

Full Costs and Benefits of Sustainable Transportation

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Goal of Sustainable Transportation

“To ensure that our transport systems meet society’s economic, social and environmental needs while **minimizing** their **undesirable impacts** on the economy, society and the environment”

Overview

- Benefits of Transportation
- Full Costs of Transportation
- One Way: Swiss Heavy Vehicle Fee
- Another Way: EU, Canada, U.S.
- Conclusions

Benefits of Transportation

- Enhancing economic, social, personal well-being
- Increasing access to health care, education, employment, recreation, wider range of consumer goods
- Improving standards of living all over globe
- Shape and prosperity of modern life depend heavily on efficient transportation

Negative Impacts of Transportation

- Fatalities, injuries
- Noise, air, water pollution
- Congestion
- Greenhouse gas emissions
- Diminishing energy resources
- Biological, ecosystem damage
- Large land use

Full Costs of Transportation

- Infrastructure costs
- Transport vehicle costs
- Accident and safety costs: partly external costs
- Environmental costs: all external costs

Full Costs Switzerland (2003)

	Road	Rail
TOTAL (billion US\$)	59.2	9.4
Paid by (%):		
• Users	89.6	65.5
• Government	1.6	30.2
• Society at large	8.8	4.3
Per passenger-mile (cents)	6.4	2.5

External Costs Switzerland (2005)

	Road	Rail
Accidents	1.835	27
Noise	1.001	67
Health	1.668	110
Building damage	249	14
Climate	1.143	6
Other costs	824	89
Nature-landscape	625	100
Congestion	1.128	---
TOTAL (million US\$)	8.473	413

“The Increasing Transit Traffic Concerns Swiss Citizens”

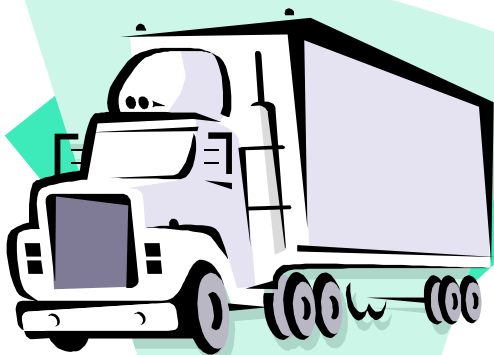


“Fight for Quality of Life”



Heavy Vehicle Fee Objectives

- Transfer to rail
- Polluter-pays principle
- Protection of environment



Heavy Vehicle Fee Design

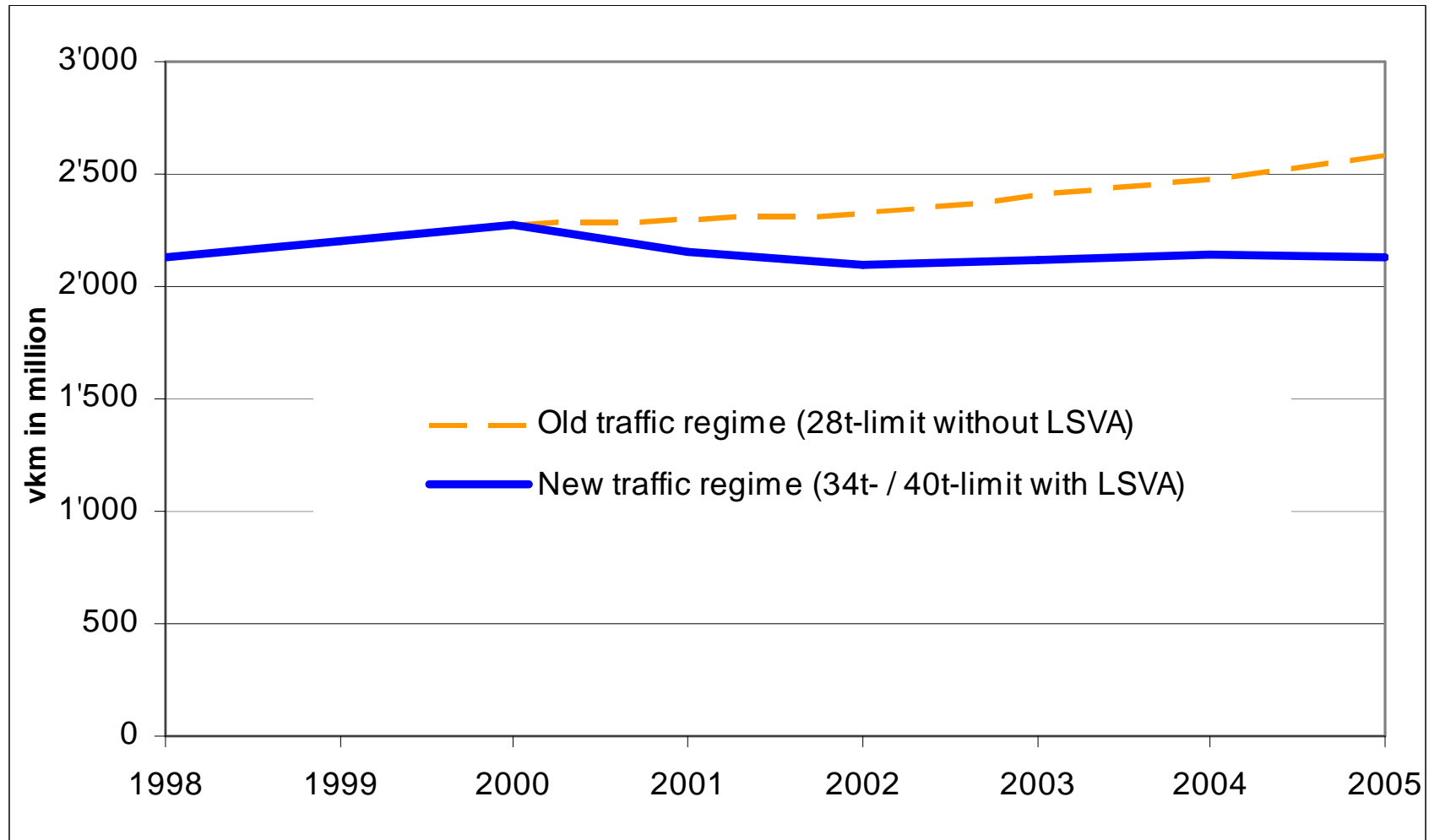
- Performance-related:
 - Distance
 - Weight
 - Emissions (2009):
 - Euro 0/1/2: 1.8 €Cts/tkm
 - Euro 3: 1.65 €Cts/tkm
 - Euro 4/5/6: 1.5 €Cts/tkm
- Vehicles admissible weight > 3.5t
- For use of entire road network

Use of Revenue

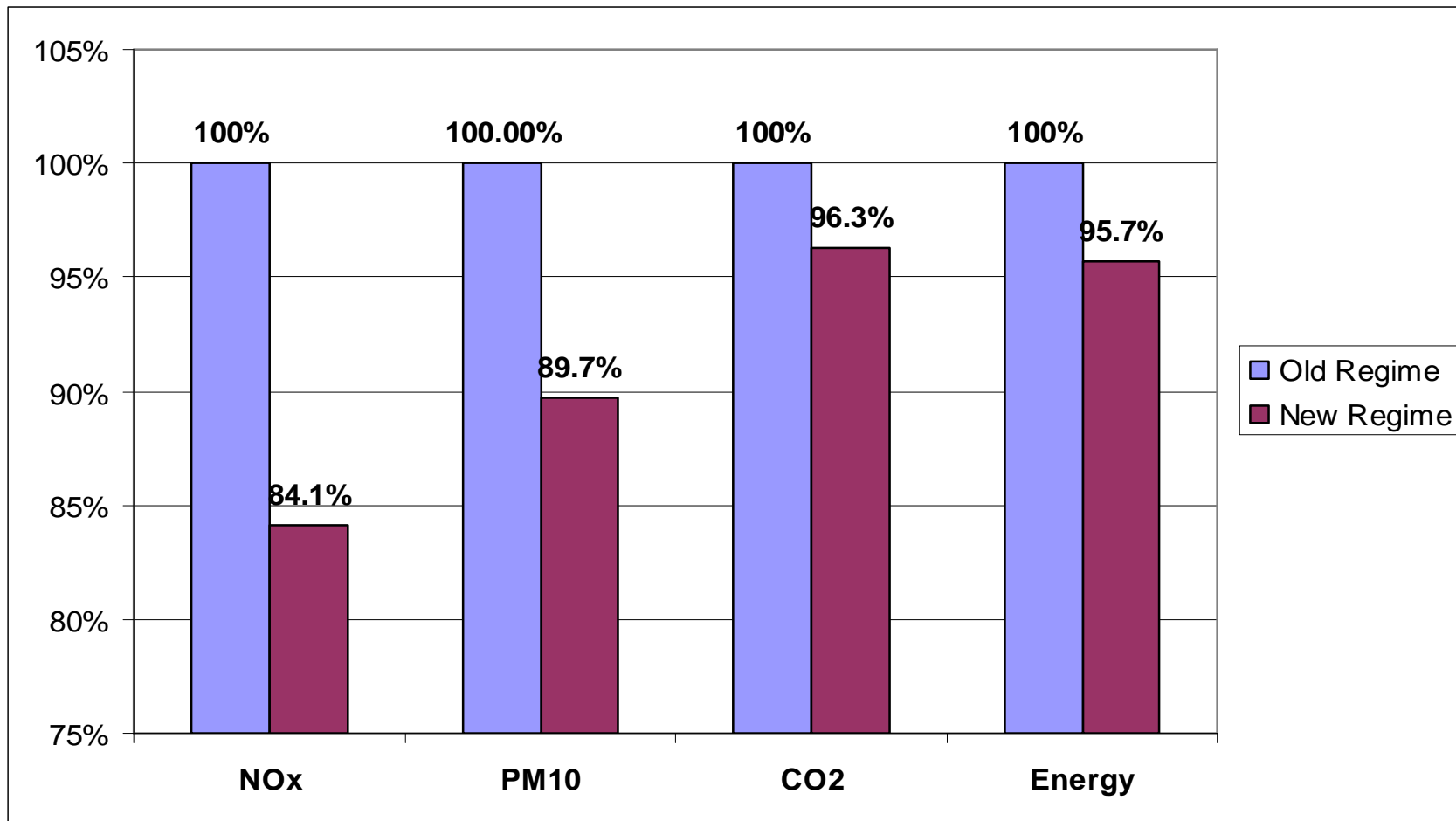
Revenue 800 million € (2006):

- 2/3 Government (Public Transport Fund)
 - New Rail Links across Alps (2 base tunnels)
 - Rail 2000
 - Noise mitigation
 - High speed links
- 1/3 Cantons

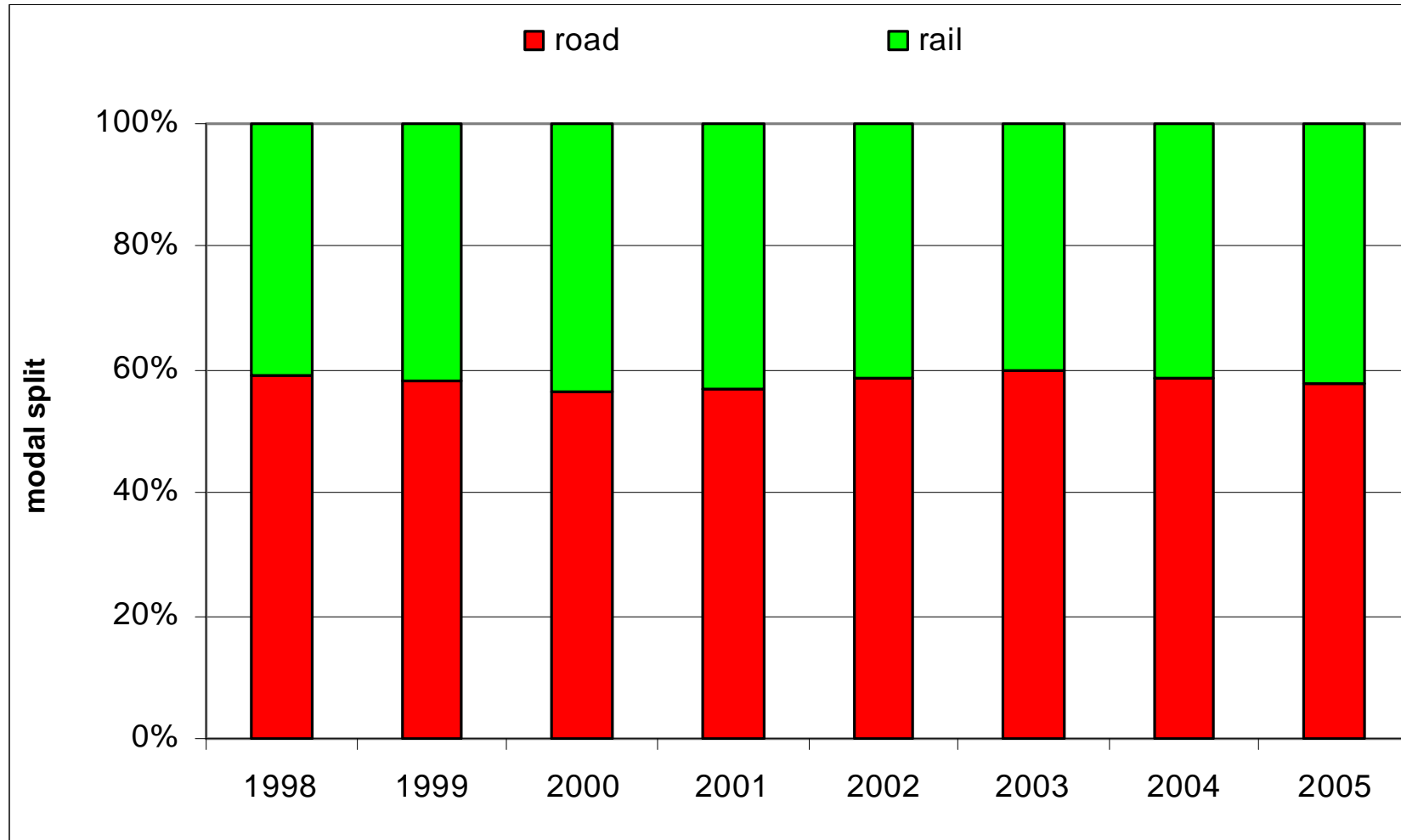
Impacts on Driving Performance



Impacts on Environment



Impacts on Modal Split



Effects on Transport Sector

- Road: vehicle fleet modernization
- Rail: freight share slightly improved
- Consumer prices: 0.11% increase

<http://www.are.admin.ch/themen/verkehr/00250/00461/index.html?lang=en>

European Union

- Greening Package (2008): Strategy for internalization of external costs
- Truck Tolling (Eurovignette): Austria (2004), Germany (2005), Czech Republic (2007)
- Urban Road Pricing: Bergen (1986), London (2003), Stockholm (2007), Oslo (2008), Milan (2008)

http://ec.europa.eu/transport/strategies/2008_greening_transport_en.htm

Canada

- Transport Canada: Sustainable Development Strategy (2004-2006)
- Investigation of the Full Costs of Transportation (2008)

<http://www.tc.gc.ca/pol/EN/aca/fci/menu.htm>

United States of America

- Department of Transportation: Congestion Initiative (2006) - Urban Partnership Agreements
- HOT-lanes

<http://www.upa.dot.gov>

Conclusions

- Consider full costs of transportation
- Internalize external costs by applying performance-related market-based instruments
- Transport users should get what they pay for and pay for what they get