005          | 2006          | 2007          | Target for<br>2009 | Target<br>attainment |
|---|---------------|---------------|---------------|---------------|---------------|--------------------|----------------------|
| <b>Wastes to recycling</b>  |               |               |               |               |               |                    |                      |
| Paper wastes (t)  | 144.98        | 102.58        | 77.12         | 110.81        | 104.64        |                    |                      |
| Wastes to recycling (t)   | 161.70        | 130.95        | 100.23        | 143.75        | 160.09        |                    |                      |
| <b>Wastes to final disposal</b>   |               |               |               |               |               |                    |                      |
| Wastes to final disposal (t)  | 86.61         | 90.28         | 43.17         | 103.88        | 61.57         |                    |                      |
| <b>Total solid waste arisings (t)</b>   | <b>393.29</b> | <b>323.81</b> | <b>220.52</b> | <b>358.44</b> | <b>326.30</b> |                    |                      |
| Paper waste (kg per staff member)   | 122.10        | 88.70         | 96.60         | 96.10         | 83.00         |                    |                      |
| Wastes remaining for final disposal, without hazardous wastes (kg per staff member) | 72.80         | 77.90         | 53.30         | 79.10         | 48.50         | 50.96              | 111.26%              |
| Wastes to recycling (kg per staff member)   | 136.23        | 113.28        | 125.60        | 124.73        | 127.00        |                    |                      |
| Total solid waste arisings, without hazard wastes (kg per staff member)             | 331.13        | 279.88        | 275.50        | 299.93        | 258.50        |                    |                      |
| Total solid waste arisings incl. hazardous wastes (kg per staff member)             | 331.33        | 280.11        | 276.34        | 311.01        | 258.84        |                    |                      |
| Recycled wastes as % of total   | 77.98         | 72.12         | 37.56         | 71.02         | 81.13         |                    |                      |

**Our targets:**

Building upon the principles established by the German Closed-Loop Materials and Waste Management Act, GTZ's waste policy has clear priorities: wastes must first and foremost be prevented and reduced. We consign those wastes that cannot be prevented to materials and energy recovery, i.e. recycling. The final disposal of non-recoverable wastes is the option of last resort.

Our explicit target is to reduce the quantity of wastes remaining for final disposal by thirty percent from the 2003 baseline to 51 kg per person by the year 2009.

**What we are doing:**

We focus on rigorous waste segregation and strive to facilitate this. At workplaces, there is one bin for paper wastes and a second one for wastes destined for final disposal. At the coffee points there are additional bins for packaging wastes (which go to

the separate Green Dot system). Canteen wastes are recovered.

**The results:**

The specific level of total waste arisings of 258.5 kg per staff member is the lowest since the environmental auditing process began. The reduction of wastes remaining for final disposal is particularly noteworthy, from 79.1 kg per staff member (2006) to 48.5 kg per staff member (2007). This corresponds to a drop of 38.7% from 2006. As the audit shows, we attained the target of reducing specific waste arisings by thirty percent by the year 2009 already in 2007; indeed, we even outperformed the target by achieving a reduction of -33%. In the field of paper wastes, specific consumption dropped by around 13 kg per person from the previous year. The proportion of recycled wastes reached 81%, which was higher than in the previous reporting years; this is attributable particularly to the strong reduction in the quantities of wastes remaining for final disposal.

**Mauritania****Inspiration for others – the environmental audit of the GTZ Office in Nouakchott**

The six buildings which the Mauritanian state makes available to GTZ in Nouakchott stand in their own grounds with a garden. Two of the buildings were converted in 2006, one serves as a guest-house. As a result of the conversion work, water consumption in the reporting period was unusually high: in 2006, the office consumed a total of 1,629 cubic meters of water, which translates into 316 litres per person per day. Until now, potable water has been used both for the daily watering of the garden and to wash the office cars. Energy consumption totalled 35,781 kWh,

which amounts to 1,491 kWh per person per year. The main energy consumers are the air-conditioning units which run six months a year; these can be controlled individually in almost every office. The one and a half tonnes of solid waste generated each month have not been segregated so far, but a large proportion of this could be composted in the garden. Paper consumption is mid-range at 34 sheets per person and day; consumption totalled 130,525 sheets in 2006. The travel and energy use needed for office operations generated 107.2 tonnes of CO<sub>2</sub> emissions.

In response to the environmental audit, the office now aims to reduce consumption levels: by five percent in the case of energy, and ten percent for water. An extensive package of measures will be implemented to achieve these goals. These include adopting an environmental code of conduct for staff, switching to more efficient electrical equipment, and setting up a compost heap. The environmental audit is also generating a positive effect beyond GTZ. As Karl-Peter Kirsch-Jung, head of the Natural Resources Programme in Mauritania, explains: **"The environmental report produced by the GTZ Office in Nouakchott has aroused interest beyond GTZ in Mauritania. The EU delegation and the environment ministry have had the methodology used by GTZ explained to them and are now thinking of preparing similar reports."**

## Water

### The challenge:

Although water covers seventy percent of our planet, it is increasingly becoming a scarce resource. Only three percent of the enormous water quantities are potable freshwater; of this, in turn, two-thirds are stored in glaciers. Rivers and lakes only contain about 0.3% of the available water reserves.

Population growth and intensifying industrial and agricultural activities are increasing the levels of water consumption. Not only the scarcity of water resources as such is problematic, but also, and with increasing frequency, the poor quality of the resource.

Today some 1.3 billion people have insufficient or no access to clean potable water. In 2002 the participants at the UN World Summit on Sustainable Development in Johannesburg set themselves the ambitious target of halving by 2015 the number of people lacking access to clean drinking water. Water has become one of the most valuable

resources of our planet. The costs of treating water have risen steeply. This is not only a problem for the arid areas of the world: in Germany, too, water bottlenecks can occur in some regions due to ever warmer summers.

### Our targets:

The target for 2009 is to reduce potable water consumption by ten percent from its 2003 per capita level (7,849 l) to 7,064 l per staff member. Furthermore, non-potable water<sup>2</sup> is to account for more than half of overall water consumption by 2009.

### What we are doing:

In order to reduce water consumption, all sanitary fittings in Houses 1, 2 and 3 were equipped with perlators in 2004. Perlators are simple mechanical devices that aerate the flow of water from the tap and thus increase its volume. As a result, less water is consumed while the same utility is provided.

In addition, optical sensors have been fitted to the water taps in the sanitary rooms, ensuring that water only flows when it is really needed.



Water consumption  
at the Eschborn site  
from 2003 to 2007

|  | 2003  | 2004   | 2005   | 2006   | 2007   | Target for<br>2009 | Target<br>attainment |
|--|-------|--------|--------|--------|--------|--------------------|----------------------|
| <b>Total water consumption (m<sup>3</sup>)</b>                 | n.d.  | 12,772 | 12,661 | 10,639 | 18,043 |                    |                      |
| <b>Potable water consumption</b>                               |       |        |        |        |        |                    |                      |
| Total potable water consumption (m <sup>3</sup> ) <sup>3</sup> | 9,317 | 5,820  | 6,118  | 5,469  | 7,771  |                    |                      |
| Potable water consumption<br>(l per staff member)              | 7,849 | 6,559  | 7,667  | 6,853  | 6,165  | 7,064              | 214.55%              |
| Potable water consumption<br>(l per staff member and day)      | 31.4  | 26.2   | 30.7   | 27.4   | 24.7   |                    |                      |
| <b>Non-potable water consumption (m<sup>3</sup>)</b>           | n.d.  | 6,952  | 6,543  | 5,170  | 10,272 |                    |                      |
| <b>Non-potable water consumption<br/>as % of total</b>         | n.d.  | 54     | 52     | 49     | 57     | > 50%              |                      |

n.d. = not determined

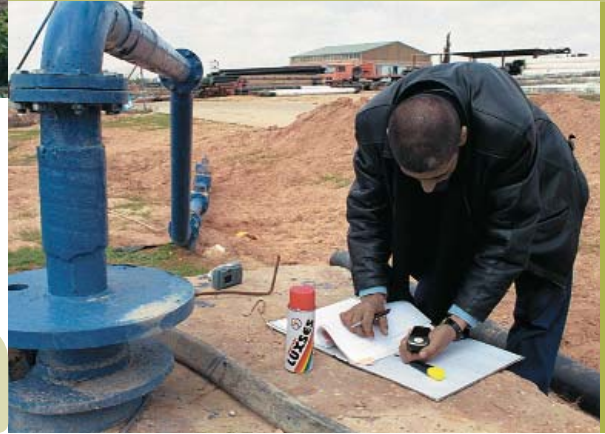
2 GTZ's House 2 is on top of an aquifer, so that non-potable water must be pumped out continuously in order to prevent the underground car park from flooding. We previously discharged this water to the sewerage. Now, however, we are using it as a non-potable water resource.

3 Including House 5

### Water efficiency in Jordan

Jordanian-German cooperation is fostering sustainable, integrated water resources management. GTZ's water programme, acting on behalf of BMZ, is concentrating on the Amman region, the Jordan Valley and the northern part of the country, where 90 percent of available water is consumed. It is here that competition for use as potable water, in irrigated farming and for industrial processes is particularly marked.

## Jordan



# Jordan

Calculations by GTZ's ecosan sector project have shown that the use of waterless urinals and urine separation toilets in the central area of House 1 saves about 2,000 cubic meters of water at GTZ Head Office.

We have fitted the kitchenettes on each floor of each building with water-efficient dishwashers. The new grease trap in the canteen can be cleaned much more efficiently, thus also saving large amounts of water every year.

The non-potable water from the aquifer is used to operate the air-conditioning system, flush the toilets and water the outdoor areas.

### The results:

Already in 2007 we outperformed both our water-saving targets for 2009 – specific potable water consumption levels and the proportion of non-potable water in overall consumption.

Total potable water consumption rose by 2,300 cubic meters because of the larger number of staff. Per-capita consumption, however, has dropped substantially. At 6,165 l per staff member, the specific level of consumption is lower than in all previous years.

The proportion of non-potable water in total water consumption figured 57% in the reporting year, which is an increase of eight percent over the previous year. It must be noted, however, that non-potable water consumption has also risen enormously, doubtless due to the cooling system in House 1, which is now used throughout the year (see also the box on adiabatic cooling on page 15). We will monitor whether this consumption remains as high in future.

### Outlook:

Although we have already attained our environmental targets in the field of water consumption, we will continue and intensify the successful measures initiated.

## Energy

### The challenge:

Climate change, air pollution and the limits to renewable resources became key themes of political debate in 2007. Energy consumption and mobility (see page 16), in particular, contribute substantially to climate change. Despite awareness of its adverse climate impacts, energy consumption is continuing to rise worldwide. This means that businesses, too, must make more conscious use of energy and must install responsible energy management. We aim to play a pioneering role here.

The production of energy from fossil fuels such as gas, coal and mineral oil is a major source of CO<sub>2</sub> emissions. This is why we give electricity from renewable sources – the sun, wind and hydropower, as well as biomass – preference over conventional sources such as coal, gas or nuclear power.<sup>4</sup> GTZ needs electricity for data processing, lighting, cooling and other processes such as cooking in the canteen or operation of the lift drives. We use fossil fuels, i.e. gas and oil<sup>5</sup>, for heating.

### Our targets:

The environmental affairs manager and the environmental steering group have formulated the following energy-related targets: electricity consumption is to be cut by 15% to a level of 2,553 kWh per staff

member by the year 2009. Over the same period, energy consumption for heating is to be cut by 30% to 4,757,300 kWh per annum. (The baseline year is, as always, 2003.)

### What we are doing:

The refurbishment of House 1 was an especially important development. We have been able to save large quantities of heating energy here by installing cutting-edge technology. This was done by replacing the heating system, improving the insulation of the building envelope and its windows, installing energy-efficient heating/cooling panels in the ceilings of the office rooms, and deploying state-of-the-art cooling technology (see the box "Climate protection in detail").

The replacement of the lifts, which now use variable-speed three-phase alternating current instead of direct current, saved 40% of the energy used for that purpose. All office rooms are fitted entirely with energy-efficient compact fluorescent lamps, with additional occupancy sensors.

GTZ has procured electricity exclusively from renewable sources for its House 1 since 2003, which has cut CO<sub>2</sub> emissions in that consumption sector to zero. The supply comes from certified green electricity generation, bearing the "ok-power" label. Our own photovoltaic system generated 3,421 kWh of electricity in the report year.



Energy consumption  
at the Eschborn site  
from 2003 to 2007

|  | 2003       | 2004       | 2005      | 2006      | 2007      | Target for 2009 | Target attainment |
|--|------------|------------|-----------|-----------|-----------|-----------------|-------------------|
| Total energy consumption (kWh)                             | 10,361,625 | 10,179,813 | 7,937,333 | 9,230,129 | 8,078,039 |                 |                   |
| Total energy consumption per staff member per day (kWh)    | 34.92      | 35.22      | 27.66     | 32.04     | 25.63     |                 |                   |
| <b>Electricity</b>   |            |            |           |           |           |                 |                   |
| Electricity consumption (kWh) <sup>6</sup>                 | 3,565,500  | 3,422,637  | 2,877,327 | 3,788,026 | 3,977,769 |                 |                   |
| Electricity consumption (kWh per staff member)             | 3,004      | 2,961      | 2,506     | 3,287     | 3,155     | 2,553           | -33.51 %          |
| <b>Heating energy</b>                                      |            |            |           |           |           |                 |                   |
| Heating energy consumption (kWh) <sup>7</sup>              | 6,796,125  | 6,757,176  | 5,060,006 | 5,442,103 | 4,100,270 | 4,757,288       | 132.22 %          |
| Heating energy consumption (kWh per staff member and year) | 5,725      | 5,845      | 4,408     | 4,722     | 3,253     |                 |                   |
| <b>Secondary and primary energy consumption</b>            |            |            |           |           |           |                 |                   |
| Total secondary energy consumption (kWh per staff member)  | 8,729      | 8,806      | 6,914     | 8,009     | 6,408     |                 |                   |
| Total primary energy consumption (kWh per staff member)    | 15,573     | 15,570     | 12,587    | 15,349    | 13,333    |                 |                   |

## Climate protection in detail: Adiabatic cooling in House 1 boosts environmental performance

All of our office buildings have a need for cooling in winter too, because, for instance, the electronic data processing systems generate heat. The refurbishment of House 1 was used to install one of the cooling technologies with the best environmental performance. Adiabatic cooling, also known as evaporative cooling, operates with minimum energy input and only needs air and water; no further refrigerants whatsoever are required. It functions in roughly the same way as human perspiration. The evaporation of water lowers the indoor air temperature, in a manner similar to the way in which the evaporative chill of perspiration cools our skin. Ventilation and air-conditioning systems make indirect use of this principle by cooling the extracted air through a large-surface trickle moistener and then lowering the temperature of warmer supply air in a heat recovery unit. The result is cooler air in the rooms without the negative tradeoff of higher levels of air moisture. This "air-conditioning" needs about one cubic meter of water to bring a thousand square meters of office space to a comfortable temperature. No potable water is needed, for the water comes from GTZ's own well in House 2.

A voluntary building energy audit was conducted for House 2 in 2007, and an energy certificate for non-residential buildings was procured pursuant to Articles 16ff. of the German Building Energy Conservation Ordinance (Energieeinsparverordnung, EnEV). This documents that the 23-year-old building has a total energy consumption of 108.6 kWh per square meter per year (m<sup>2</sup>/a), which comes very close to the value required by the EnEV for new construction (100 kWh m<sup>2</sup>/a) and is well below the value required by the EnEV for modernised buildings (137.7 kWh m<sup>2</sup>/a). This underscores the great success of the energy-efficiency improvement measures carried out in recent years.

Further, smaller individual measures include the replacement of conventional fluorescent lighting tubes with energy-efficient tubes, and the insulation of individual offices in Houses 2 and 4.

### The results:

Following refurbishment of House 1, per-capita consumption of energy dropped slightly from the previous year. Nonetheless, GTZ remains far removed from its target of consuming thirty percent less energy in 2009 than in 2003. In fact the current level is above the 2003 baseline.

A positive development, however, is the level of energy consumed for heating purposes, which was reduced substantially in the report year. This is attributable above all to the improved energy efficiency of House 1. Absolute savings figured more than 1.3 million kWh compared with the previous year. In a long-term perspective, consumption levels are lower than ever before. The overall energy balance continues to develop in a very positive direction.

### Outlook:

If winters remain mild, we anticipate further heating energy savings in the coming year. In the year 2007, control systems in House 1 first had to be adjusted following refurbishment in order to find the most energy-saving settings. These optimised settings are expected to reveal a positive effect in the coming environmental audits.

We aim to have a building energy audit performed for our House 4 too in 2008.

To improve energy efficiency in Houses 2 to 5, the environmental steering group will decide on targeted measures this year, which will aim particularly to reduce electricity consumption.

<sup>4</sup> Nuclear power does not generate any direct CO<sub>2</sub> emissions. The resulting radioactive waste, however, is very difficult or impossible to manage.

<sup>5</sup> Heating oil is only used to heat House 5 (kindergarten).

<sup>6</sup> Including photovoltaic system; excluding House 5

<sup>7</sup> Including heating oil consumption in House 5

## CO<sub>2</sub> emissions / mobility

### The challenge:

Since the UN Intergovernmental Panel on Climate Change (IPCC) produced its Fourth Assessment Report in February 2007, climate change has become a hotter policy topic than ever before. It is now clear that anthropogenic emissions of CO<sub>2</sub> and other greenhouse gases are the key driver of global warming.

Global warming impacts already measurable today include the melting of glaciers, the thawing of permafrost soils, increasing aridification and desertification, sea-level rise due to melting polar ice, and an increase in extreme weather events such as flooding due to heavy rains and tropical cyclones. Species loss is also accelerating because animals, plants and ecosystems cannot adapt to the rapid changes.

Regions in the southern hemisphere are particularly affected by climatic changes. It is here that most of GTZ's partner countries are located. The industrialised nations have a particular responsibility to take action, as it is they who generate substantial CO<sub>2</sub> emissions through their economic activity, especially by burning fossil fuels.

GTZ has procured electricity exclusively from renewable resources for its Head Office since 2003. Hence its CO<sub>2</sub> emissions are generated mainly by official and staff journeys (mobility) and, in second place, by heating. As we are a company with worldwide operations, official travel by air makes a particularly large impact, followed by road and rail travel.

GTZ's calculation of its CO<sub>2</sub> emissions inventory takes account of the 2.7 Radiative Forcing Index (RFI) of air travel – a factor reflecting the greater global warming impact of emissions from aircraft compared with ground-level emissions.

### What we are doing:

In accordance with the recommendations made by its mobility working group established in 2006, GTZ has taken further action to foster the use of cycling and public transport in 2007. We took part for the fifth time in the "Bike to Work" ("Mit dem Rad zur Arbeit")

campaign initiated by the health insurer AOK. In the context of that campaign, we also collected additional data, for instance on the routes taken and the alternative means of transport used. The number of participants in the campaign once again rose from the previous year. And, once again, a GTZ staff member was one of the winners in the AOK prize draw. We continued the campaign in-house in autumn with prizes and award categories of our own.

The company has further expanded the services available to cyclists. For instance, competent staff are available to carry out cycle checks from 2008 onwards. Further measures are to follow, ensuring GTZ's place among the companies designated "bicycle-friendly" by ADFC, the German cyclists' association.

Since 2003 GTZ has offered its staff a "Jobticket" with which they can use local public transport free of charge from their place of residence to GTZ. Within the tariff zones through which they pass for that trip, they can also use the ticket in their leisure time. The jobticket is financed by staff abstaining from taking two of the half-days off work to which they are entitled. 753 jobtickets were issued in the report year. About sixty percent of the staff have thus taken up this offer.

Under the terms of its travel guidelines, GTZ only reimburses the value of a second-class rail ticket for travel costs within Germany. If official journeys are made by car, specific justification must be provided. This strategy is intended to prompt those undertaking such journeys to make increased use of rail transport within Germany.

GTZ aims to become a climate-neutral company. To that end, we have developed an offset project together with a partner in Thailand: the methane gases arising from the effluent treatment of a palm oil firm are captured and utilised. Certification as a CDM Gold Standard project is targeted (see also the box on the Clean Development Mechanism (CDM) on page 26). GTZ established corresponding budgetary reserves to purchase the certificates from the 2007 business year onwards. This ensures retroactive climate-neutrality.

**The results:**

The total number of kilometers travelled on official journeys, both within Germany and abroad, again rose substantially in this year. The development of the choice of mode of transport is regrettable: travel has shifted from rail to air. The proportion of official journeys made within Germany by air rose by eleven percent from the previous year, while the proportion made by rail dropped by the same number of percentage points. The total number of kilometers travelled on official journeys abroad also rose rapidly, totalling more than twenty million kilometers. This is attributable to the larger number of staff in combination with the increased business activity of GTZ.

The development of total kilometers travelled has an analogous negative effect upon the CO<sub>2</sub> inventory. The rise in absolute terms over the previous year amounts to 1,200 tonnes CO<sub>2</sub> for transport alone. The reduced consumption of gas and oil delivered

savings of some 300 tonnes CO<sub>2</sub> over the same period, but this did not suffice to offset the emissions generated by official journeys.

With the contribution of some 11,400 tonnes of CO<sub>2</sub>, air travel continues to account for the largest share of CO<sub>2</sub> emissions.

The link to the increased number of staff is reflected in the per-capita CO<sub>2</sub> emissions, which rose by 430 kg per staff member.

|   | 2003       | 2004       | 2005       | 2006       | 2007       |
|---|------------|------------|------------|------------|------------|
| <b>Official journeys within Germany</b>     |            |            |            |            |            |
| Total official journeys within Germany (km) | 3,305,861  | 3,242,603  | 3,573,432  | 3,874,981  | 5,273,020  |
| Air (km)                                    | 1,651,526  | 1,466,360  | 1,427,065  | 1,512,112  | 2,686,828  |
| Share of air (%)                            | 49.96      | 45.22      | 39.94      | 39.02      | 50.95      |
| Rail (km)                                   | 1,563,613  | 1,681,043  | 2,053,812  | 2,259,505  | 2,499,490  |
| Share of rail (%)                           | 47.30      | 51.84      | 57.47      | 58.31      | 47.40      |
| GTZ company car fleet (km)                  | 90,722     | 95,200     | 92,555     | 103,364    | 86,702     |
| Share of car (%)                            | 2.74       | 2.94       | 2.59       | 2.67       | 1.65       |
| <b>Official journeys abroad</b>             |            |            |            |            |            |
| Air (km) <sup>8</sup>                       | 54,864,720 | 46,662,240 | 46,522,260 | 53,821,817 | 74,571,862 |



Official journeys from 2003 to 2007

|  | 2004   | 2005   | 2006   | 2007   |
|--|--------|--------|--------|--------|
| Commuting (t CO <sub>2</sub> ) <sup>9</sup>                          | 1,143  | 1,727  | 1,420  | 1,565  |
| Weekend commuters (t CO <sub>2</sub> ) <sup>10</sup>                 | 477    | 316    | 338    | 372    |
| Official journeys by rail (t CO <sub>2</sub> )                       | 111    | 136    | 149    | 165    |
| Official journeys by air (t CO <sub>2</sub> ) <sup>11</sup>          | 7,559  | 7,405  | 10,398 | 11,391 |
| Official journeys by car (t CO <sub>2</sub> )                        | 23     | 22     | 24     | 19     |
| Total transport (t CO <sub>2</sub> )                                 | 9,313  | 9,606  | 12,329 | 13,512 |
| Total transport (t CO <sub>2</sub> per staff member)                 | 8.26   | 8.56   | 10.69  | 10.99  |
| Energy consumption (t CO <sub>2</sub> )                              | 1,808  | 1,298  | 1,385  | 1,073  |
| Total CO <sub>2</sub> emissions (t CO <sub>2</sub> )                 | 11,121 | 10,904 | 13,714 | 14,585 |
| Total CO <sub>2</sub> emissions (t CO <sub>2</sub> per staff member) | 9.82   | 9.65   | 11.43  | 11.86  |



CO<sub>2</sub> emissions from 2004 to 2007 by source

<sup>8</sup> Air kilometers of all staff worldwide and of consultants, if flights are booked through the central travel agency HRG.

<sup>9</sup> Calculated from the 2005 mobility analysis

<sup>10</sup> Calculated from the 2005 mobility analysis

<sup>11</sup> The CO<sub>2</sub> emissions of air travel were calculated using the emissions calculator of "atmosfair" ([www.atmosfair.de](http://www.atmosfair.de)). The figure only includes the flights booked by staff at the Eschborn site.

### Internal and external environmental communication

Internal environmental communication makes an important contribution to informing GTZ staff about environmental issues, raising their awareness and eliciting their active involvement.

It mainly uses GTZ's own channels of corporate communication – the Infoscreen at the entry to the canteen, the "gtz intern" staff periodical, the "GTZ-News" portal and the Intranet pages of GTZ's environmental affairs manager. Following refurbishment of House 1, we have put up permanent information boards on the individual measures in the canteen area.

Corporate environmental performance is reported regularly to the Staff Council and at employee meetings. Furthermore, environmental management is a firm component of GTZ's Annual Report.

The United Nations World Environment Day on 5 June each year provides a special opportunity to boost staff awareness, and GTZ carries out a range of activities to mark the occasion. In 2007, for example, we placed a large block of ice in the entrance hall and took bets on how long it would take to melt, in order to thus draw attention to global warming (it took 3.3 days for the 0.75 cubic meters of ice to melt away).

In 2004 GTZ published its first detailed Environmental Report, going into greater substantive depth than the previously published environmental audits. The Chamber of Auditors rated GTZ's 2004 Environmental Report among the top third of submissions to the German Environmental Reporting Award. This success motivated the environmental affairs managers to produce comprehensive reports for 2005 and 2007 too. Since 2005 we have published an environmental audit and an environmental report in alternating



### Tunisia

#### Environmental audit of the GTZ Office in Tunis – Recycling to start immediately

Environmentally relevant data were systematically recorded and assessed in Tunis for the first time in May 2007. GTZ's Tunisian office occupies 300 square meters of floor space, on one floor of a rented building without any further outside areas or a garden. Water is thus used only for the kitchen, the toilets, and to clean the floors. Water consumption totalled 137,000 litres in 2006, which translates into 38 litres per person per day.

The energy consumption of the office can only be identified in part, because the air-conditioning system and the heating are controlled centrally and their consumption is charged at a flat rate that does not feature on the bills. Other forms of energy consumption totalled 8,196 kWh in 2006, i.e. 497 kWh per person per year. Three to four kilograms of solid waste arise daily; the waste is not yet segregated.

The annual paper consumption of the office amounts to 61,500 sheets, or 43 sheets per staff member per day. In the field of mobility, on the other hand, the office's performance is good: the two official cars, of VW Passat Diesel type, consume six litres of fuel over one hundred kilometres, and are thus quite economical. Only twelve percent of GTZ flights in Tunis are attributable to office staff. The bulk is caused by the projects. CO<sub>2</sub> emissions attributable to energy use and mobility totalled 67.5 tonnes. Staff agreed a ten percent reduction in all fields as the target for the next environmental audit, and appointed persons responsible for the individual fields such as energy, paper etc. A particularly large potential for improvement was identified in the field of paper consumption and solid waste, since paper and plastics can be recovered in Tunis. This is due to start with immediate effect.

### Hydropower boosts development

A reliable power supply is critical, particularly for rural development. In Nepal, GTZ, acting on behalf of BMZ, is helping to plan and operate mini-hydropower plants. Small enterprises and the people of remote regions benefit from the green electricity produced by the systems.

## Nepal



# Nepal

years. Following numerous enquiries received from non-German-speaking contacts, an English version of the report has been produced in addition to the German version since 2005

### Sustainable procurement

Environmental aspects became a part of our assessment criteria when issuing public calls for tenders in 2002. This was established in our green procurement strategy paper, which is continuously updated and refined and is available to all staff in the GTZ Intranet. Wherever possible, preference is given to certified green services and products over conventional ones, insofar as this is justifiable in economic terms. Exactly what "green" means varies from product group to product group. When appraising tenders, we take account of a range of quality aspects, such as the need to be energy-efficient, resource-conserving, recyclable, low-emission and low-noise.

For several years now GTZ's procurement volume abroad has been about twice that of Head Office procurement. The consideration of environmental cri-

teria when purchasing materials and products in the field is thus an issue of growing importance. We provide training on green procurement for staff in the field. Orientation to ecolabels is only possible to a limited degree as yet, because these scarcely exist there.

At Head Office, in contrast, we took care that particularly the office materials procured in 2007 met high environmental standards.

## Operations in Berlin

The work of the Berlin environmental team was dominated in 2007 by two large-scale events: the German dual presidency of the EU and G8, with numerous associated events, and the conversion of GTZ-Haus Berlin. Both events have had an impact on the environmental and resource profile of the house.

### Information and communication

The environmental newsletter titled "DER GRÜNE PUNKT", which is produced to mark special developments or occasions, was published three times in 2007. The first issue informed staff about the introduction of green electricity in the house and about the annual planning of the environmental team. Respirable fine particles from printers, the 2006 environmental audit and how to handle monitors properly were the themes of the second issue. The final issue in 2007 invited staff to attend the reception for the solartaxi at GTZ-Haus Berlin.

## Staff in Berlin mostly make use of public transport and cycling.

The environmental team organised and hosted that reception, at which the inventor and driver of the solartaxi, Louis Palmer, explained the idea behind his world tour with the solartaxi designed to raise awareness of climate issues, and presented the itinerary that is currently taking him round the globe (travelblog at <http://solartaxi.blueblog.ch>). Louis Palmer is carrying with him a letter of recommendation from the GTZ Managing Directors – a result of the efforts of the Berlin environmental team. This letter will ensure that Palmer receives support from the local GTZ Offices on his travels. The reception was crowned by a trial run in the solartaxi with the office director and a member of the environmental team.

### Mobility

Staff in Berlin do not come to work exclusively by solartaxis, but they do mostly make use of public transport and cycling. A mobility survey carried out in 2006 showed that only 18 percent use their own car to travel to work, 52 percent take the bus or train and 30 percent of those surveyed cycle to work.

### Fair trade and procurement

Catering for staff and visitors alike uses exclusively coffee, tea and juices from fair trade and organic farming. The flowers used for decoration are also fair trade products.

These organic standards also apply to events. Caterers are urged to use fair trade and organic products and food produced in the region.

GTZ-Haus Berlin thus not only promotes sustainable development, but also improves the public perception of GTZ as a company standing for sustainable development.

Keeping detailed records of the office materials consumed in GTZ-Haus Berlin helps to make sparing use of them. Procurement is largely via Head Office, which ensures compliance with the environmental standards applied there.

### Paper and solid waste

Owing to the preparations for conversion of GTZ-Haus Berlin, the overall quantity of solid waste has risen sharply; this, however, is almost exclusively attributable to the increased quantity of bulky waste. Some of the other waste categories have in fact been reduced.

Paper consumption rose by fifty percent due to the numerous events associated with the German EU Council presidency and G8 presidency. Nonetheless, at 600,000 sheets, the quantity consumed was still less than that in the record year 2005, when it was 700,000 sheets.



## India

### First nationwide environmental audit of all activities

In India, GTZ not only produces an environmental audit for its country office but also conducts audits for the individual offices of all programmes and projects. GTZ thus now for the first time surveys the entire environmental impacts of its business operations in a partner country. Between January and July 2008, these impacts were recorded and assessed for seven programme offices and for the GTZ country office.

In order to make environmental management a firm part of all programmes in India, they have all appointed environmental affairs managers who are responsible for implementing the measures decided upon and who make sure that resource conservation issues are always at the forefront of daily operations.

Building upon a survey of the environmental status quo in the specific programme or project, opportunities for improvement are identified. The measures that follow serve to mitigate adverse environmental effects and help to make more efficient use of resources and cut costs. But the environmental audits have further effects, too. They raise staff awareness of environmental aspects and showcase GTZ's commitment to sustainable development in everyday operations and within the staff's own four (office) walls. Or, as the overall coordinator of environmental audits on the Indian subcontinent, Ulrike Killguss, puts it: "In a country such as India, in which resource efficiency is playing an ever more important role, GTZ is acting as a model of good practice."

### Water and energy

Overall energy consumption dropped by 16 percent in 2007 compared with the previous year. This is attributable exclusively to the low heating costs thanks to the mild winter. Electricity consumption, in contrast, rose by seven percent from the previous year, whereby the entire building has been supplied with green electricity since 2006.

Water consumption also rose. At 832 cubic meters, it is still below the peak values of 2004 and 2005. However, it shows an increase of 16 percent over the previous year. This is largely due to the fact that we had significantly more visitors to events held in the house in 2007.

### Conversion of GTZ-Haus Berlin

Preparations for the conversion of GTZ-Haus Berlin near Potsdamer Platz were already in full swing in 2007. The fourth and fifth floors will be refurbished from mid-2008. To ensure that this project is implemented in accordance with the state of the art of environmental engineering, the environmental team was involved in the planning process from the outset. The environmental affairs manager of GTZ took part in preparatory meetings with the building-site supervisor and the architects, thus ensuring that the selection of materials and the installation of systems will be in line with our environmental criteria. Following refurbishment, the upper floors will meet the same environmental standards as the floors below.

# Environmental performance in development cooperation

## Assessing the environmental impact of projects and programmes

Of course GTZ does not simply appraise the environmental impacts of its operations in offices in Germany and abroad. The environmental effects of our projects are also considered from the outset. We conduct an environmental impact assessment (EIA) already when preparing offers to the German Federal Ministry for Economic Cooperation and Development (BMZ) in order to identify the potential environmental effects associated with a planned project or programme. To that end, each project is classified by its objective and environmental relevance in a category of environmental relevance meeting OECD-compatible criteria (see box).

| Markers of environmental relevance (ER) |   |
|---|---|
| ER 2:                                   | Project/programme is designed above all to foster environmental protection and natural resource conservation.       |
| ER 1:                                   | Project/programme includes components that help achieve environmental protection and natural resource conservation. |
| ER 0:                                   | Project/programme is not oriented toward ecological sustainability.   |

Yet regardless of the marker assigned to a project in this appraisal process, it can still have environmental consequences. If these are evident, the project outline must include remedial measures. If no such assessment can yet be made when the offer is submitted, then monitoring must be included in project design. Where projects have major environmental relevance (markers ER 1 and ER 2), monitoring environmentally relevant activities is a mandatory part of project design. In all such cases, an environmental annex must be included with the offer, setting out in further detail the environmental risk or need for clarification as well as the corresponding remedial measures.

## Towards strategic environmental assessment

For some time now, a shift from project-based to programme- and policy-based approaches has been observable in international development. It is with a view to this trend that, for example, the two new offer formats "Programme proposals" and "Modules" have emerged in German official development assistance. To do justice to these changes in the field of environmental impact assessment too, the system of such assessments is currently being reviewed at GTZ. Strategic environmental assessments are now to take account of more complex and longer-term environmental impacts, going beyond the aspects addressed by project-related EIA. We are also already deploying such overarching assessments of environmental aspects and consequences in a strategic fashion. In Benin, for example, they have been used in support of the process of poverty reduction strategy paper development (see box).

## Protecting the climate, adapting to climate change

Climate protection is increasingly becoming an integral element of development cooperation, as climate change hits the poor countries especially hard. These countries are more vulnerable, are more prone to natural disasters, and have few or no capacities to adapt to a changing climate. Climate change therefore threatens to reverse the progress achieved in poverty reduction and international cooperation. For these reasons, environmental and climate protection plays a key role in German development cooperation. In the cooperation agreements with many countries in Latin America, Asia, Oceania and Africa, environmental and resource protection has been established as a priority for development funding, with around a quarter of all German development cooperation projects falling into this category.

## Poverty reduction and strategic environmental assessments

Heavily indebted poor countries prepare Poverty Reduction Strategy Papers (PRSP) in order to gain debt relief or have access to IMF loans. These papers were analysed in Benin for the 2003–2005 period. The finding was that insufficient consideration had been given to environmental aspects.

In response, when preparing the next strategy papers the Benin authorities worked together with GTZ's Rioplus sector project and used strategic environmental assessment tools in order to systematically take account of environmental aspects from the outset.

This aimed to generate a set of measurable environmental indicators for the second strategy paper, to boost awareness of sustainability in development programmes, and to mainstream specific goals and activities designed to conserve natural resources and improve environmental quality in all programmes relevant to the strategy paper. In addition, the environmental costs associated with the various options set out in the strategy papers were calculated.

The separation of poverty reduction and sustainable environmental policy is often artificial. For where grinding poverty forces people to make destructive use of their environment, the plundered nature further deepens poverty. Development approaches that embrace both dimensions have a prospect of breaking out of this vicious circle. The example of Benin has gained substantial recognition among development policymakers worldwide, for instance at the Dublin Workshop on Effectiveness in Practice in 2007. It shows how strategic environmental assessments can play a part in shaping the planning of development processes so that environmental aspects play a major role from the beginning.

GTZ's Climate Protection Programme (CaPP) is a major programme which provides support to our main client, the Federal Ministry for Economic Cooperation and Development (BMZ), in the implementation of Germany's international climate commitments and advises it on climate policy issues. CaPP also helps the developing countries to translate climate policy into practical action and mainstreams climate protection within the various activities of German development cooperation.

In its practical environmental work, GTZ prioritises climate change and its human impacts. We are responding to climate change with a dual strategy: firstly, with a programme and projects to reduce

greenhouse gas emissions and thus actively protect the climate. Secondly, we are helping people to cope with the impacts of climate change. This may involve very different types of action in different regions: in some cases, it means improving the sustainable

## In its practical environmental work, GTZ prioritises climate change and its human impacts.

management of water resources; in others, it means identifying alternatives to deforestation or revitalising traditional, more resilient crops. The following examples illustrate the diversity of climate protection in the development context.

**Proklima – Protecting the ozone layer**

Climate change does not stop at national borders. The international community has therefore adopted a number of climate protection agreements which the signatory states pledge to implement. This is not always an easy task, especially for the developing countries. On behalf of the Federal Ministry for

Economic Cooperation and Development (BMZ), GTZ's Proklima programme provides technical and financial support to the developing countries to help them implement the Montreal Protocol on Substances that Deplete the Ozone Layer and other international climate conventions.

**The Montreal Protocol**

The Montreal Protocol on Substances that Deplete the Ozone Layer which entered into force in 1989 is an international environmental treaty designed to protect the ozone layer. It commits the 193 signatory states to phase out the production and use of substances containing either chlorine or bromine which destroy stratospheric ozone ("greenhouse gases").

The Montreal Protocol was the first multilateral environmental treaty to be equipped with its own unique financial mechanism: in order to help developing countries implement their commitments arising under the Protocol, the Multilateral Fund for the Implementation of the Montreal Protocol was established in 1990/91. The Fund is replenished by the industrialised nations. Germany contributes around 11% of the Fund's budget. 20% of contributions made by each donor country can take the form of direct bilateral implementation in developing countries. GTZ Proklima implements relevant projects in more than 40 countries of the world on behalf of the Federal Ministry for Economic Cooperation and Development (BMZ).

Working in close cooperation with the partner countries, Proklima implements projects to protect the ozone layer, from the planning stage through to the final phase-out of ozone-depleting substances. Proklima also provides advice to national and international bodies and organisations on the development of guidelines, laws and phase-out strategies. A key element of the programme is the provision of training for occupational groups which handle climate-damaging substances. For example, local trainers learn about the proper handling of ozone-depleting substances and environmentally-friendly alternatives. Through Proklima, technicians increase their expertise in relation to the recovery and recycling of ozone-depleting substances and the maintenance of refrigerating plants. Farmers learn about alternative, ozone-friendly technologies. And customs inspectors are trained to identify climate-damaging substances when checking imports and exports. With more than 110 projects in some 40 countries and total funding of 22 million euros, GTZ Proklima is one of the world's most comprehensive climate protection programmes, making it the largest bilateral partner

of the Multilateral Fund for the Implementation of the Montreal Protocol.

**Carbon Procurement Unit, India:  
Emissions credits for German industry**

In order to reduce greenhouse gas emissions worldwide, the Kyoto Protocol to the United Nations Framework Convention on Climate Change introduced various instruments, including the Clean Development Mechanism (see also box, page 26). This allows companies in the industrialised countries to invest in certified climate projects in developing countries and thus achieve emissions reductions which are then quantified and documented in certificates. These may be used as credits to enable the companies to meet their own reduction obligations, or, alternatively, sold via the emissions trading schemes. This enables companies to meet their reduction commitments at low cost while continuing to operate existing industrial plant. The developing countries benefit from emissions trading through technology transfer and additional income. The global climate is the overall winner.

But how does a German company go about obtaining emissions certificates in a developing country? How can it identify suitable projects for investment? To do so, it needs a partner which is very familiar with the countries and projects in question, has good contacts with local administrations, and understands the procedures – a partner like GTZ.

GTZ International Services has been commissioned by German companies to facilitate their access to emissions credits from developing countries. Specifically for the purposes of this private sector contract, GTZ created in 2007 a central contact point, the Carbon Procurement Unit (CPU), in Gurgaon near the Indian capital New Delhi. After China, India has the largest number of projects to generate emissions certificates. At present, the CPU is running some 100 projects of various sizes in India, in each case supporting every stage of the project right up to final certification. It identifies potential projects at an early stage and conducts economic and technical feasibility studies. It provides advisory services to the project owners and establishes contact with the German companies. The CPU's first client was RWE Power AG in Essen, Germany, which will be permitted to expend as many as 90 million of the certificates before 2012 to meet its greenhouse gas reduction obligations. A large number of these credits are to come from India.

### **Proklima in Kenya: Finding alternatives to methyl bromide in agriculture**

Methyl bromide is a greenhouse gas which is used as a pesticide in agriculture, storage facilities and buildings. It not only depletes the ozone layer, but is also toxic for humans and animals, causing nausea, dizziness, skin irritation and breathlessness. Repeated exposure can cause neurotoxicity, i.e. damage to the central nervous system, including headaches, dizziness and mental confusion.

Under the Montreal Protocol (see box, p. 24), the industrialised countries were required to phase out methyl bromide use completely by 2005. Developing countries have until 2015 to complete the phase-out. In Kenya, methyl bromide is mainly used in the cultivation of cut flowers and vegetables for export. The

average consumption of this toxic gas amounted to 330 tonnes per annum before the launch of the project.

On behalf of BMZ, GTZ has been working since 2003 with the United Nations Development Programme and the National Ozone Unit at Kenya's National Environment Management Authority (NEMA) to phase out methyl bromide and thus implement the Montreal Protocol. The project aims to help Kenyan farmers to progressively reduce their methyl bromide use and apply alternative technologies instead. As part of this process, local farmers are trained in the use of alternative pest control methods, such as steam soil sterilisation. These alternative methods are non-toxic for humans and cause no damage to the stratosphere, and are also cheaper and make more sparing use of water than treatment with methyl bromide.

As part of the project, training courses for flower growers and other relevant interest groups have also been provided, including practical demonstrations of alternative and sustainable technologies in the field. At the same time comprehensive training material has been produced and distributed, and a training centre set up. GTZ has also helped farmers install the equipment necessary to use these alternative methods.

It now seems very likely that full phase-out of methyl bromide in Kenya will be achieved already in 2010 – in other words, five years earlier than the deadline established by the Montreal Protocol. The project has thus made an outstanding contribution to global climate protection and has greatly reduced the health risks for Kenyan farmers and agricultural workers. But that is not all. The introduction and diffusion of environmentally compatible alternatives to methyl bromide also contribute to the implementation of other international environmental conventions: the comprehensive and sustainable reduction of water consumption promotes the implementation of the UN Convention to Combat Desertification, while reduced pesticide use is in line with the Convention on Biological Diversity and the UN's Agenda 21 ("the agenda for sustainable development into the 21<sup>st</sup> century"). GTZ's project to phase out methyl bromide in Kenya is thus benefiting the climate, humans, flora and fauna.

### **Adaptation to Climate Change I: Water resources management in Peru**

According to a report by the Tyndall Centre for Climate Change Research, Peru is one of the three countries which will be hardest hit by the impacts of climate change. In particular, the availability of water will change on a permanent basis in Peru owing to the loss of glacier melt in the Andes, with severe drought and increases in precipitation variance being the consequences. Agriculture, which is highly water-dependent, therefore faces major challenges. How can the population manage water, as a vital resource, in a way which ensures that farming can continue in future? How can arable farming be adapted so as to supply the population with adequate food in future, even under changed climatic conditions?

In order to empower regional and local actors to identify long-term solutions to these and other issues and to formulate their budget and development plans accordingly, GTZ, on behalf of the BMZ and working with Peruvian partners, is implementing a pilot project in the Peruvian districts of Piura and Arequipa. Agriculture is the mainstay of livelihoods in this region.

In a first step, GTZ and its partners worked through available climate data and collected new data in order to be able to predict the detailed specific impacts of climate change on the pilot region and selected crops as accurately as possible. The next

step was to increase the knowledge and awareness of climate risks among various target groups. To this end, workshops, exhibitions and discussions were designed and carried out among communities in the region. At the same time, GTZ has continued to advise local decision-makers on ways of integrating the topic of climate change into decision-making processes. Advanced training has been provided for local and regional experts so that they are able to take systematic account of the impacts of climate change in development and budget planning and thus improve the information base for decision-making.

As part of the project, measures to improve local water resources management were also identified and supported in order to make the water supply less susceptible to the impacts of climate change. The positive experiences gained with this pilot project are being incorporated into the advisory services provided for Peruvian institutions nationwide and are enhancing regional and national knowledge transfer.

### **Implementing the UN Framework Convention on Climate Change in Tunisia**

In order to assist this North African country to implement the United Nations Framework Convention on Climate Change (UNFCCC), GTZ, acting on behalf of BMZ, has launched the "Clean Development Mechanism (CDM) Capacity Development in Tunisia" project together with public and private sector partners in Tunisia.

## **The Clean Development Mechanism (CDM) – a climate-oriented development tool**

The Clean Development Mechanism, agreed at the third Conference of the Parties to the UNFCCC in Kyoto, Japan, in 1997, is a mechanism for the reduction of greenhouse gas emissions worldwide. As developing countries often do not have access to the technology or the financial resources to build "clean" industrial plants or retrofit old ones to make them environmentally compatible, the Clean Development Mechanism allows industrialised and developing countries to implement climate projects jointly in developing countries. The underlying idea is to cut greenhouse gases where it is cheapest to do so. These reductions are then credited to the industrialised countries, enabling them to meet their reduction commitments; alternatively, they can be sold via the emissions trading schemes. Through the Clean Development Mechanism, the developing countries have access to climate-compatible technologies and additional injections of funding.

## The United Nations Framework Convention on Climate Change (UNFCCC)

The United Nations Framework Convention on Climate Change (UNFCCC) was adopted at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in 1992 and entered into force in 1994 after being ratified by 50 countries. Since then, the majority of the world's countries have ratified the Convention. The objective of the UNFCCC is to stabilise greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.

The Convention is the first international treaty to address climate change as a serious problem and oblige the international community to act. The provisions and the mechanisms to be established under the UNFCCC are negotiated and agreed at the annual conferences of the parties (COPs). In 1997, for example, the Kyoto Protocol was adopted at COP3 in the Japanese city of the same name. This establishes binding targets for the industrialised countries that are party to the Protocol to reduce their emissions of the six major greenhouse gases.

The GTZ project aims to build Tunisia's capacities to identify and develop CDM projects. Until recently, Tunisia had very little know-how or experience with the CDM. Staff in the public authority responsible for assessing CDM project proposals often lacked the expertise necessary to enable them to evaluate the applications competently, with the result that potential CDM project developers rarely benefited from secure financing and advice and there were no clear criteria on how to structure applications or produce project documentation.

Through organisational and personnel development measures, the administrative staff were familiarised with evaluation criteria and procedures. As part of this process, structures and criteria for project evaluation have been defined, along with standards for the projects themselves. Further training has also enabled the staff to arrive at a realistic appraisal of projects' emissions reduction potential.

In a second project phase, GTZ has run workshops and provided more advanced sector-specific training programmes for the national energy suppliers, chemical companies, national waste management authorities and consultancies working in the environmental sector. Here, participants have developed ideas for projects to reduce greenhouse gases, discussed methods of calculating emissions reductions and produced draft project outlines. These practically-

oriented training programmes have at the same time increased the awareness of all participants for the Clean Development Mechanism (CDM).

Today, Tunisia's Designated National Authority is up and running and is able to assess the effectiveness of a proposed project. An infrastructure has been established for potential project developers, criteria have been adopted for project development and documentation, and the first reports about successful projects have been produced. There are no more impediments to the development and expansion of CDM projects in Tunisia.

### **Adaptation to Climate Change II: The GTZ Water Programme in Jordan**

Jordan is one of the world's water-poorest countries. Water scarcity not only makes daily life more difficult for the people of Jordan; it also limits the growth of industry, tourism and agriculture and thus constitutes a major obstacle to the country's economic development. The problem is exacerbated by strong population growth. The gap between the demand for and availability of water is causing a severe drain on groundwater, with non-renewable fossil groundwater reserves becoming exhausted. With water already a very scarce resource, the problem is worsened by highly inefficient use of water in agriculture and the drinking water system. This causes environmental damage and puts a question



# Romania

mark over the water security of future generations. GTZ has been working in Jordan for more than 30 years. Acting on behalf of BMZ, it is helping Jordan to achieve more efficient management of its water resources. The Water Programme brings together a variety of instruments and projects in an effort to help Jordan implement a cross-sectoral, nationwide water strategy in all the relevant institutions. This has required radical institutional reforms. Through policy advice and targeted capacity building, institutional reforms have successfully been carried out in six of Jordan's twelve administrative districts. Administrative processes have been reorganised or optimised, and the flow of information between the relevant agencies has been improved. This has gone some way towards making water resources management in Jordan more efficient, at least in some areas. Contracts with private service providers have now been concluded in some districts, and coalitions of water users in agriculture are taking on some of the responsibilities for water distribution and improving efficiency of water use in irrigation.

In order to guarantee access to water even for the poorest, advice on tariff structuring has been provid-

ed to regional water suppliers. As a result, special tariffs for the poorest population groups have been introduced in several regions. Water scarcity remains the greatest challenge facing Jordan. However, the structures to enable Jordan to deal with the problem responsibly and on a sustainable basis are expanding, along with the expertise and capacities of the stakeholders involved.

## Pilot Project for Forest Conservation in Madagascar

Forests are important carbon sinks. Every year, around 10 million hectares of forest are destroyed in order to create land for grazing or plantations. This is occurring mainly in the developing countries, where people feel they have no economic alternatives to this course of action. Deforestation releases large quantities of CO<sub>2</sub> and contributes to soil erosion, desertification and species extinction.

In Madagascar, an estimated three million hectares of forest were destroyed between 1990 and 2005, equivalent to 200,000 hectares and 50 million tonnes of CO<sub>2</sub> emissions annually. The forests are falling victim to the demand for fuelwood, while widespread

### EU partner ministries forging uniform environmental policy

Working together with the German Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), GTZ is helping to set up environmental agencies in Romania. The main purpose of these twinning projects is to adopt the standards established by EU environmental law – such as for air quality monitoring in inner cities, for the development of a central environmental information system, and the establishment of the NATURA 2000 protected area system.

## Romania



poverty, strong population growth, and traditional and unadapted forms of agriculture are other factors causing forest clearance. As most of Madagascar's fauna are endemic – in other words, found only on the island of Madagascar – deforestation puts these species at risk as well.

The GTZ project “Emission Reduction through Avoided Deforestation in Madagascar”, implemented on behalf of BMZ, develops practical approaches and methods to reduce deforestation, and therefore greenhouse gas emissions, in an economically viable and socially compatible way on the island. In cooperation with local partners, pilot regions are selected, the precise causes of deforestation analysed, and alternative land-use strategies developed, in some cases coupled with incentives and compensation payments for avoided deforestation. These are targeted directly at local communities which are dependent on the forest in the pilot region and which are driving the deforestation process. The outcomes of the pilot project will be used at local and national level to develop an effective strategy for the conservation of the remaining forests.

The pilot project will clarify a number of questions concerning the methodology and practical implementation of forest conservation. At international level, the outcomes will flow into the debate about the possible inclusion of forest conservation in climate agreements in the post-Kyoto period from 2012 onwards (see box below).

### The Kyoto Protocol

The Kyoto Protocol is an additional protocol to the UN Framework Convention on Climate Change (see box, p. 27). It was adopted in 1997 at the third Conference of the Parties to the UNFCCC, which was held in the city of Kyoto, Japan, and is the first international agreement to establish binding targets for greenhouse gas emission reductions. Under the Kyoto Protocol, in the 2008–2012 period, the industrialised countries must reduce their collective emissions of greenhouse gases by an average of 5.2% compared with the year 1990. However, national reduction targets, and indeed permitted increases, vary widely from country to country.

The Protocol introduces four mechanisms which are designed to help the individual countries fulfil their reduction commitments. Through “burden sharing”, for example, a group of countries may act together to meet their commitments. The European Union is a case in point: it aims to reduce its greenhouse gas emissions by a total of 8% by 2012. However, different national targets apply here: Luxembourg is to make the most radical cuts, i.e. 28%, with Denmark and Germany each aiming for 21%. The largest permitted increases were granted to Spain, Greece and Portugal, with +15%, +25% and +27% respectively.

GTZ has adopted the auditing principles published by the Association for Environmental Management in Banks, Savings Banks, and Insurance Companies (VfU) as its standard for in-house environmental audits at the Eschborn and Berlin locations. We depart from these principles by using the more exact emission factors published by the German Federal Environment Agency (UBA) to calculate energy- and transport-related emissions. To calculate the emissions of air travel, we have used the emissions calculator provided by atmosfair ([www.atmosfair.de](http://www.atmosfair.de)) as recommended by UBA.

## Operations in Eschborn

### 2007 system boundaries



Audit  
reference:  
Staff

|   | 2003  | 2004  | 2005  | 2006  | 2007    |
|---|-------|-------|-------|-------|---------|
| Weighted number of staff excluding external personnel             | 1,156 | 1,128 | 1,122 | 1,121 | 1,229.5 |
| Weighted number of staff including external personnel             | 1,187 | 1,156 | 1,148 | 1,153 | 1,260.5 |
| Weighted number of staff including external personnel and interns |       |       |       | 1,231 | 1,352.5 |

The figures give the aggregate number of full-time posts expressed as weighted numbers of staff. The number of people actually working at Head Office is higher, as GTZ, as a family-friendly company, offers its employees a broad array of worktime schemes, including various part-time options such as half posts.

The numbers include all Head Office employees and project personnel working at Head Office, as well as trainees. We have included interns since 2006; however, their number is only taken into account when calculating travel data.

It is assumed that the absence times of Head Office employees on official journeys balance the absence times of interns and consultants at Head Office. Interns and consultants are therefore not taken into account in the audit inventory.

External personnel are canteen and security personnel who use space in the buildings and, through their presence and activities, are taken into account for the consumption and waste figures.

| Building                      | Gross area m <sup>2</sup> | Net internal area (offices) m <sup>2</sup> |
|-------------------------------|---------------------------|--|
| House 1 (after refurbishment) | 18,800                    | 16,240                                     |
| House 2                       | 14,500                    | 12,005                                     |
| House 3                       | 16,000                    | 10,880                                     |
| House 4                       | 1,650                     | 1,250                                      |
| House 5                       | 445                       | 400  |
| <b>Total</b>                  | <b>51,395</b>             | <b>40,375<sup>13</sup></b>                 |



Audit  
reference:  
Buildings

2007 was the first year for three years in which GTZ again used House 1 for the entire year. As a result, the floor area reference figure is different from the three previous years. House 5 is not taken into account when calculating per-capita consumption values, as the children are not counted as staff. Working days per year: 250.

### Characterisation of system boundaries

The 9<sup>th</sup> environmental audit of GTZ covers the Eschborn location with the above staff and buildings and the installations listed below.

### System boundaries

- EDP centre: included
- Canteen: included
- Canteen personnel: partly included
- Guards: partly included
- Well water installation: included
- Photovoltaic installation: included
- Solar thermal installation: included
- Official journeys: These data include trips booked for GTZ by the HRG travel agency. They include: Head Office employees, field-staff members, GTZ International Services and consultants/appraisers. The calculation of CO<sub>2</sub> emissions is based exclusively on data for Head Office staff employed in Eschborn.

<sup>13</sup> Total excluding House 5, as this contains no net internal office area.

## 2007 list of indicators Operations in Eschborn

| Indicator   | Quantity                      | Reference / boundary   |
|---|-------------------------------|--|
| <b>Facilities</b>   |                               |  |
| Net internal area   | 40,375 m <sup>2</sup>         | Only office space is included in net internal area                         |
| Net internal area per staff member                          | 32.84 m <sup>2</sup>          | Houses 1–4, House 5 is kindergarten  |
| <b>Consumables</b>  |                               |  |
| Sanitary paper  |                               | not determined   |
| Paper consumption, total                                    | 11,741,490 sheets             | Excl. documentation and publications                                       |
| Total paper consumption per staff member and year           | 9,550 sheets per staff member | Excl. external personnel and interns, excl. documentation and publications |
| Printed paper consumption per staff member and year         | 6,636 sheets per staff member | Excl. external personnel and interns, excl. documentation and publications |
| Photocopies per staff member and year                       | 2,914 sheets                  | Excl. external personnel and interns, excl. documentation and publications |
| Recycled paper as % of total                                | 99.1%                         | Proportion of recycled paper in overall consumption                        |
| Number of hazardous substances                              | 19                            | Incl. building cleaning  |
| <b>Energy</b>   |                               |  |
| Total energy consumption                                    | 8,078,039 kWh                 | Electricity, oil, gas  |
| Electricity consumption                                     | 3,977,769 kWh                 | Incl. photovoltaics, excl. House 5   |
| Electricity consumption per staff member per year           | 3,155 kWh                     | All staff members on site, incl. external personnel, excl. interns         |
| Electricity consumption per unit net internal area per year | 98.52 kWh/m <sup>2</sup>      | Only office space is included in net internal area                         |
| Heating energy consumption                                  | 3,974,290 kWh                 | Excl. House 5  |
| Heating energy consumption per unit net internal area       | 98.43 kWh/m <sup>2</sup>      | Only office space is included in net internal area                         |
| Heating energy consumption per staff member per year        | 3,253 kWh                     | Incl. external personnel, excl. interns                                    |
| <b>Water &amp; wastewater</b>                               |                               |  |
| Potable water consumption, total                            | 7,771 m <sup>3</sup>          | Houses 1–5   |
| Non-potable water consumption, total                        | 10,272 m <sup>3</sup>         | From well water installation   |
| Potable water consumption per staff member per year         | 6,165 l                       | All staff members on site, incl. external personnel, excl. interns         |
| Potable water consumption per staff member per day          | 24.7 l                        | Assuming 250 working days  |
| Total water consumption per staff member per year           | 14,313 l                      | All staff members on site, incl. external personnel, excl. interns         |
| Total water consumption per staff member per day            | 57.3 l                        | Assuming 250 working days  |
| Contribution of non-potable water to total consumption      | 57%                           |  |

| Indicator  | Quantity      | Reference / boundary   |
|--|---------------|--|
| <b>Solid waste</b>   |               |  |
| Total waste arisings   | 326.30 t      | Incl. paper  |
| Total waste arisings per staff member and year                 | 258.84 kg     | All staff members on site, incl. external personnel, excl. interns |
| Paper waste  | 104.64 t      | All staff members on site, incl. external personnel, excl. interns |
| Paper waste per staff member per year                          | 83 kg         | All staff members on site, incl. external personnel, excl. interns |
| Wastes remaining for final disposal                            | 61.57 t       | Excl. hazardous wastes   |
| Wastes remaining for final disposal, per staff member per year | 48.5 kg       | All staff members on site, incl. external personnel, excl. interns |
| Recovery ratio   | 81.13%        | Proportion of total waste arisings                                 |
| <b>Transport</b>   |               |  |
| Proportion of commuters using local public transport           | 20%           | According to 2005 mobility survey                                  |
| Jobticket  | 753 tickets   | Number of Jobtickets issued  |
| Official journeys within Germany km                            | 5,273,020 km  |  |
| Official journeys within Germany km per staff member           | 4,289 km      | Excl. external personnel and interns                               |
| Proportion of rail km (within Germany)                         | 47.40%        | Proportion of total official journeys within Germany               |
| Proportion of air km (within Germany)                          | 50.95%        | Proportion of total official journeys within Germany               |
| Proportion of company car km (within Germany)                  | 1.65%         | Proportion of total official journeys within Germany               |
| Official journeys abroad km                                    | 74,571,862 km | All international flights booked through the central travel agency |
| Official journeys by air km                                    | 35,297,629 km | Only flights booked by Eschborn staff                              |
| Official journeys by air per Eschborn staff member km          | 28,709 km     | All staff members on site, incl. external personnel, excl. interns |
| <b>Emissions</b>   |               |  |
| CO <sub>2</sub> emissions, energy                              | 1,073 t       | Emission factors according to UBA (2004)                           |
| CO <sub>2</sub> emissions, commuting                           | 1,565 t       | Emission factors according to UBA (2004)                           |
| CO <sub>2</sub> emissions, weekend commuters                   | 372 t         | Emission factors according to UBA (2004)                           |
| CO <sub>2</sub> emissions, official journeys                   | 11,575 t      | Emissions factors according to atmosfair (2006)                    |
| CO <sub>2</sub> emissions, total                               | 14,585 t      |  |

## Input/output analysis for 2007 Operations in Eschborn

| Account                              | Unit           | Input | Stock  | Unit           | Output |
|--------------------------------------|----------------|-------|--------|----------------|--------|
| <b>1. Land and property</b>          |                |       |        |                |        |
| 1.1 Buildings                        | qty.           |       | 5      |                |        |
| 1.2 Land area                        | m <sup>2</sup> |       | 34,703 | m <sup>2</sup> |        |
| ■ built-up                           | m <sup>2</sup> |       | 13,913 | m <sup>2</sup> |        |
| ■ landscaped                         | m <sup>2</sup> |       | 9,985  | m <sup>2</sup> |        |
| ■ sealed                             | m <sup>2</sup> |       | 10,805 | m <sup>2</sup> |        |
| 1.3 Floor areas                      |                |       |        |                |        |
| ■ net internal area                  | m <sup>2</sup> | 9,944 | 40,375 | m <sup>2</sup> |        |
| ■ total floor area                   | m <sup>2</sup> |       | n.d.   | m <sup>2</sup> |        |
| ■ enclosed volume                    | m <sup>3</sup> |       | n.d.   | m <sup>3</sup> |        |
| <b>2. Systems &amp; facilities</b>   |                |       |        |                |        |
| 2.1 Building services systems        |                |       |        |                |        |
| ■ well system                        | qty.           |       | 1      | qty.           |        |
| ■ heat recovery systems              | qty.           |       |        | qty.           |        |
| - water                              |                |       | 1      |                |        |
| - air                                |                |       | 8      |                |        |
| ■ PV                                 | qty.           |       | 1      | qty.           |        |
| ■ solar thermal                      | qty.           |       | 1      | qty.           |        |
| ■ sculleries                         | qty.           | 1     | 2      | qty.           | 1      |
| ■ grease traps                       | qty.           | 1     | 2      | qty.           | 1      |
| ■ petrol traps                       | qty.           | 2     | 3      | qty.           |        |
| ■ transformers                       | qty.           |       | 8      | qty.           |        |
| ■ low-voltage switchgear             | qty.           |       | 4      | qty.           |        |
| ■ medium-voltage switchgear          | qty.           |       | 4      | qty.           |        |
| ■ lifts                              | qty.           |       | 24     | qty.           |        |
| ■ emergency power supply             | qty.           |       | 4      | qty.           |        |
| ■ ventilation systems                | qty.           | 15    | 64     | qty.           |        |
| ■ heating systems                    | qty.           |       | 5      | qty.           |        |
| ■ sprinkler systems                  | qty.           |       | 3      | qty.           |        |
| ■ uninterruptible power supply units | qty.           | 2     | 10     | qty.           |        |
| ■ fire alarm systems                 | qty.           |       | 4      | qty.           |        |

| Account                                 | Unit | Input | Stock | Unit | Output |
|---|------|-------|-------|------|--------|
| 2.1 Building services systems           |      |       |       |      |        |
| ■ wall hydrants                         | qty. |       |       | qty. |        |
| – wet                                   |      |       | 55    |      |        |
| – dry                                   |      |       | 8     |      |        |
| ■ smoke extracts                        | qty. |       | 13    | qty. |        |
| ■ water treatment units                 | qty. |       | 5     | qty. |        |
| ■ water lifting units                   | qty. |       | 6     | qty. |        |
| ■ pressure boosting systems             | qty. |       | 4     | qty. |        |
| ■ gas control stations                  | qty. | 2     | 4     | qty. |        |
| ■ fire dampers                          | qty. |       | 350   | qty. |        |
| ■ indirect free cooling                 | qty. | 2     | 2     | qty. |        |
| ■ evaporative chillers                  | qty. | 2     | 2     | qty. |        |
| ■ safety lighting unit                  | qty. | 1     | 1     | qty. |        |
| ■ gas extinguisher system               | qty. | 1     | 1     | qty. |        |
| ■ electro-acoustic systems              | qty. | 7     | 7     | qty. |        |
| ■ frequency converters                  | qty. | 4     | 4     | qty. |        |
| ■ CO warning system                     | qty. | 4     | 4     | qty. |        |
| 2.2 Central EDP                         | qty. | 17    | 139   | qty. | 14     |
| 2.3 Distributed EDP                     |      |       |       |      |        |
| ■ PCs incl. laptops                     | qty. | 262   | 2,164 | qty. | 455    |
| ■ printers                              | qty. | 107   | 1,123 | qty. | 57     |
| 2.4 Photocopiers                        |      |       |       |      |        |
| ■ GTZ-owned                             | qty. |       | 1     | qty. |        |
| ■ rented                                | qty. | 2     | 67    | qty. |        |
| 2.5 Office equipment                    | qty. | --    | --    | qty. | n.d.   |
| 2.6 Communications equipment            | qty. | 2     | 138   | qty. | 5      |
| 2.7 Kitchen equipment                   |      |       |       |      |        |
| ■ refrigeration, freezing               | qty. | 1     | 10    | qty. |        |
| ■ canteen dishwashing system            | qty. |       | 4     | qty. |        |
| ■ dishwashers in kitchens on each floor | qty. | n.d.  | 52    | qty. |        |
| ■ refrigerators                         | qty. | n.d.  | 52    | qty. |        |

| Account   | Unit           | Input                   | Stock | Account                           | Unit              | Output |
|---|----------------|-------------------------|-------|-----------------------------------|-------------------|--------|
| <b>2.8 Electronic household equipment</b>                     |                |                         |       |                                   |                   |        |
| ■ washing machines  | qty.           |                         | 1     |                                   | qty.              |        |
| ■ condensing driers   | qty.           |                         | 1     |                                   | qty.              |        |
| ■ dishwashers   | qty.           | 3                       | 4     |                                   | qty.              |        |
| <b>2.9 Motor vehicles</b>                                     |                |                         |       |                                   |                   |        |
| ■ utility vehicles  | qty.           |                         | 1     |                                   | qty.              |        |
| ■ company cars  | qty.           | 1                       | 3     |                                   | qty.              | 3      |
| <b>3. Consumables</b>   |                |                         |       |                                   |                   |        |
| 3.1 Paper (excl. photocopies, documentation and publications) | sheet          | 8,159,679               |       |                                   | sheet             |        |
| 3.2 Photocopies   | sheet          | 3,581,811               |       |                                   | sheet             |        |
| 3.3 Hygienic paper  | kg             | n.d.                    |       |                                   | kg                |        |
| 3.4 Cleaning agents   | kg             | n.d.                    |       |                                   | kg                |        |
| 3.5 Hazardous substances                                      | qty.           | 19                      |       |                                   | qty.              |        |
| <b>4. Incoming post and goods</b>                             |                |                         |       | <b>4. Outgoing post and goods</b> |                   |        |
| 4.1 Incoming post   | kg             | 16,571                  |       | 4.1 Outgoing post                 | kg                | 67,138 |
| 4.2 Incoming goods  | kg             | 195,040                 |       | 4.2 Outgoing goods                | kg                | 6,717  |
| <b>5. Energy</b>  |                |                         |       | <b>5. Emissions (energy)</b>      |                   |        |
| 5.1 Heating energy  | kWh            | 4,100,270               |       | 5.1 Heating energy                | t CO <sub>2</sub> | 1,017  |
| 5.2 Electricity, total  | kWh            | 3,989,073 <sup>15</sup> |       | 5.2 Electricity                   | t CO <sub>2</sub> | 56     |
| of this, conventional sources                                 | kWh            | 91,355 <sup>16</sup>    |       | 5.2 Electricity                   | t CO <sub>2</sub> | 56     |
| of this, photovoltaics  | kWh            | 3,421                   |       |                                   |                   |        |
| <b>6. Town mains water</b>                                    |                |                         |       | <b>6. Wastewater</b>              |                   |        |
| 6.1 Potable water   | m <sup>3</sup> | 7,771                   |       | 6. Wastewater, total              | m <sup>3</sup>    | 18,043 |
| 6.2 Well water, recirculated                                  | m <sup>3</sup> | 10,272                  |       |                                   |                   |        |

15 Incl. House 5 (kindergarten)

16 Houses 4 and 5

| Account  | Unit | Input      | Stock | Account  | Unit              | Output  |
|--|------|------------|-------|--|-------------------|---------|
| <b>7. Solid waste</b>                                    |      |            |       |  |                   |         |
|  |      |            |       | 7.1 Paper  | t                 |         |
|  |      |            |       | 7.1.1 Mixed paper for recovery                           | t                 | 82.80   |
|  |      |            |       | 7.1.2 File material for recovery                         | t                 | 21.84   |
|  |      |            |       | 7.2.1 "Green Dot" labelled wastes                        | t                 | n.d.    |
|  |      |            |       | 7.2.2 Commercial wastes handled as municipal solid waste | t                 | 61.10   |
|  |      |            |       | 7.2.3 Green waste  | t                 | n.d.    |
|  |      |            |       | 7.2.4 Kitchen and canteen waste                          | t                 | 40.56   |
|  |      |            |       | 7.2.5 Electroscrap                                       | t                 | 2.85    |
|  |      |            |       | 7.2.6 Glass waste  | t                 | n.d.    |
|  |      |            |       | 7.3 Hazardous waste, recovered                           | t                 | 75.60   |
|  |      |            |       | 7.4 Hazardous waste, to final disposal                   | t                 | 0.47    |
| <b>8. Transport</b>                                      |      |            |       |  |                   |         |
| <b>8.1 Commuter travel (incl. weekend journeys home)</b> |      |            |       |  |                   |         |
| 8.1.1 Local public transport                             | km   | 2,091,381  |       | 8.1.1 Local public transport                             | t CO <sub>2</sub> | 155     |
| 8.1.2 Rail   | km   | 2,644,092  |       | 8.1.2 Rail   | t CO <sub>2</sub> | 175     |
| 8.1.3 Motor vehicles                                     | km   | 10,754,573 |       | 8.1.3 Motor vehicles                                     | t CO <sub>2</sub> | 1,607   |
| 8.1.4 Pedestrians/cyclists                               | km   | 201,529    |       |  |                   |         |
| <b>8.2 Official journeys within Germany</b>              |      |            |       |  |                   |         |
| 8.2.1 Company cars                                       | km   | 86,702     |       | 8.2.1 Company cars                                       | t CO <sub>2</sub> | 19      |
| 8.2.2 Privately-owned cars                               | km   | n.d.       |       | 8.2.2 Privately-owned cars                               | t CO <sub>2</sub> | n.d.    |
| 8.2.3 Rail   | km   | 2,499,490  |       | 8.2.3 Rail   | t CO <sub>2</sub> | 165     |
| 8.2.4 Air  | km   | 2,686,828  |       | 8.2.4 Air  | t CO <sub>2</sub> | see 8.4 |
| <b>8.3 Official journeys abroad</b>                      |      |            |       |  |                   |         |
| 8.3.1 Air travel abroad by Eschborn staff                | km   | 32,610,801 |       | 8.3.1 Air travel abroad by Eschborn staff                | t CO <sub>2</sub> | see 8.4 |
| 8.4 Air travel by Eschborn staff, total                  | km   | 35,297,629 |       | 8.4 Air travel by Eschborn staff, total                  | t CO <sub>2</sub> | 11,391  |

## Operations in Berlin

### 2007 system boundaries

In 2007, 74 staff members worked in GTZ-Haus Berlin. Consultants and employees working elsewhere in Berlin are not taken into account.

GTZ-Haus Berlin had the same net internal area in 2007 as it did in previous years: 2,073 square meters (incl. net area of the ground floor atrium and the 5<sup>th</sup> floor). Working days per year: 250.

### Characterisation of system boundary:

The 3<sup>rd</sup> environmental audit carried out by GTZ at its Berlin location covers the office building on site, with the number of staff set out above.

### List of indicators for operations in Berlin in 2007

| Indicator   | Quantity                              | Reference / boundary  |
|---|---------------------------------------|---|
| <b>Facilities</b>   |                                       |   |
| Net internal area per staff member (total staff: 74)        | 27 m <sup>2</sup><br>per staff member | GTZ-Haus Berlin   |
| <b>Consumables</b>  |                                       |   |
| Paper consumption   | 600,000 sheets                        | Excl. sanitary paper  |
| Paper consumption per staff member and year                 | 8,108 sheets                          | Excl. sanitary paper  |
| Photocopies per staff member and year                       | 2,401                                 | All staff members on site   |
| Recycled paper as % of total                                | 100%                                  | Proportion of recycled paper in overall consumption                 |
| <b>Number of hazardous substances</b>                       | n.d. (number)                         | Incl. building cleaning   |
| <b>Energy</b>   |                                       |   |
| Total energy consumption                                    | 661,536 kWh                           | Electricity, gas  |
| Total energy consumption per staff member per year          | 8,939 kWh                             | All staff members on site   |
| Electricity consumption                                     | 267,363 kWh                           |   |
| Electricity consumption per staff member per year           | 3,613 kWh                             | All staff members on site   |
| Electricity consumption per unit net internal area per year | 133 kWh/m <sup>2</sup>                | GTZ-Haus Berlin   |
| Heating energy consumption                                  | 394,173 kWh                           | Gas   |
| Heating energy consumption per staff member per year        | 5,326 kWh                             | All staff members on site   |
| Heating energy consumption per unit net internal area       | 197 kWh/m <sup>2</sup>                | GTZ-Haus Berlin   |
| <b>Water &amp; wastewater</b>                               |                                       |   |
| Water consumption, total                                    | 832 m <sup>3</sup>                    | Town mains water + sprinkler system                                 |
| Water consumption per staff member per year                 | 11,243 l                              | All staff members on site   |
| Water consumption per staff member per day                  | 44.97 l                               | Assuming 250 working days   |
| <b>Solid waste</b>  |                                       |   |
| Total waste arisings  | 159,808 l                             | Incl. paper, glass, packagings and bulky waste                      |
| Total waste arisings per staff member and year              | 1,733 l                               | All staff members on site   |
| Paper waste   | approx. 50,000 l                      | Cannot be determined precisely, as mixed with collected bulky waste |

n.d. = not determined

| Indicator  | Quantity         | Reference / boundary  |
|--|------------------|---|
| <b>Solid waste</b>   |                  |   |
| Paper waste per staff member and year                          | 676 l            | All staff members on site   |
| Bulky waste  | approx. 57,000 l | Cannot be determined precisely, as mixed with collected paper waste |
| Bulky waste per staff member and year                          | 770 l            |   |
| Glass waste  | 2,888 l          |   |
| Glass waste per staff member per year                          | 84.32 l          | All staff members on site   |
| Packagings   | 12,480 l         |   |
| Packagings per staff member per year                           | 168 l            | All staff members on site   |
| Wastes remaining for final disposal                            | 37,440 l         | Solid municipal waste   |
| Wastes remaining for final disposal, per staff member per year | 505.94 l         | All staff members on site   |
| Recovery ratio   | 40.9%            | Proportion of total waste arisings                                  |
| <b>Transport</b>   |                  |   |
| Proportion of commuters using local public transport           | 52%              | According to staff survey   |
| <b>Emissions</b>   |                  |   |
| CO <sub>2</sub> emissions, energy                              | 88 t             | Only gas (electricity CO <sub>2</sub> -free as green electricity)   |
| CO <sub>2</sub> emissions, commuting                           | 13.3 t           |   |
| CO <sub>2</sub> emissions, total                               | 101.3 t          |   |

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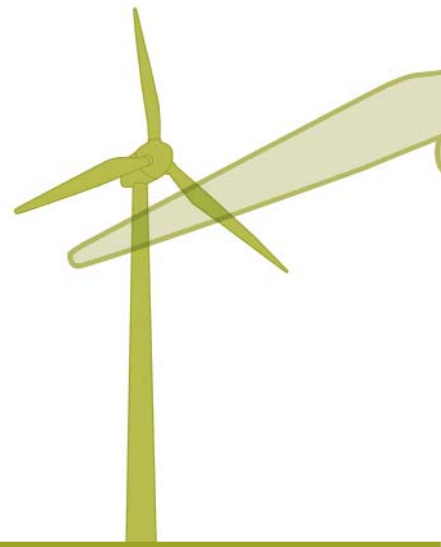
Mobility team:

Armin Wagner, Sascha Thielmann, Stefan Pohl, Britta Heine, Jörg Senn, Dagmar Bott, Roger Wolf

CO<sub>2</sub> neutrality:

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Acting on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ), GTZ is working to boost wind power in twelve countries. GTZ has helped to get 20 wind farms on stream in these countries.



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