

Concrete Example: Activities of the chemical industry

German Business for Climate Protection

- Presentation of the results of an extended Technology Study by McKinsey Germany –**

“Costs and Potentials of Greenhouse Gas Abatement in Germany”

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German chemical industry indicators

	1995	2000	2006	2007*
Sales (in billion Euro)	112,3	135,0	162,2	174,4
Production (change against previous year in %)	2,1	2,7	3,7	4,5
Employment (in 1000)	536	470	436	437
Exports (in billion Euro)	51,8	76,6	119,3	131,2
Imports (in billion Euro)	32,3	52,7	83,9	95,6
Fixed asset investments (in billion Euro)	5,8	6,8	6,1	6,5
R&D expenditure (in billion Euro)	5,3	7,1	8,2	8,2

Source: Statistisches Bundesamt, VCI

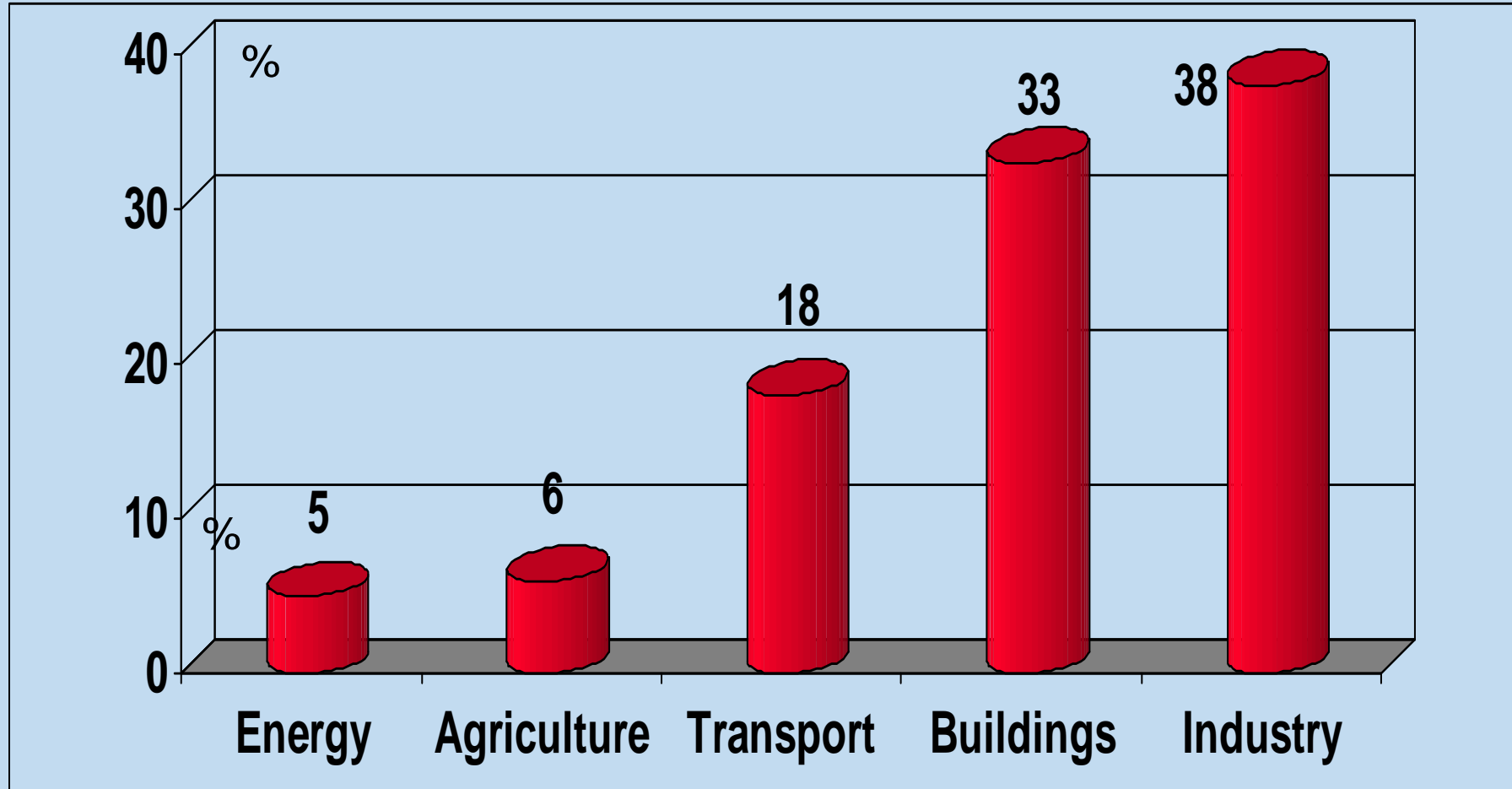
* Estimate

- **Annual Electricity Consumption: 50 Mio. MWh**
 - about 20% of Industry electricity consumption
 - about 10% of total German electricity consumption

- **Annual primary energy consumption:**
 - 110 Mio. MWh natural gas (energy and feedstock)
 - 10 Mio. MWh oil (only energy)
 - 6 Mio. MWh coal

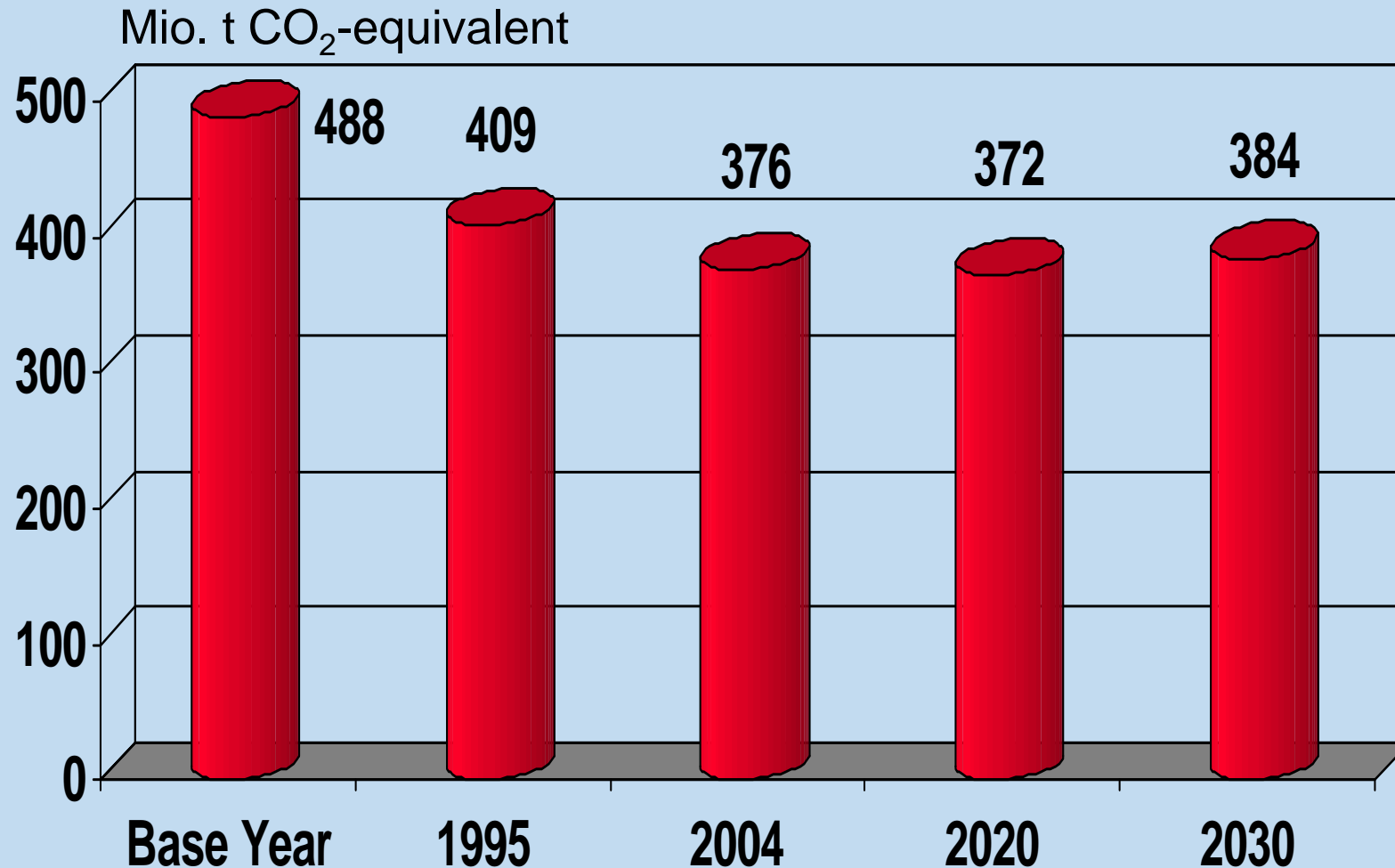
- **Annual Energy costs: about 4 Billion Euro**

CO₂-emissions* in Germany 2004



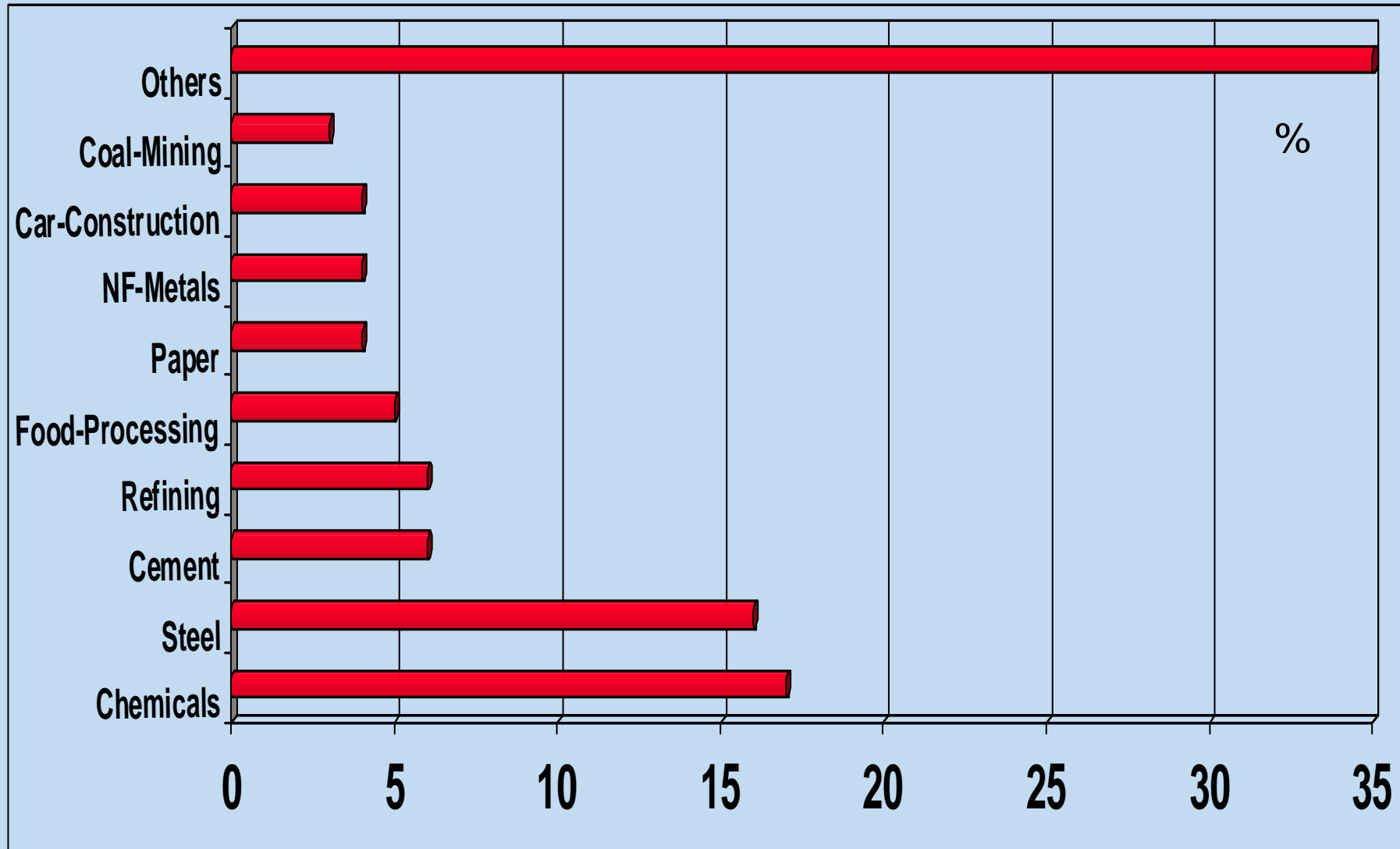
*Numbers contain direct emissions and indirect emissions calculated from the electricity consumption

GHG-emissions* in the German Industry

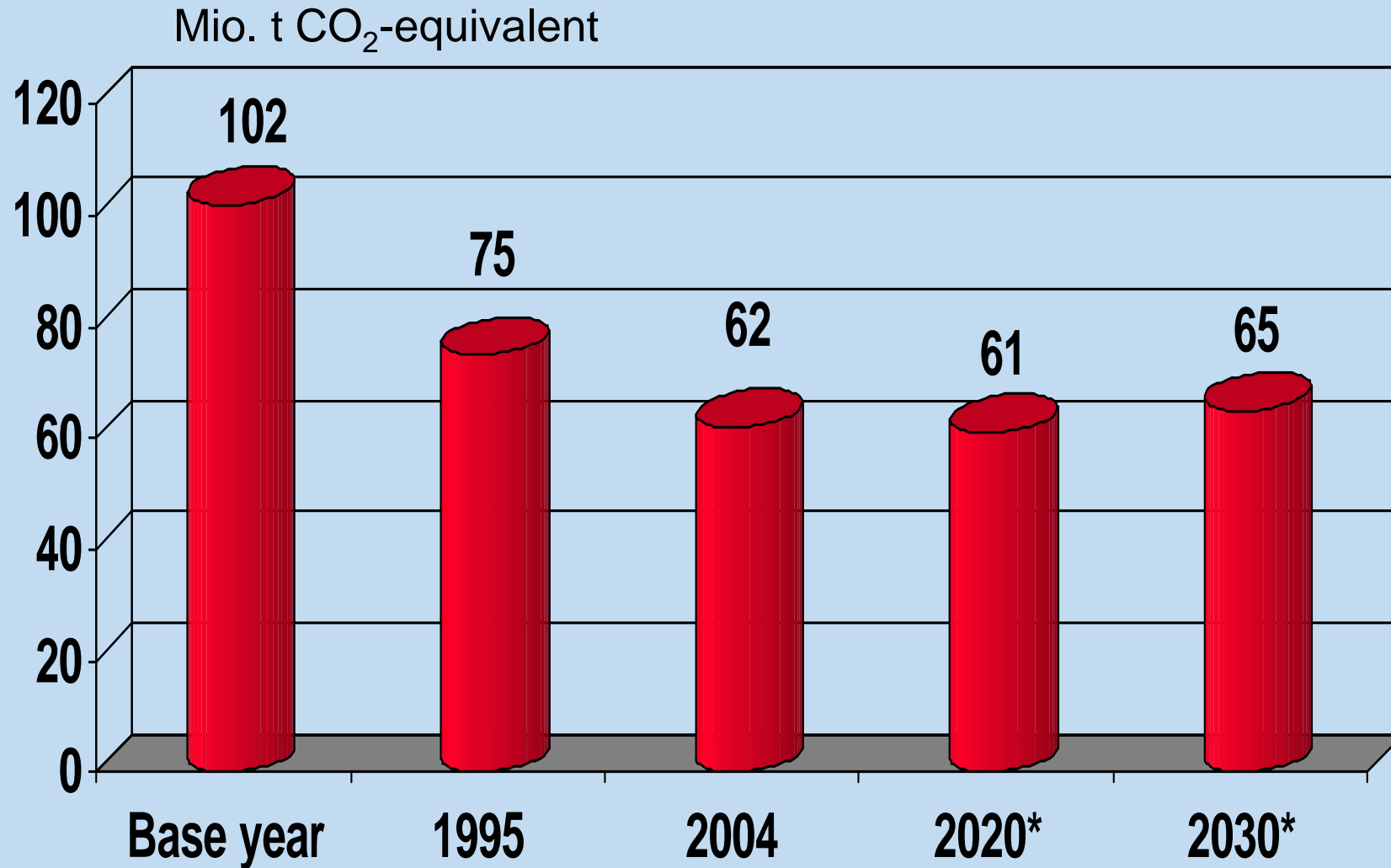


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GHG-Emissions in 2004 in industrial sectors (%)



GHG-emissions in the German Chemical Industry



* If all reduction options with costs less than 20€/t(CO₂e) are realized

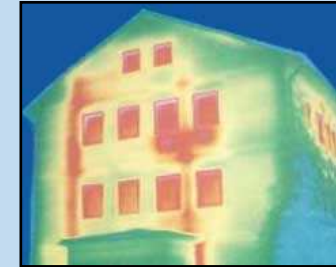
- **Increased and optimized use of CHP**
- **Fuel switch from coal/lignite to gas**
- **Optimized energy management**
- **Optimization of processes**
- **N₂O-destruction in Adipidic Acid production**

- **GHG-emissions in the German chemical industry will be constant until 2030**
- **Although there will be an increase in production and sales by about 2% per year**
- **Compensation of GHG-emissions increase induced by increased production by**
 - Further reduction of N₂O-emissions
 - Further optimization of processes
 - More efficient motors, pumps
 - Additional use of CHP
 - Further fuel switch
 - (CCS)

- **Because of already realized high (energy) efficiency in chemical processes the reduction potentials in the chemical production will be very limited**
- **Importance of chemical industry as provider of products and technologies for energy efficiency and GHG-reductions in other sectors (energy production, households, transport) will increase**
- **Reductions in other sectors by products and technologies of the chemical industry will be much higher than emissions in processes to produce these products**

Products of the Chemical Industry for climate Protection

Polystyrene or Polyurethan insulation materials minimize energy consumption in buildings



Plastics reduce weight of cars and by this the fuel consumption of cars

Special Chemicals optimise tires and reduce fuel consumption of cars



Polyurethanfoam for insulation of refrigerators and optimize the energy efficiency



Flatscreens on liquid crystal basis reduce electricity consumption

Innovative tensides make it possible to reduce washing temperature and by this to reduce energy consumption



Polykrystalline Silicon as base material for generating renewable electricity by solar light

Biodiesel is produced out of biomass by chemical processes and with the help of chemicals



Thank you for your Attention

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