Sustainable product responsibility.

Tapping the social opportunities of digitization.
Sustainable product responsibility is a complex task in the ICT sector. Our top priority is to develop energy-efficient products, solutions and services which should make connected work and life easier for our customers in future and help them to assume responsibility towards the environment and climate. The "Smart 2020" study makes a stunning forecast: it claims that the CO\textsubscript{2} savings potential of 7.3 gigatons associated with the use of innovative ICT products will be five times higher than the CO\textsubscript{2} emissions of the entire ICT industry in 2020. This will be made possible by consistent digitization of high-energy processes such as travel, transport and printing. As part of our sustainable product responsibility, it is vital that we exploit the potential inherent in digitization and safeguard it over the long term.

CO\textsubscript{2} equivalents savings potential through ICT solutions in 2020.

<table>
<thead>
<tr>
<th>Category</th>
<th>CO\textsubscript{2} Equivalents</th>
<th>%</th>
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</thead>
<tbody>
<tr>
<td>Facility management and technical building installations</td>
<td>2.4</td>
<td>30.8</td>
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<tr>
<td>Logistics and mobility</td>
<td>2.2</td>
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<td>Energy</td>
<td>2.1</td>
<td>25.9</td>
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<tr>
<td>Production and industry</td>
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<td>14.1</td>
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<tr>
<td>Total</td>
<td>7.3</td>
<td></td>
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Research and development for a low-carbon economy.

With the realignment of our CR activities in 2008, we set ourselves the goal of strengthening the low-carbon economy in the long term. One of our central levers is the systematic integration of sustainability aspects in the development of our products and services. These include assessments of the ecological and social consequences of ICT technologies and their CO\textsubscript{2} emissions.

Opportunities and risks of digitization.

Telework, videoconferencing, route optimization, electronic workflow and digitization of old paper files all offer vast savings potential. There are already lots of good examples of how mobile information transfer can be used to make savings on physical transportation and consumption values. By using e-mail, mobile Internet, Short and Instant Messaging or wireless sensor systems, the actual movements of goods, persons or documents become superfluous for the most part. In some cases, the increases in efficiency can be supported by figures: For example, T-Systems was able to help a German automobile manufacturer save 150 tons of paper, 800,000 transport kilometers and 168,000 liters of photo developing chemicals a year by setting up electronic workflows and an archive for incoming invoices. Digitizing files and records for a German pension fund agency actually reduced the volume of traffic needed to transport files by 90 percent. However, the increasing use of terminal equipment normally also means higher energy consumption. For example, an potential increase in energy requirements cannot be excluded during the transition phase to the NGN, since more energy will be needed to cope with rising amounts of data and to run parallel network infrastructures. Reducing this additional demand is therefore yet another focus of our development work.
Telephone, data and videoconferences.
Digital conferences help save time, money and not least CO₂ emissions. If 30 percent of all business trips worldwide were replaced by videoconferences, this would yield savings of 80 million tons of CO₂ a year according to GeSi's “Smart 2020” study. There is a vast need for solutions that are ecologically meaningful, as is reflected by the growing customer demand in this area. Between 2006 and 2007, for example, the number of telephone and data conferences rose by around 50 percent.

Testing desktop video conferencing.
We are now in the process of testing various video conferencing technologies within the Group. Since 2004, we have increasingly used desktop video conferencing (DTVC). This step enabled T-Mobile to save around 7,000 metric tons of CO₂ by the beginning of 2007. Once the trial phase was over, we presented the DTVC technology at the Federal President's "Environment Week" in June 2007. We will be integrating it in other product developments and thus making it available to our customers.

Virtual meetings in high-end quality.
Since December 2007, T-Systems has been using Telepresence, a Cisco Systems development based on a completely new video conferencing technology. On the basis of real-time transmission of images and sound, up to twelve participants can converse during a virtual meeting. High-definition cameras, realistic presentation on 65” plasma monitors and a 4-channel sound system provide high-definition video (HD) and hi-fi quality speech reproduction. As a Cisco premium partner, T-Systems is responsible for selling this new, easy-to-use solution in Germany.

Mobile communications network and mobile services.
Expansion of our mobile Internet services means that our customers can achieve a more flexible, individual life and work balance. Real-time route management and specific, location-related mobile services help drivers to circumvent traffic jams on the roads. They guide them in unfamiliar environments and help to cut fuel consumption and CO₂ emissions. Mobile, high-speed Internet greatly boosts the attraction for our customers of forms of travel that are less harmful to the environment, e.g., rail travel.

High-speed Internet with Railnet.
T-Mobile and T-Systems have joined forces with Deutsche Bahn to equip the company's intercity express (ICE) trains with 79 WLAN HotSpots. This means high-speed Internet in two senses: with fast data transfer that never fails to function, even at a lightning 300 km/h. Travel by train, surf, chat, email, work, and produce less CO₂. Since January 2008, all this can be done on one train – initially on around 50 ICEs plying between Munich, Frankfurt, Cologne and Dortmund. By 2011, we will make this technology available on all ICEs in Germany.
Networked homes.
A dream has come true: today, we can manage all equipment and services ranging from consumer electronics and household devices, security technology and heating right through to electronic information and communication with a single system. This saves not only travel and time but also reduces the use of energy and resources and does less harm to the environment. Deutsche Telekom Laboratories, Deutsche Telekom's research and development center, is collaborating with eight other technology enterprises to develop a solution of this kind, which is known as SerCHo (Service Centric Home).

Smart home services under real test conditions.
The project funded by the Federal Ministry of Economics and Technology and known as SerCHo focuses on integrating electronic services in the home. The project guarantees numerous benefits for the tech-minded and people in residential care. For example, SerCHo raises users' awareness for energy-saving potential through immediate monitoring of their consumption. Thanks to automated energy delivery, consumers also stand to benefit from attractive rates models offered by the utility companies. SerCHo has been on show to visiting experts since June 5, 2007 as a fully networked four-room apartment at Ernst-Reuter-Platz in Berlin. The automation of home processes in the form of smart home services is developed here under real conditions and its content, functionality and user-friendliness put to the test.

First complete green product range.
With its cordless Sinus telephone line, Deutsche Telekom was the first company to offer a fully environmentally friendly range of terminal devices in fall 2007. One feature of all products from the Sinus range is their extremely low energy consumption. The switched-mode power supply (SMPS) alone accounts for a 30 to 60 percent power saving compared with conventional transformer power supply units. Besides, the transmission power of the base unit and the handset has been reduced and adapted to modern needs.

Climate-neutral telephony.
As part of a joint project run by our Sustainability Design department and the Terminal Equipment Center, we offer users who buy a new Sinus phone another special feature: they can make climate-neutral phone calls with it for an average period of 5 years. Deutsche Telekom has offset the emissions arising from energy consumption by buying and retiring emission reduction certificates for 53,100 metric tons of CO₂. In turn, it supports climate-friendly projects from the CO₂ emissions trade project “Hesse Tender,” among them innovative energy production plants with a measurable CO₂ savings effect.

The Sinus range includes analog as well as ISDN telephones with and without an answering machine. Prices range from EUR 29.99 to EUR 109.99, and do not include the extra costs for development and manufacture or the cost of purchasing certified emission reductions. We sold around 400,000 Sinus telephones between October 2007 and March 2008. Healthy sales of this new series bearing the “climate-neutral” label attest to the new product concept.