



Science For A Better Life



Sal. Oppenheim European SRI Conference 2009 | Paris Innovations For Climate Protection

Ursula Mathar
Bayer AG
VP Environment & Sustainability

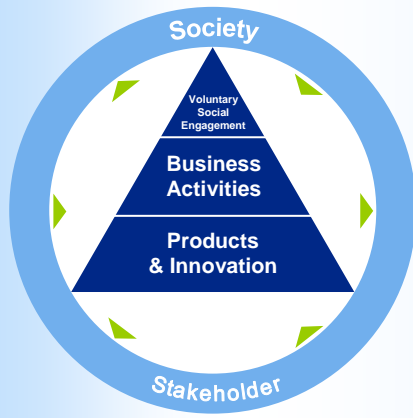
Manfred Rink
Bayer MaterialScience AG
VP Corporate Development

Important Information



This presentation may contain forward-looking statements based on current assumptions and forecasts made by Bayer Group or subgroup management. Various known and unknown risks, uncertainties and other factors could lead to material differences between the actual future results, financial situation, development or performance of the company and the estimates given here. These factors include those discussed in Bayer's public reports which are available on the Bayer website at www.bayer.com. The company assumes no liability whatsoever to update these forward-looking statements or to conform them to future events or developments.

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

Challenges from Global Mega-Trends



Longer life

Longer life expectancy results in increasing demand for innovative medicine and therapies



Ensure sufficient quality food supplies while acreage per capita is decreasing



More People

Growth of population results in increasing demand for quality food, energy and medicine supply



Increase energy efficiency and supply alternative energy feedstocks



Reduce greenhouse gas emissions while economies are growing

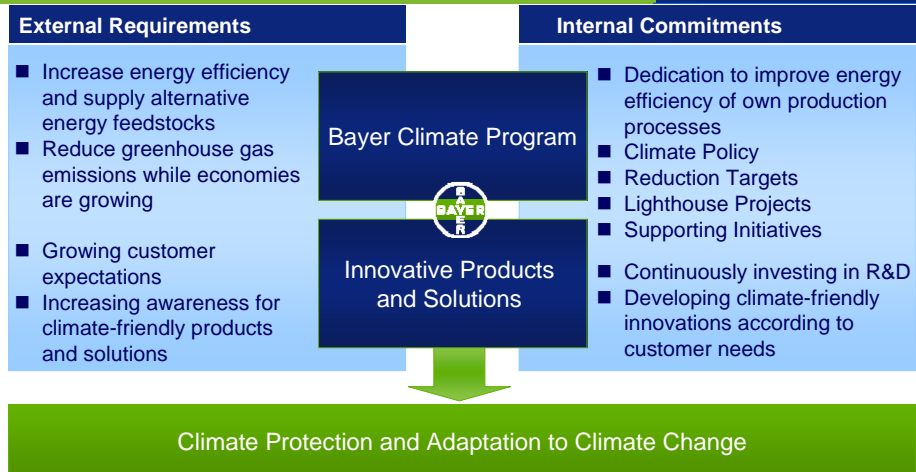
Food Supply

Climate Change

Business Opportunities Addressing Global Mega-Trends



Climate Protection as Key Objective for Bayer



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. N₂O



*portfolio-adjusted, according to GHG protocol

Bayer Investor Presentation • Sal. Oppenheim European SRI Conference 2009 • Page 7

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

MaterialScience

Reduction of specific greenhouse gas emissions by **25 %** per metric ton of sales product*

CropScience

Reduction of absolute greenhouse gas emissions by **15 %**

HealthCare

Reduction of absolute greenhouse gas emissions by **5 %**

- 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

Bayer Investor Presentation • Sal. Oppenheim European SRI Conference 2009 • Page 8

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

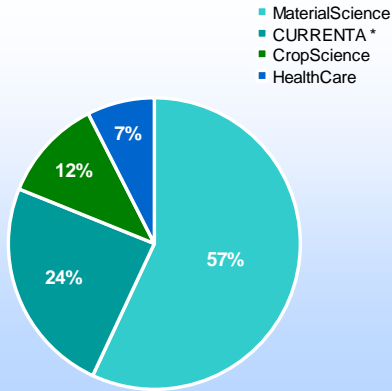
EcoFleet	Business Travel	Green IT	Award&Scholarships
Emissions caused by company vehicles to be cut by 20 percent between 2007 and 2012	Reduce the number of business trips by making better use of the latest conferencing technology	Green Data Center program aims to improve energy efficiency by 20 percent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

MaterialScience has highest Leverage to Further Improve Energy Efficiency



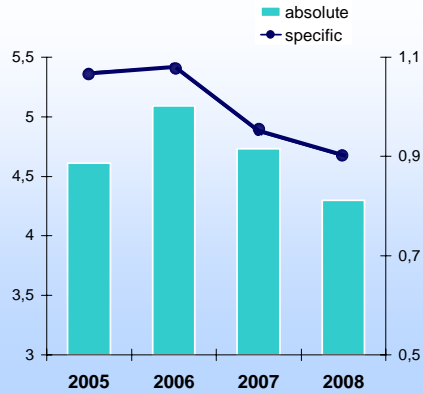
2008 Group direct + indirect GHG emissions

Million metric tons of CO₂ equivalents



GHG Emissions at MaterialScience

Million metric tons of CO₂ equivalents



* The emissions shown for CURRENTA are attributable to the provision of energy to other companies at the CHEMPARK sites

Bayer Investor Presentation • Sal. Oppenheim European SRI Conference 2009 • Page 11

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

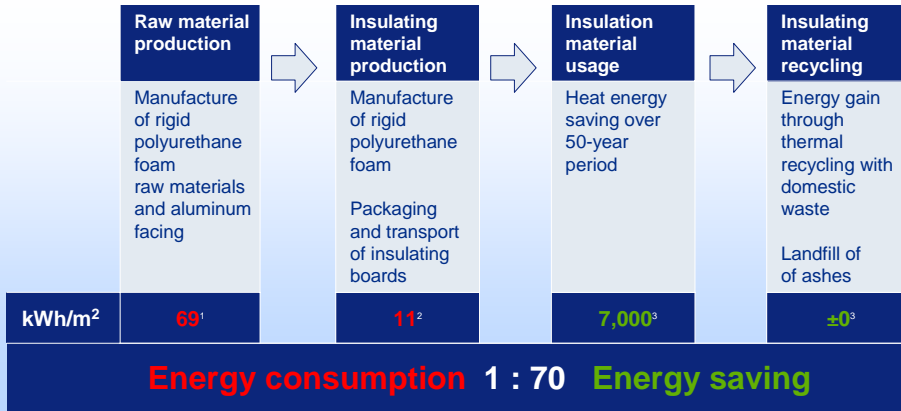


Process	Energy costs
MDI ODC Chlorine recycling*	Reduction by 30 %
TDI Gas phase phosgenation	Reduction by 40 %
Chlorine recycling (catalytic oxidation)	Reduction by 50 %
HDI Gas phase phosgenation	Reduction by 65 %



Bayer Investor Presentation • Sal. Oppenheim European SRI Conference 2009 • Page 12

Innovative Climate Protection with MaterialScience Products



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

Bayer Investor Presentation • Sal. Oppenheim European SRI Conference 2009 • Page 13



EcoCommercial Building Climate Protection through Intelligent Building

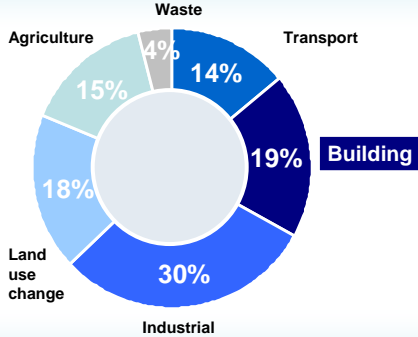
Manfred Rink
Bayer MaterialScience AG, VP Corporate Development
Head of New Business

Energy Efficient Materials and Solutions are in Focus of our Construction Business



Building Sector is one Significant Cause of World Greenhouse Gas Emissions

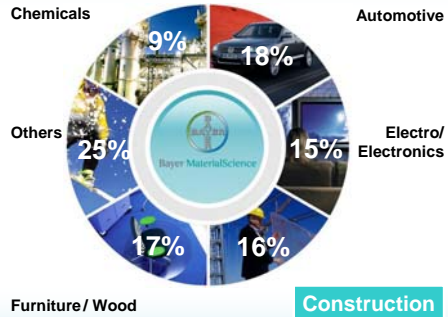
Emissions by Sector Group
Total estimate: 41,755 MtCO₂ equivalent



Basis: World Resources Institute, World GHG Emissions Flow Chart (2000)

Construction Sector a Key Customer Industry of MaterialScience

2008 Bayer MaterialScience sales by industry
Total: €9.738 billion



Construction Industry New Challenges - New Opportunities



New challenges for the construction industry



low-emission

energy-efficient

sustainable

modular

Solutions

Bayer MaterialScience

- Rigid polyurethane foam for heat and low-temperature insulation
- Lightweight, stable and transparent PCS sheets
- Components for durable, efficient photovoltaics
- Raw materials for low-VOC and VOC-free paints
- Coatings and adhesives
- Concept for climate-friendly building

Bayer MaterialScience - Innovative Materials for the Construction Industry



PUR Insulation Board



TPU Film Roof Underliner



PUR Metal Sandwich Panel



PUR Frame and Adhesives



Waterborn, Low-VOC* Coating



PC Solid and Multi-Wall Sheets

*VOC: Volatile Organic Compound

Bayer Investor Presentation • Sal. Oppenheim European SRI Conference 2009 • Page 17

The Bayer Eco-Commercial Building – An Innovative Concept

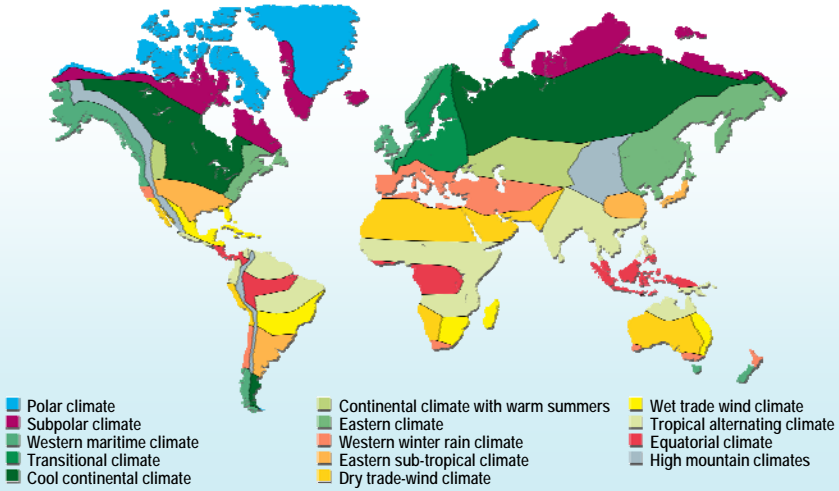


- **Climate-friendly building**
considering the local climate conditions
- **Integral planning**
dynamic building simulation
optimized building concept
use of adjusted materials
- **High energy efficiency**
- **Low operating cost**
- **Fast amortization**
- **Optional zero-emission building**
- **Global applicability**



Bayer Investor Presentation • Sal. Oppenheim European SRI Conference 2009 • Page 18

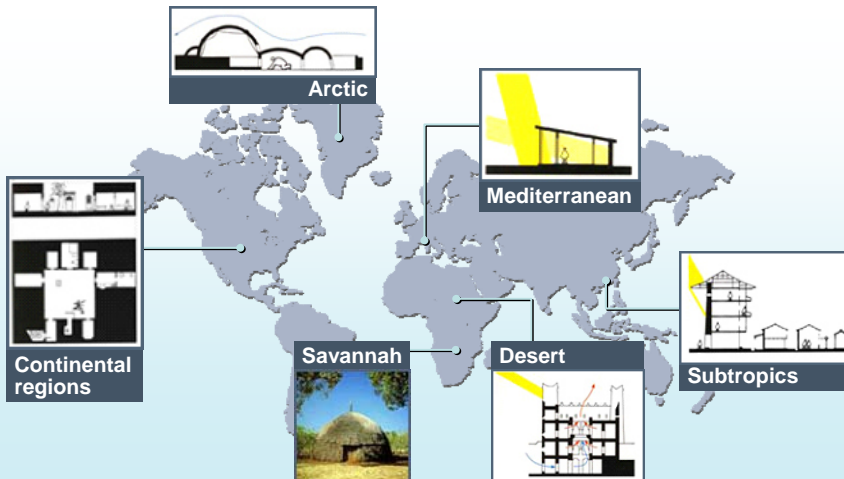
The Earth's Climatic Zones Global Approach – A Challenge



Source: E. Neef (simplified)

Bayer Investor Presentation • Sal. Oppenheim European SRI Conference 2009 • Page 19

Climate-friendly Construction Methods – A Traditional Concept Revitalized



Bayer Investor Presentation • Sal. Oppenheim European SRI Conference 2009 • Page 20

Specification and Projects Goals as Eco-Commercial Building (Bayer ECB)



Projekt Specification

- 40 office workplaces
- Conference rooms
- Show room for exhibitions

Project Goals

- Zero-emission office building
- Modular building concept
- Climate-optimized for local conditions
- Passive and active measures for saving and supplying energy

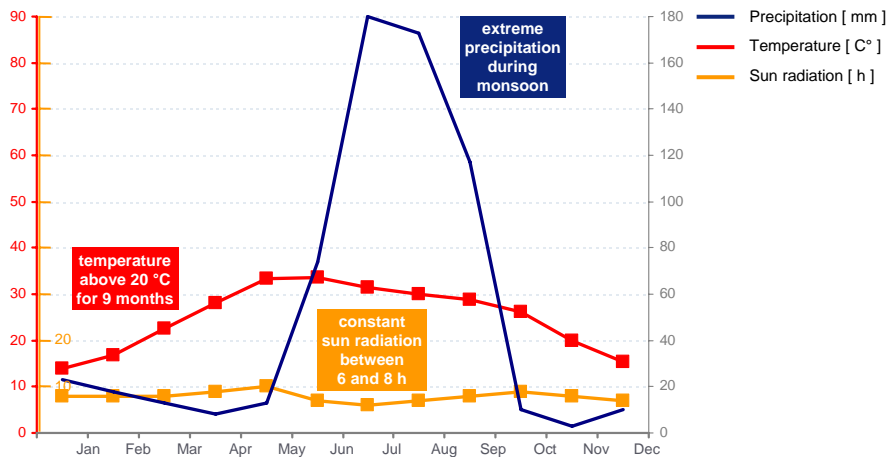
Bayer MaterialScience new regional headquarter in Greater Noida, India



Tropical Alternating Climate at our New Regional Headquarter near New Delhi



Local climate in Greater Noida, India

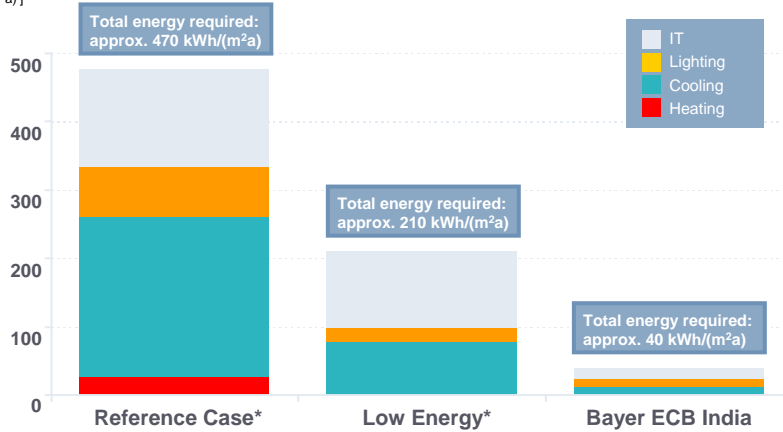


Energy Consumption Expected to be Reduced Significantly by Bayer ECB



Energy consumption in the simulated building (Indian Standard)

Specific energy requirement
[kWh / (m²a)]



* Source: United Nations Environment Programme, 2007

Bayer Investor Presentation • Sal. Oppenheim European SRI Conference 2009 • Page 23

Bayer ECB: Materials and Technologies for a Climate-Friendly Building



Building simulation

- Building architecture follows energetically requirements
- Optimized architecture as result of dynamic building simulation:
Window / façade – ratio, air tight building envelope, thermal insulation concept

Energy management

- Energy concept derived from dynamic building simulation
- Optimized: IT-system, cooling, lighting
- Remaining energy demand supplied renewable resources

Bayer MaterialScience construction materials

- Insulation: PUR-boards and metal sandwich panels
- Glazing: PC solid and multi-wall sheets
- Air tight building envelope: PUR-based adhesives and sealants
- Coatings: Waterborn + low-VOC-PUR systems for floor coatings + parquet
- Photovoltaic: TPU film, PUR frame, PUR adhesives

Global Applicability of the Bayer ECB Concept



Location	New Delhi	Kansas	Valencia	Dubai	Shanghai	Leverkusen
Climate Zones	Tropical alternating climate	Subtropical Eastern climate	Western winter rain climate	Dry trade-wind climate	Subtropical Eastern climate	Transitional climate
Energy Demand [kWh / m ² a]*						
* Total energy demand	40	33	30	39	36	35
+ PV-system area	650 m ²	500 m ²	450 m ²	450 m ²	700 m ²	850 m ²
CO₂ Emission	0	0	0	0	0	0
Amortisation [a]	9.5	8.7	6.6	6.5	12	11

Bayer Investor Presentation • Sal. Oppenheim European SRI Conference 2009 • Page 25

Lighthouse Projects in Process



Regional headquarter in Greater Noida, India

- Investor: Bayer MaterialScience
- Planned opening: 2010
- Energy supply: photovoltaic



Kindergarten in Monheim, Germany

- Investor: Bayer AG
- Planned opening: 2009
- Energy supply: geothermal energy + photovoltaic + thermal solar power



Bayer Investor Presentation • Sal. Oppenheim European SRI Conference 2009 • Page 26

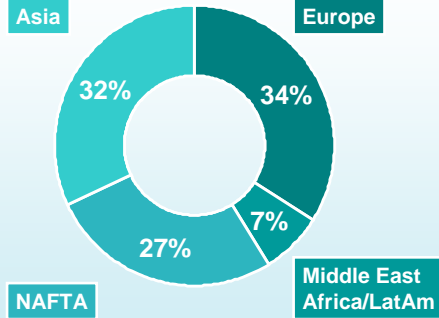
Reduction of Emissions in Building Sector an Interesting Business Opportunity



New Building Sector 2008*: approx. €555bn

Estimated CAGR 2008-2015: approx. 2%

commercial+industrial+office buildings



- Asia expected to further increase its share
- Need for energy efficiency expected to drive demand for low / zero emission buildings and insulation material
- We are in direct dialogue with the Original Decision Makers
- The Bayer ECB gives access to new business opportunities for our customers and us

Sources: Global Insight – Global Construction Outlook, BMS SPC-CI estimates

Bayer Investor Presentation • Sal. Oppenheim European SRI Conference 2009 • Page 27



Sal. Oppenheim European SRI Conference 2009 | Paris
Innovate For Climate Protection



Science For A Better Life