

Market-based Instruments Applied to Transportation Issues: Swiss Heavy Vehicle Fee

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Overview

- Full Costs of Transportation
- Externalities, External Costs
- Market-based Instruments
- Swiss Heavy Vehicle Fee (HVF)
- Conclusion and Discussion

Inefficiencies in Transportation

“... one of the important reasons why imbalances between modes of transport and inefficiencies have arisen is because transport users have not been adequately confronted with the full costs of their activities. As prices do not reflect the full social cost of transport, demand has been artificially high. If appropriate pricing and infrastructure policies were to be pursued, these inefficiencies would largely disappear over time.”

Source: EU Mid-term Review of White Paper (2006)

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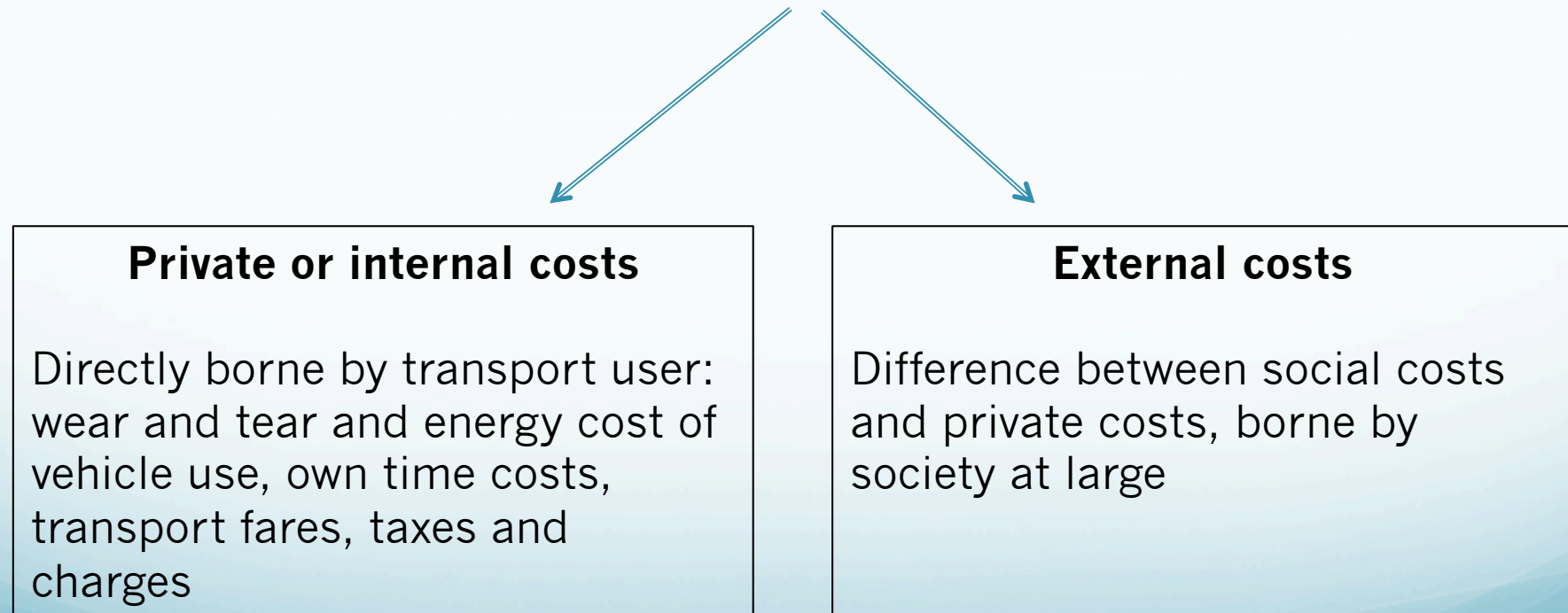
Source: EU Mid-term Review of White Paper (2006)

Negative Impacts of Transportation

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

Full Social Cost of Transportation

All costs occurring due to provision and use of transport infrastructure: wear and tear of infrastructure, capital, congestion, accident, environmental costs



Classification of Costs of Transport

Cost of categories	Social costs	
	Internal/Private costs: borne by transport user	External costs: borne by society or other transport users
Transport operating expenditure	Fuel and vehicle costs Tickets/fares	Costs paid by other users or by society
Infrastructure use costs	Costs covered by infrastructure charge Costs covered by tickets/fares	Costs partly uncovered
Accidents costs	Costs covered by insurance, own accident costs	Uncovered accident costs (e.g. pain and suffering imposed on others), administrative and police costs
Noise costs	Own disbenefits	Costs borne by people exposed to noise (noise disturbance, health effects)
Air pollution costs	Own disbenefits (depending on individual situation)	Costs borne by people exposed to air pollution (health effects)
Climate change costs	Own disbenefits (including future generation, i.e. children)	Costs borne by society and by future generations
Congestion costs	Own time costs	Delays/time costs imposed on others

Source: EU Green Paper "Towards fair and efficient pricing in transport" (1995)

External Costs CH: 9 billion CHF

	Road (94%)	Rail (6%)
Accidents	2'076	24
Noise	1'262	85
Health	1'970	141
Building Damage	298	19
Climate	1'210	3
Nature-Landscape	747	121
Other Costs	896	102
Total (million CHF, 2009)	8'459	495

Source: ARE 2013

Prices in Transport Sector

- Little relationship between amount 'consumed' (distance or resources) and total price
- Mismatch between transport prices paid by users and underlying costs
- Solution: Applying '**user-pays**' and '**polluter-pays**' **principles** by using market-based instruments

Price-based Market Instruments

- User charges
- Emission charges or fees
- Changing taxes
- Giving subsidies

Market-based Instruments applied for Internalization

- Lead to more efficient use of infrastructure
- Reduce negative side effects of transport activity
- Improve fairness between transport users and transport modes
- Change behavior
- Flexible, often used in policy mix with other instruments (regulations with command/control measures)

Heavy Vehicle Fee in CH since 2001



- Shift from Road to Rail
- Protection of Environment
- Internalizing External Costs

Design of Swiss Heavy Vehicle Fee

- Performance-related:

Distance

Weight

Emissions (2009):

• Euro 0/1/2:	3.07	Cts/tkm
• Euro 3:	2.66	Cts/tkm
• Euro 4/5/6:	2.26	Cts/tkm

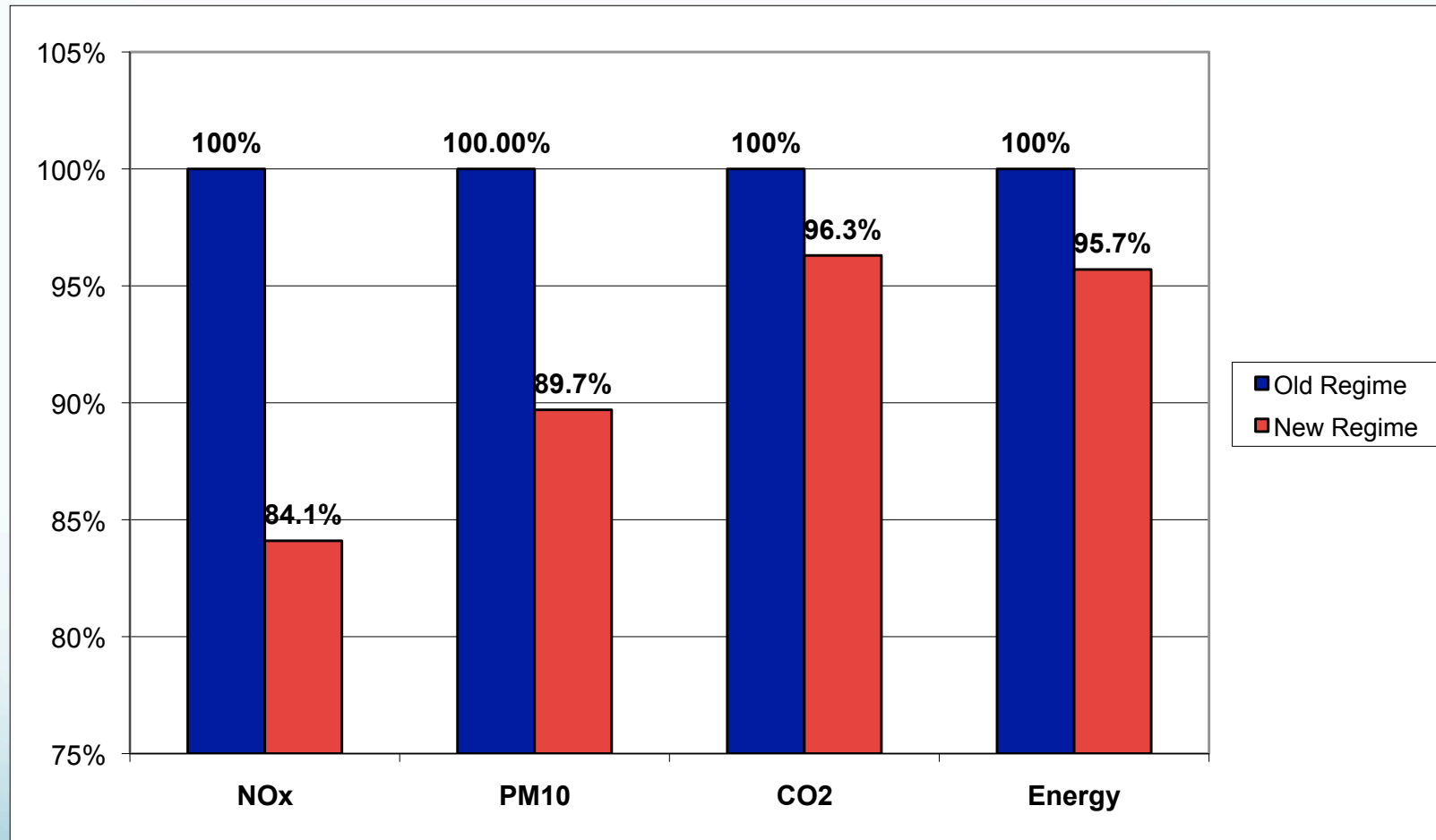
- Admissible Weight > 3.5t
- Use of all Roads in CH

Use of Revenue HVF

Current Revenue CHF 1000 million/annum:

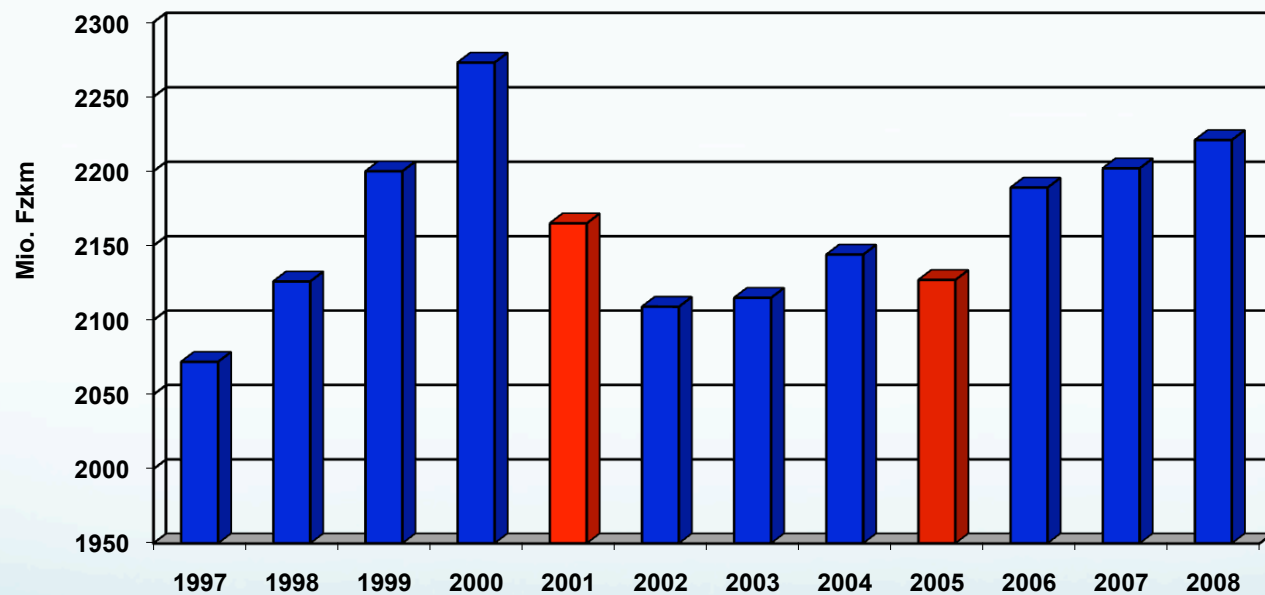
- 2/3 Government (Public Transport Fund, FinöV)
 - New Rail Links across Alps (2 base tunnels)
 - Rail 2000
 - Noise Mitigation
 - High Speed Rail Links
- 1/3 Cantons

HVF - Impact on Environment



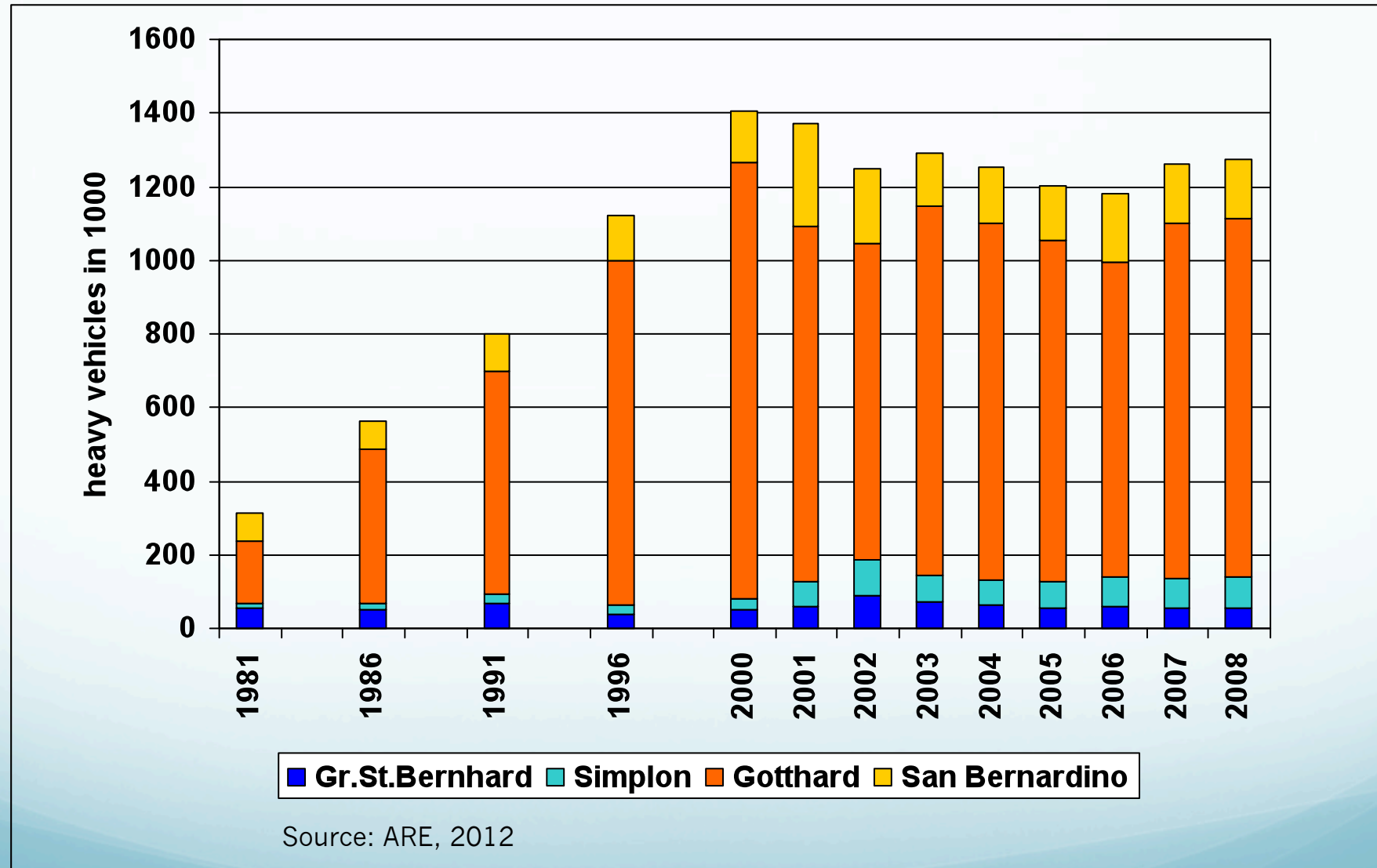
Source: ARE, 2012

HVF - Effect on Vehicle Kilometers



Source: ARE, 2012

HVF - Effect on Alpine Trips



Road Charging Globally

- **Truck Tolling:** Austria (2004), Germany (2005), Czech Republic (2007), Slovakia (2010), Poland (2011)
- EUROVIGNETTE (as of 2013): External costs of air pollution, noise and congestion may be charged
- **Urban Road Pricing:** Singapore (1975), Bergen (1986), London (2003), Stockholm (2007), Oslo (2008), Milan (2008), HOT-lanes in US

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

Sources

- <http://www.are.admin.ch/themen/verkehr/00250/00461/index.html?lang=en>
- http://europa.eu/rapid/press-release_PRES-11-300_en.htm
- http://ec.europa.eu/transport/modes/road/road_charging/charging_hgv_en.htm
- <http://www.eea.europa.eu/publications/road-user-charges-for-vehicles>

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