



## EFFAS/DVFA Taking ESG into Account 2009 | Frankfurt

### Sustainability Strategy - Focus on Business Relevance

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## Disclaimer

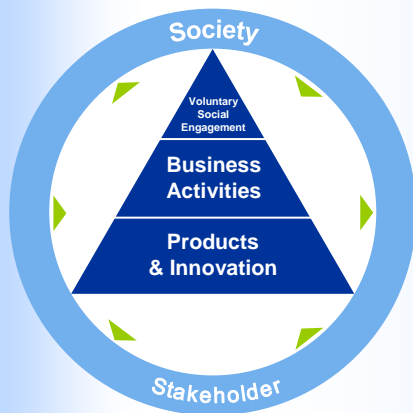


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## We are Aiming for Sustainability in Everything We Do



## Our Sustainability Strategy Focuses on Business Relevance



- We regard economy, ecology and social dimension as objectives of equal rank
- Our products are designed to be innovative, benefit people and improve their quality of life
- Our portfolio and our sustainability management address global challenges to safeguard food supplies, health care provision, energy efficiency and effective climate protection

## Global Trends Require Sustainable Action



- Increase energy efficiency and supply alternative energy feedstocks
- Reduce greenhouse gas emissions while economies are growing



- Ensure sufficient quality food supplies while acreage per capita is decreasing
- Longer life expectancy results in increasing demand for innovative medicine and therapies

## Growing World Population Escalates the Challenges



Growth of world population results in increasing demand for

- Quality Food
- Energy
- Medicine Supply

- Global agricultural production would have to double in the next 50 years to feed the estimated world population of over 9 billion people. (The Food and Agriculture Organization of the United Nations (FAO))
- Energy demand in up-and-coming Asia is set to almost quadruple by 2030 compared to 1990. (International Energy Outlook 2008 (IEO))
- Deaths from noncommunicable diseases (e.g. heart attacks, strokes, cancers, diabetes, respiratory disease) are likely to increase by 17% over the next 10 years. (WHO press release, July 2009)

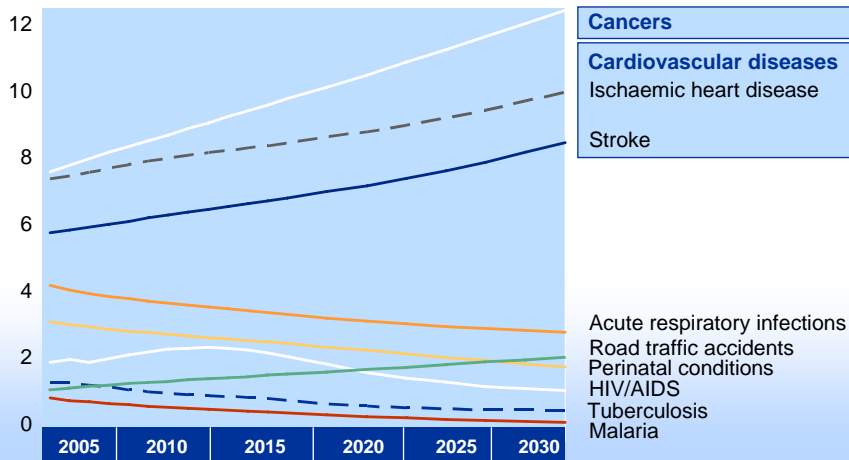
# Bayer - Business Opportunities Addressing Global Challenges



# Cancer and Cardiovascular Diseases remain Main Causes of Death



Deaths (millions)



Source: The global burden of disease: WHO 2004 update Updated from Mathers and Loncar, PLoS Medicine, 2006

## Key Medical Innovations of Bayer HealthCare in Oncology and Cardiology



### Nexavar

- Dual-targeted mechanism
  - antiangiogenic and antiproliferative
- First targeted therapy in renal cell carcinoma
- Only approved drug with overall survival benefit in liver cancer
- > 200 active trials exploring Nexavar's anti-tumor potential



### Xarelto

- Still high unmet medical need for thromboembolic diseases
- Novel, oral, direct Factor Xa inhibitor
- Launched in more than 40 countries for prevention of venous thromboembolism in adults following elective hip or knee replacement surgery
- Late-stage development program in four indications on track

## Bayer Strategy on Social Health Care Programs



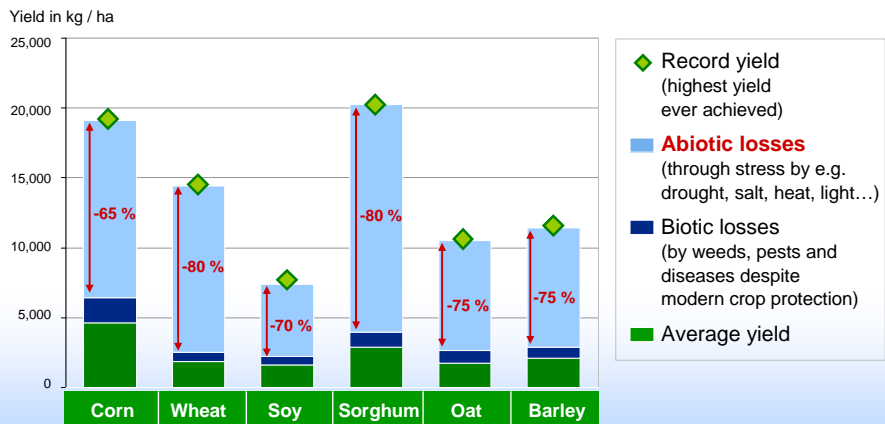
Areas of focus	Contents	Support approaches
<b>Reproductive health</b>	<ul style="list-style-type: none"> <li>■ Family planning</li> </ul>	<ul style="list-style-type: none"> <li>■ Cooperation in numerous family planning programs with international partners</li> </ul>
<b>Tropical and infectious diseases</b>	<ul style="list-style-type: none"> <li>■ Neglected tropical diseases</li> <li>■ Tuberculosis</li> </ul>	Better treatment options for <ul style="list-style-type: none"> <li>■ African sleeping sickness</li> <li>■ Chagas' disease</li> <li>■ Malaria</li> <li>■ Tuberculosis</li> </ul>
<b>Innovative programs</b>	<ul style="list-style-type: none"> <li>■ Oncology</li> </ul>	<ul style="list-style-type: none"> <li>■ Access programs for Nexavar</li> </ul>

# Bayer - Business Opportunities Addressing Global Challenges



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# Significant Yield Losses from Biotic and Abiotic Stresses



Source: Buchanan, Grissem, Jones: Biochemistry and Molecular Biology of Plants; American Society of Plant Physiologists, 2000

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## Our Modern Crop Protection Products help to Safeguard Harvests and Increase Yields



### Imidacloprid (Confidor Stress Shield)

- Worldwide #1 insecticide
- Broad spectrum activity
- "Stress shield" feature supports plants with additional tolerance to biotic and abiotic stress factors
- Considerable yield increases even in situations without insect infestations



### Trifloxystrobin (Flint, Nativo, Stratego)

- Broad-spectrum strobilurin fungicide
- Mesostemic properties support disease control even under adverse conditions
- Yield enhancements proven in many crops worldwide
- Potential to strengthen the plant's resistance to abiotic stresses

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## Bayer CropScience Stress-Tolerance Research to Increase Yield Stability



- Reducing a plant's energy loss under stress enables the plant to better withstand short-term stress situations, thereby increasing yield stability and allowing planting in high-stress areas
- Stress-tolerance research at Bayer CropScience targets the PARP pathway, addressing a broad range of stresses including heat, drought, cold and salinity
- Bayer CropScience stress-tolerance research project shows promising results across a broad number of abiotic stress inducers and crops

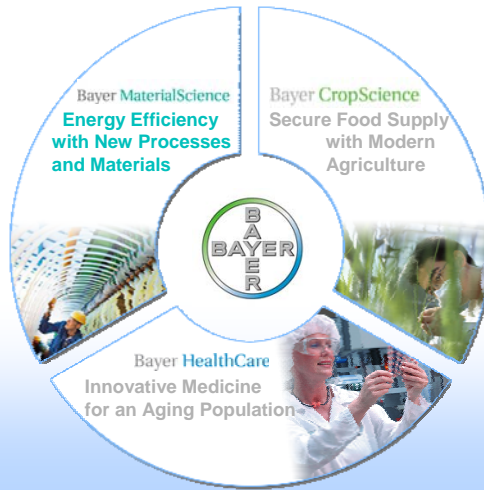
### Encouraging research results



PARP = poly(ADP-ribose)polymerase

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# Bayer - Business Opportunities Addressing Global Challenges



## Building and Industry Sector Have Largest Potential for GHG Emissions Reduction



### Buildings\*

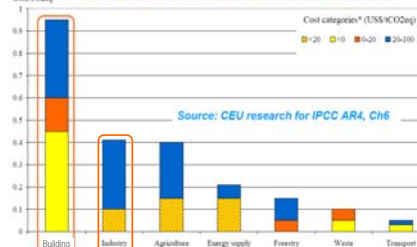
- Approx. 20% of worldwide GHG emissions attributed to building sector
- Highest greenhouse gas mitigation potential of all sectors in 2030 estimates
- Opportunities for realising GHG reductions in the building sector exist worldwide

### Chlorine Production

- Basic material for > 50% of all chemical products
- Production is highly energy intensive
- Total worldwide energy use for chlorine production: approx. 210m MWh p.a.

### GHG mitigation Potential by Sector in 2030

✓ Short-term win for GHG emissions reduction



\* For the building, energy, waste and transport sectors, the potential is split into three cost categories: at 0-20 US\$/tCO<sub>2</sub>eq, at 20-100 US\$/tCO<sub>2</sub>eq. For the industrial, forestry, and energy supply sectors, the potential is split into two categories: at costs below 20 US\$/tCO<sub>2</sub>eq and at 20-100 US\$/tCO<sub>2</sub>eq.

\* Source: IPCC 4th Assessment Report

# Bayer MaterialScience Innovations to Increase Energy Efficiency



## EcoCommercial Building (ECB)

- Climate-friendly building concept with global applicability
- Innovative approach for sustainable, environmental friendly and economic construction
- Cutting-edge construction solutions, materials and technology, e.g. high performance insulations systems
- Integral planning and building solutions together with EcoCommercial Building partners

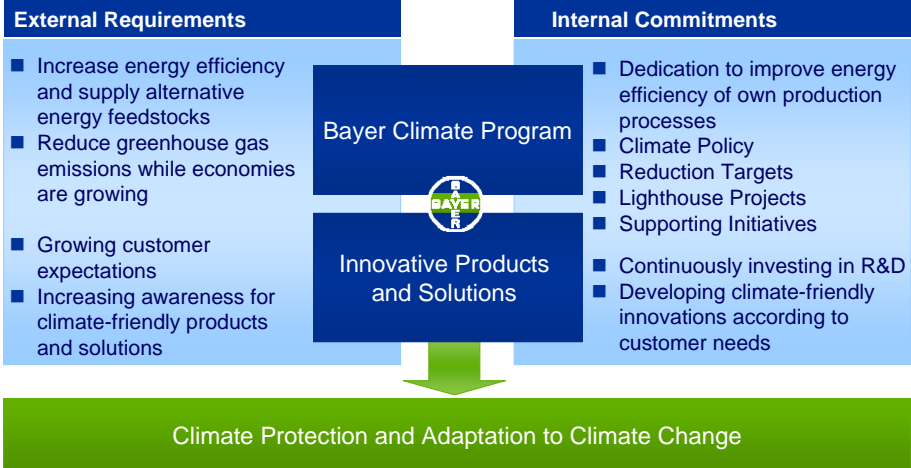


## Energy efficient chlorine production

- Hydrochloric acid by-product recycling (HCL-ODC\*)
- Energy use and corresponding CO<sub>2</sub> emissions reduced by 30%
- In operation at Bayer Integrated Site Shanghai

\* HCL-ODC = Hydrochloric Acid - Oxygene Depolarized Cathode  
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# Climate Protection as Key Objective for Bayer



# Bayer Climate Program: Ambitious Reduction Targets until 2020



## Global greenhouse gas emissions: Reduction 2005 to 2020

- Maintenance of 2007 level of greenhouse gas emissions at Bayer Group up to 2020 according to today's estimates despite growth in production

<b>MaterialScience</b>	Reduction of specific greenhouse gas emissions by <b>25 %</b> per metric ton of sales product*
<b>CropScience</b>	Reduction of absolute greenhouse gas emissions by <b>15 %</b>
<b>HealthCare</b>	Reduction of absolute greenhouse gas emissions by <b>5 %</b>

- Investment of €1 billion in climate-relevant R&D and other projects from 2008 to 2010

\* Without byproducts sodium hydroxide (NaOH), hydrochloric acid (HCl) and trade products  
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## Summary



Challenges

Innovation + Competence

Need for Solutions

Business  
Opportunity

Corporate  
Responsibility

- Global challenges are increasing the need for solutions
- These challenges represent business opportunities today and in the future
- We feel responsible to contribute with our innovation potential and competencies
- Climate protection is a key objective for Bayer
- We are aiming for sustainability in everything we do



■ More Information on our Commitment to Climate Protection



## Long-established Commitment to Reduce Greenhouse Gas (GHG) Emissions



### Reduction of world wide, absolute GHG emissions\*

- 1990 - 2005 minus 32 %
- 2005 - 2008 minus 7 %

### Optimization of energy supply and production processes

- Reduction of GHG intensity of energy used (e.g. Combined Heat & Power plants)
- Reduction of energy consumption (e.g., oxygen depolarized cathode)
- Reduction of non-energy-related emissions from production facilities, i.e. N<sub>2</sub>O



\*portfolio-adjusted, according to GHG protocol

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# Lighthouse Projects: Innovative Solutions for Climate Protection



## Bayer Climate Check

- Control instrument documents climatic effect and reveals potential savings



## Stress-tolerant Plants

- Research to increase stress-tolerance and yields in plants



## Eco-Commercial Building

- Innovative concept for commercial buildings with zero emissions

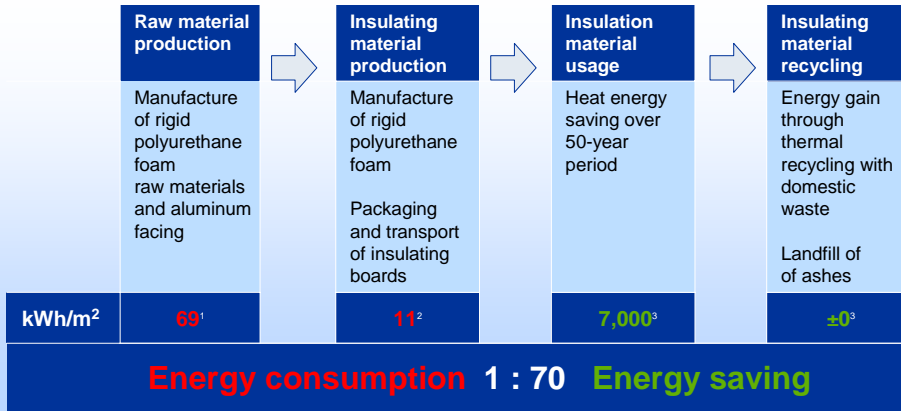
# Supporting Initiatives: Active Contribution



Group wide engagement involving employees and external stakeholders

EcoFleet	Business Travel	Green IT	Award&Scholarships
Emissions caused by company vehicles to be cut by 20 percent between 2007 and 2012	Reduce the number of business trips by making better use of the latest conferencing technology	Green Data Center program aims to improve energy efficiency by 20 percent	Climate Award of excellence in climate research  Scholarships for dedicated school and university students
			

# Innovative Climate Protection with MaterialScience Products



Source: 1=ISOPA/BOUSTEAD; 2=BING; 3=IVPU (estimate)

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# Bayer MaterialScience - Innovative Materials for the Construction Industry



\*VOC: Volatile Organic Compound

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# Energy Efficient State-of-the-Art Technologies at MaterialScience Site Caojing



Process	Energy costs	
<b>MDI</b> ODC Chlorine recycling	Reduction by 30 %	<p>Aerial view on Caojing site</p>
<b>TDI</b> Gas phase phosgenation  Chlorine recycling (catalytic oxidation)	Reduction by 40 %  Reduction by 50 %	
<b>HDI</b> Gas phase phosgenation	Reduction by 65 %	



## ■ Elements of our Sustainability Strategy



# Sustainability Management Integrated into all Levels of the Group



## Group level - general:

- Bayer values
- Leadership principles
- Policies

## Group level - sustainability:

- SD policy
- UN Global Compact
- Human Rights Position

## Subgroups & service company level (incl. countries&regions)

- HSEQ systems & audits
- Strategy programs
- Risk management

## Community Board Sustainable Development

Chair: Group Management Board Member responsible for Innovation, Technology & Environment

### Members:

- Members of the subgroup management boards
- Heads of Corporate Center: Environment & Sustainability, Investor Relations, Corporate Development, Corporate Office, Human Resources & Organizations, Communications, Law & Patents
- Heads of Bayer Technology Services and Bayer Business Services

## Community Council Sustainable Development

Chair: Head of Environment & Sustainability

# Our Principles of Business Conduct

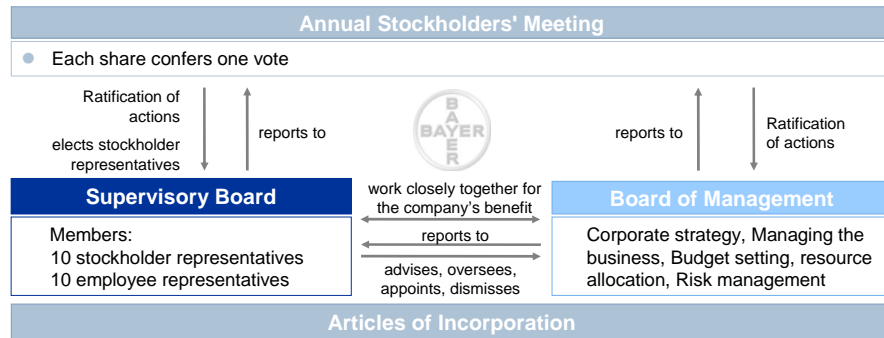


We are committed to fair competition	No antitrust violations
We are committed to integrity in business dealings	No corruption
We are committed to the principle of sustainability	No inappropriate risks for human health and the environment
We are committed to upholding foreign trade laws	No export infractions
We are committed to safeguarding equal opportunity in securities trading	No illegal insider trading
We are committed to proper record-keeping and transparent financial reporting	No deception
We are committed to fair and respectful working conditions	No discrimination
We are committed to protecting the fruits of our own endeavors and respecting the legally recognized rights of others	No infringement of our own or others' property rights
We are committed to keeping corporate and personal interests separate	No conflicts of interest
We are committed to cooperating with the authorities	No misinformation

## We are in Full Compliance with the German Corporate Governance Code



- Full Compliance with the recommendations of the German Corporate Governance Code
- Systematic monitoring to identify any business or financial risks at an early stage and take appropriate action to manage them
- Comprehensive corporate compliance program in place



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## Program for Legal Compliance and Corporate Responsibility at Bayer



### Bayer will not tolerate any violations of the law.

Our Program for Legal Compliance and Corporate Responsibility includes a definitive ban on anti-competitive conduct and corruption as well as rules on non-discrimination, the protection of intellectual property, product safety, occupational safety and environmental protection.

- Rules apply throughout the Bayer Group, to all countries and to all employees
- Till January 2009, approx. 77,000 employees have been trained on compliance-related issues since start of campaign in 2007
- Consequences for violators range from a reprimand, claims for damages to immediate termination, depending on the severity of the case
- Local compliance hotlines enable Bayer employees to anonymously report any suspected violations to an independent unit and seek counsel in their native language
- Formation of Corporate Compliance Committees in each subgroup and service company, chaired by a Compliance Officer and include at least one lawyer
- Corporate Auditing Department regularly verifies adherence to the policy
- Worldwide internal communications campaign "Compliance W.I.N.S. to promote compliant conduct has been completed in 2009

W.I.N.S.: Worldwide Integrity Is Necessary for Success  
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## Bayer Human Rights Position Mandatory Worldwide Throughout the Group



- Part of performance management and bonus system for our roughly 25,000 managerial employees
- Integral part of employee orientation trainings
- Implementation supported by *Program for Responsible Behavior and Corporate Compliance*
- Bayer is a founding member of the UN Global Compact
- Our procurement guidelines demand that suppliers clearly commit to principles of sustainable development



### Statement on Child Labor as part of the Bayer Human Rights Position

We follow a clear "zero tolerance to child labor" policy in our business operations worldwide. We do not tolerate child labor in our supply chain either, where we take action against known cases of violations. Our efforts to fight against child labor are consistent with the ILO's\* (International Labor Organization) core labor standards and the United Nations Global Compact principles. ...

\*Minimum Age Convention 1973; (No. 138); Worst Forms of Child Labor Convention, 1999, (No. 182)

## Sustainable Procurement Management



- Bayer Procurement Policy supports U.N. Global Compact principles, our Group Values and Leadership Principles and the Bayer Human Rights Position
- Strategy for implementing sustainability optimized further
- Requirements for our suppliers:
  - "Commitment to fair competition and fair contract design vis-à-vis their business partners, and clear boundaries between company and personal domains"
  - "Compliance with internationally accepted ethical principles relating to human rights, working conditions (including the disapproval of child labor) and anticorruption measures within the Group's sphere of influence"
  - "Conservation of natural resources, environmental protection and production and use of socially and environmentally acceptable products and processes"
- Regular training for procurement staff includes sustainability aspects
- Key suppliers sensitized for sustainability at Bayer International Supplier Day and through training

# Sustainability Has a Long Tradition at Bayer



<b>1901</b> Foundation of the "Abwasser-Commission der Farbenwerke zu Leverkusen"	<b>1986</b> "Policy guidelines for environmental protection and safety"	<b>2000</b> Founding member of the UN Global Compact	<b>2004</b> Cooperation agreement with UNEP	<b>2006</b> Sustainable Development Policy	<b>2008</b> Revised Corporate Compliance Policy  Implementation of Bayer Climate Check
<b>1976</b> First Bayer Report on environment and society	<b>1999</b> "Guidelines for Legal Compliance and Corporate Responsibility at Bayer"	<b>2003</b> Strategy for Sustainable Agriculture	<b>2005</b> Partnership with TB Alliance	<b>2007</b> Bayer Human Rights Position  Bayer Climate Program	<b>2009</b> Bayer Code of Conduct for Responsible Lobbying  Support for the CEO Water Mandate Initiative of the UN Global Compact

# Key Bayer Group Sustainable Development Goals through 2010



## Area of action: Innovation

Objective	Achievement 2008
<ul style="list-style-type: none"> <li> <b>Therapeutic proteins</b>                      Development of patient-specific medicines by 2015 through the expression of therapeutic proteins from tobacco plants (plant-made pharmaceuticals)                 </li> </ul>	
<ul style="list-style-type: none"> <li> <b>Cancer therapy</b>                      Expansion of the scope of application for the cancer drug Nexavar® to include the indications liver, lung and breast cancer                 </li> </ul>	
<ul style="list-style-type: none"> <li> <b>Energy-efficient production process</b>                      Optimization of a production process for monomeric diisocyanate with the goal of reducing energy consumption by about 15 percent                 </li> </ul>	

## Key Bayer Group Sustainable Development Goals through 2010



Areas of action: Social responsibility and Responsibility for the environment

Objective	Achievement 2008
<ul style="list-style-type: none"> <li> <b>Occupational safety</b>                      Reduction in the incidence of industrial injuries with lost working days to less than two per million hours worked                 </li> </ul>	
<ul style="list-style-type: none"> <li> <b>Emissions into water</b>                      Reduction in the discharge of total organic carbon (TOC) and nitrogen into receiving waters by 10 percent per metric ton of sales product                 </li> </ul>	
<ul style="list-style-type: none"> <li> <b>Emissions into air</b>                      Reduction in VOC (volatile organic compounds) emissions by 30 percent per ton of sales product                 </li> </ul>	
<ul style="list-style-type: none"> <li> <b>Climate protection</b>                      Restriction of global greenhouse gas emissions (metric tons CO<sub>2</sub> equivalents) to the 2007 level through 2020 despite an increase in production                 </li> </ul>	

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## Key Bayer Group Sustainable Development Goals through 2010



Area of action: Responsibility for the environment

Objective	Achievement 2008
<ul style="list-style-type: none"> <li> <b>Protection of the ozone layer</b>                      Adherence to a maximum threshold of less than 20 metric tons of ods (ozone-depleting substances) emissions per year (cfc-11 equivalents)                 </li> </ul>	
<ul style="list-style-type: none"> <li> <b>Waste</b>                      Reduction in the volume of waste requiring special supervision (hazardous waste) to less than 2.5 percent per metric ton of sales product                 </li> </ul>	

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