The future needs the railways.
For a cleaner environment.

Green mobility.
The challenge of climate change

- Increasing growth in the world population and global economy
- Corresponding depletion of natural resources and increase in environmentally-harmful emissions
- Without counter measures: increase in annual CO₂ emissions to around 85 gigatons in 2050

Source: UN Population Division

Source: Stern Review

World population (in billions)

1950: 2.5
1975: 4.1
2000: 6.1
2015: 7.3
2025: 8.0
2050: 9.2

Worldwide CO₂ emissions (in gigatons per year)

2000: 42 Gt
2050: 85 Gt

Source: Stern Review
The spread of urbanization calls for attractive, environmentally-friendly and economic transportation solutions in order to ensure the competitiveness and appeal of urban regions in the long term.
With its solutions portfolio, Siemens can directly impact around 26 gigatons of the annual energy-related CO₂ equivalents (CO₂e) of greenhouse gas (GHG) emissions.

Around 5.3 gigatons of this can be ascribed to transportation-related emissions.

At around 2%, railways account for the smallest component of all transportation modes.

Source: IEA World Energy Outlook, Vattenfall, Siemens
We care for attractive and clean railway systems: Green mobility.

Intelligent solutions for more environmental sustainability:

**Eurorunner**  
13 dB(A) quieter and up to 16% more economical

**Velaro**  
Only 0.33 liter of fuel per seat per 100 km

**ZLS 901**  
Route setting system  
Fewer stops mean lower energy consumption

**Sitas SES**  
Saves up to 300 tons CO$_2$ due to recovered braking energy

**Syntegra trucks**  
Energy-efficient, oil-free and lightweight

**Metro Oslo**  
With 95% recyclability, valuable to the end

**Transrapid**  
75% cleaner than an airplane at 400 km/h

**Combino Plus**  
Eco-friendly large space streetcar for congestion-free city traffic
Metro Oslo

- 94.7% recyclable components and materials
- 30% lower energy consumption than previous model due in part to lightweight construction and regenerative brakes
- Environmental labeling to ISO 14021 standard

With 95% recycling rate, valuable to the end
100% Combino Plus low-floor streetcars

- Energy savings up to 30% through regenerative braking system
- No wear on brake linings due to electric braking
- Over 90% recyclable
- Reduced noise emission

Eco-friendly space saver for congestion-free urban traffic

© Siemens 2010
Industry Sector, Mobility Division
Desiro UK commuter trains

- Water-soluble paints and solvent-free coatings
- Recycling rate 96.8% (material recycling: 89.9%, thermal recycling: 6.9%)
- Reduced disposal costs

Environment-friendly right from the start
Syntegra bogie

- Fully-integrated traction, running gear and braking technology
- Energy-savings up to 26%, e.g. through
  - Elimination of gearbox
  - Lightweight construction
  - Regenerative brake system
- Fewer emissions
  (oil, braking dust, abraded matter, noise)
- Wear-resistant and easy maintenance

Energy-efficient, oil-free and lighter in weight
Velaro Platform
To fulfill Europe’s climate protection targets

- Converted energy consumption of only 0.33 liters of fuel per passenger per 100 km
- Mineral oil replaced with alternative, environmentally-compatible coolant in the transformers (e.g. with ICE 3 and Velaro E)
- Wooden floors from sustainable forestry
- Environment-friendly refrigerant in the HVAC systems
- Completely recyclable trainset

Only **0.33 liters** per passenger / 100 km
The high speed train driving resistance depends mainly on its aero dynamical characteristics.

The driving resistance increases e.g. approx. 20% with the increase of the speed from 250 km/h to 280 km/h.

Improvements in the aerodynamic result in significant reduction of the driving resistance. This can be achieved by improvements in the roof, under floor, coaches transitions, etc.
We are committed to sustainability

- Active member in important national and international organizations
- Listing in the Dow Jones Sustainability Index for the eighth time in succession
- Global certification of Siemens’ EH&S standards for projects, development and production sites according to:
  - ISO 14001
  - OHSAS 18001
Sustainability is part of our corporate philosophy

“I won’t sell the future for quick profits”

Werner von Siemens, 1816–1892
Thank you for your attention!