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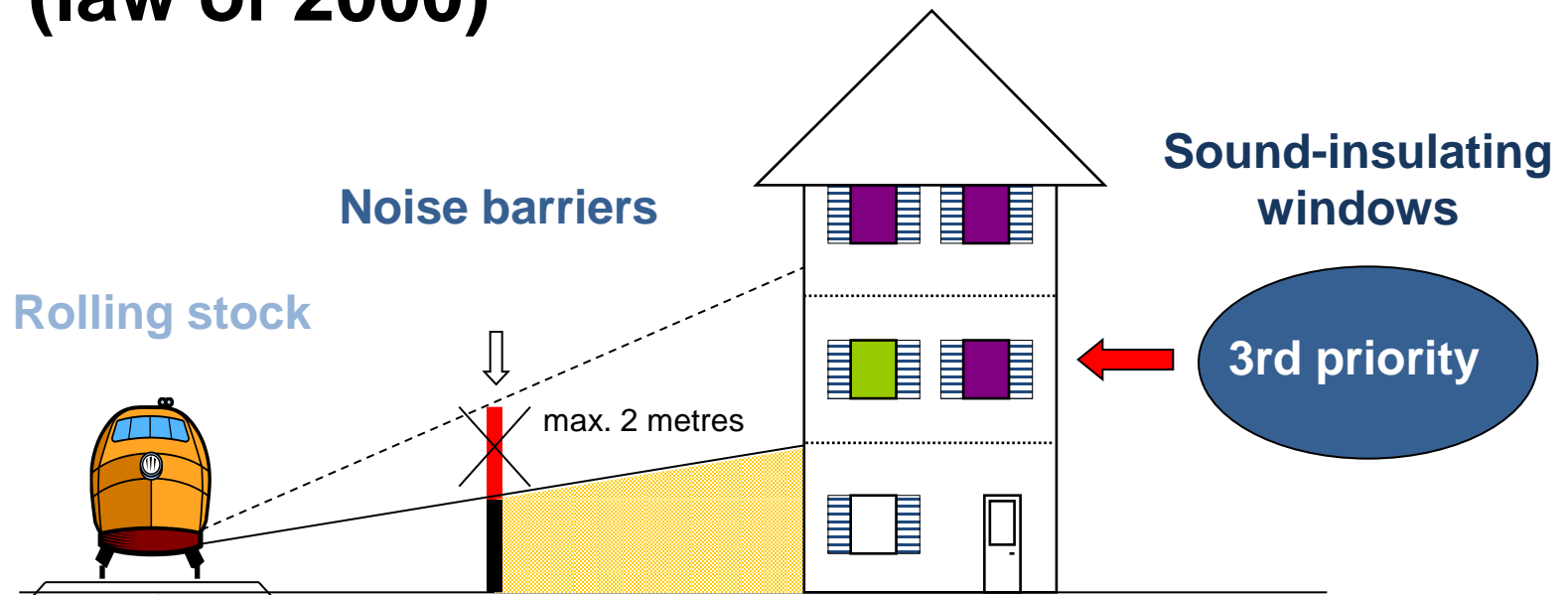
**Federal Office of Transport**

# **Freight noise reduction: The Swiss ban on cast iron blocks**

Dr. Rudolf Sperlich  
11 June 2013



# Programme of measures (law of 2000)



1st priority

2nd priority

3rd priority

Investment credit:  
CHF 1.85 billion

Statutory period: 2015

**Legal objective:**  
Protection for at least 67% of the affected  
population until 2015



# What was achieved by the end of 2012?

- **Rolling stock**

- all CH passenger coaches (normal gauge) retrofitted
- all planned SBB freight wagons retrofitted
- around 50% of private freight wagons retrofitted
- **More than 8,000 freight wagons in CH retrofitted!**



- **Noise barriers:**

290 km projected  
250 km planning permission issued  
210 km built



- **Sound-insulation windows:**

81,000 windows projected  
65,000 planning permission issued  
27,000 installed





# K-Blocks: better than expected!

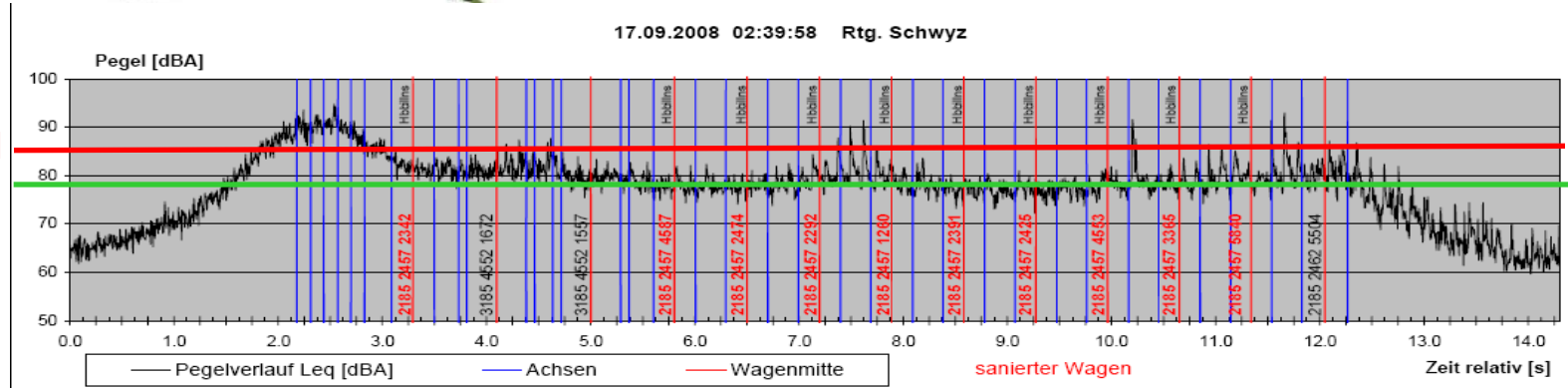


target CH: 86.0 dB[A]

## Measurements of retrofitted freight wagons in Steinen:

- Eaos/Eanos: 80.7 db[A]
- Hbils/Hbbillns: 79.2 db[A]
- Res: 81.1 db[A]
- Shimmns: 81.5 db[A]

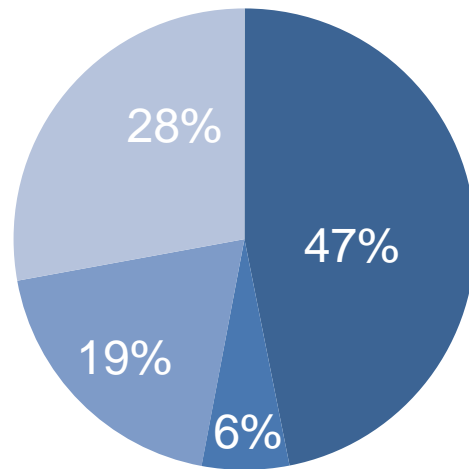
target CH  
Hbbillns



- Retrofitting (K-block) = more noise reduction than expected!
- Clearly within noise limits of European TSI!



# Mix of freight wagons in CH (2011): proportion of CI-type brake blocks



- low-noise wagons CH
- low-noise international wagons
- noisy CI-type wagons CH
- noisy CI-type wagons international

Impact of noise protection in CH:

(reduction of percentage of residents affected by noise which is above the maximum noise limit values):

- legal objective: 67 %
- prediction: 62 %

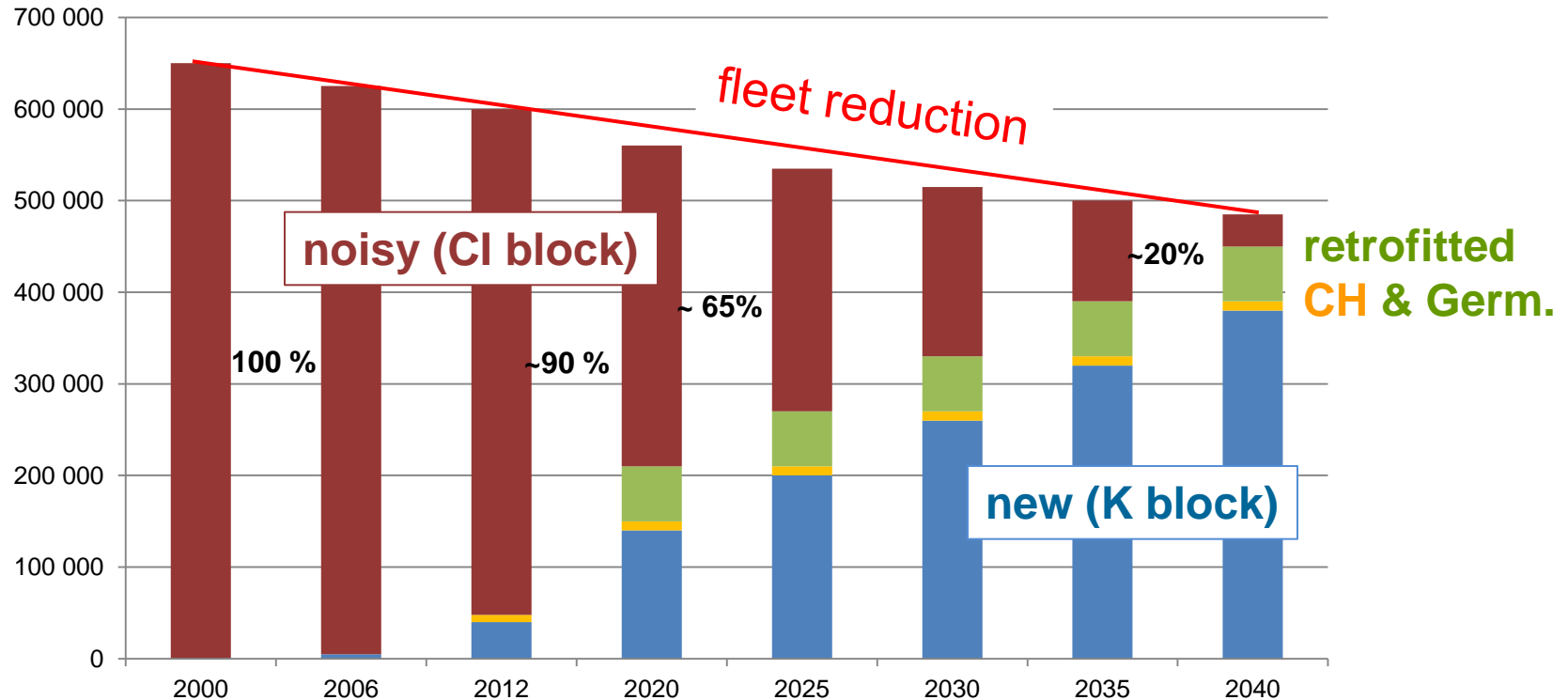
→ The Swiss parliament demands a higher noise protection impact





# Freight wagons in Europe

No CI-ban, average scenario,  
Source: EC, incl. retrofitting by DB Schenker





# Swiss position

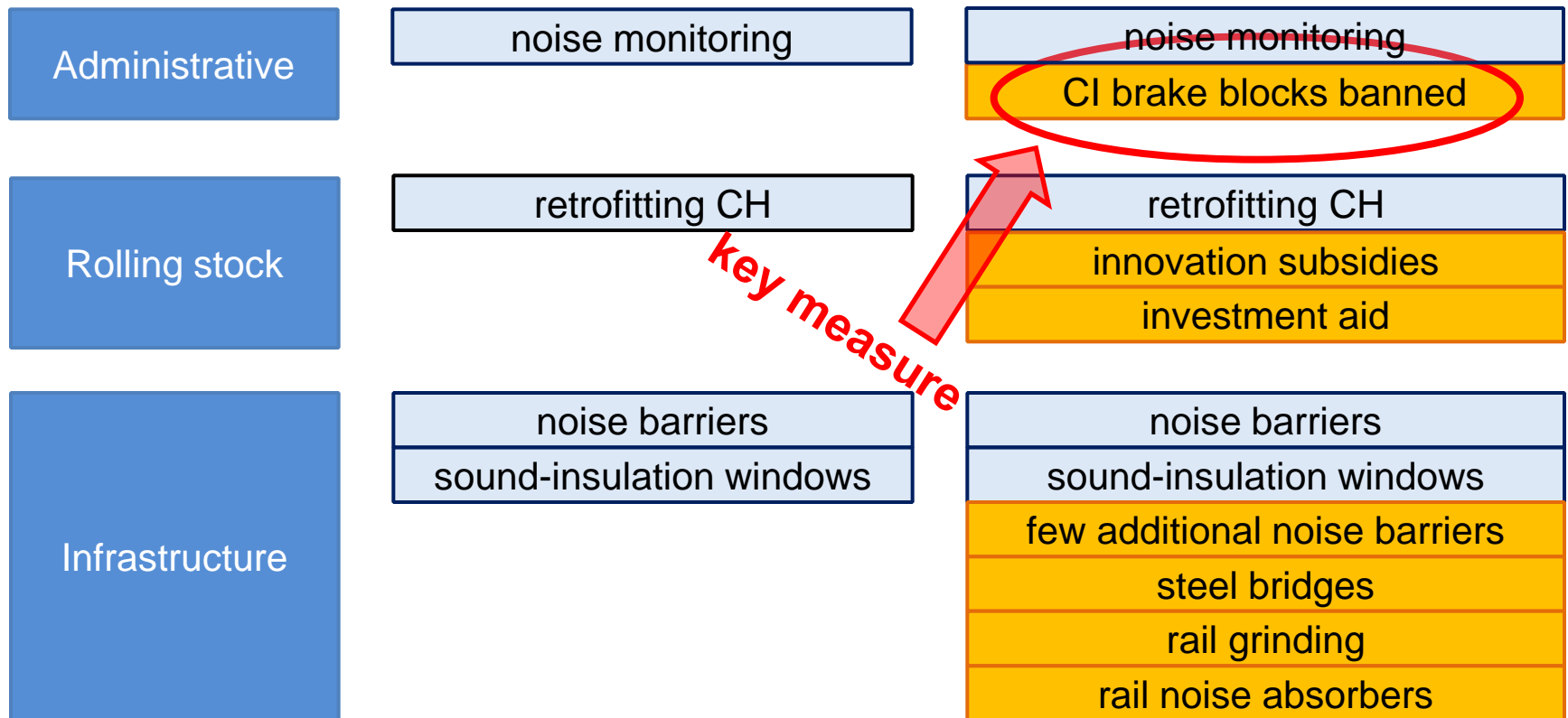
- The Swiss legal objective for the impact of noise reduction can only be achieved by reducing the number of noisy foreign freight wagons
- Further development of the European freight traffic railway network means that noise emissions must be reduced (fully low-noise trains)
- Noise-related track access charges  
NRTAC = help financing the retrofitting / LCC  
NRTAC  $\neq$  incentive potential
- No regulatory pressure means no real improvement until 2040 !
- The **ban on noisy freight wagons** is the new key measure in the Swiss railway noise abatement strategy



# Additional measures in CH

previously  
(1<sup>st</sup> package)  
until 2015

new  
(2<sup>nd</sup> package)  
until 2025





# Ban on noisy wagons from 2020

... the key measure for Switzerland

- ... will be brought into force based on the TSI noise limits for existing freight wagons
- ... meets general agreement between the EC and the railway sector
- ...will be coordinated with the EC, based on impact study





# Noise-related track access charge (NRTAC)

→ The noise related price advantage for freight wagons was doubled in Switzerland in 2013 (new system of TAC)!

- reduction of access charge:  
K- or LL-blocks: CHF 0.02 per axle-km  
disc brakes: CHF 0.03 per axle-km
- The advantage is valid for **all low noise wagons**: new, refitted and foreign
- No maximum, no malus





# Noise-related track access charge (NRTAC)

- The noise related price advantage is compensated by an overall levelling of the track access charge (all trains)
- Pragmatic, simple system through self-declaration of RUs  
→ wagon owners with low-noise rolling stock must get price advantage through contracts
- CI-ban improves the position of the wagon owners: the demand in low-noise wagons will increase





# Financing by frequent passages on the (Swiss part of) corridor 1

CHF 0.02 / axle-km → CHF 0.08 / wagon-km

Stretch of 300 km: price advantage CH = CHF 24

with LL-blocks:

Retrofitting costs CHF 2,400<sup>1</sup> / CHF 24 (300 km)

= 100 transit passages

**100 transit passages within 6 years**

**= 16 passages per year**

<sup>1</sup> KCW, Steer Davier Gleave, TU Berlin etc.



# Ban on noisy freight wagons (1)

Photo © SBB

- In CH, around 70% of noisy foreign freight wagons are of German origin
- Not all European wagons have to be retrofitted:  
200'000 low-noise wagons in 2020 will be sufficient
- The railway sector benefits from the new Swiss base tunnels:
  - faster and reduced gradients
  - improvement of productivity
  - rail transport is more attractive





# Ban on noisy freight wagons (2)

- The CH government can delay the 2020 ban by two years in justified cases
- Widespread request among the public and in the Swiss parliament for a ban by 2017
- The decision of the Swiss parliament is expected by the end of 2013





# Conclusion 1

- Retrofitting of freight wagons is highly effective if the train is fully equipped.
- The high proportion of loud foreign freight wagons limits the effect of Swiss measures.
- Without regulatory pressure → no real improvement until 2040/50.

Photo © SBB

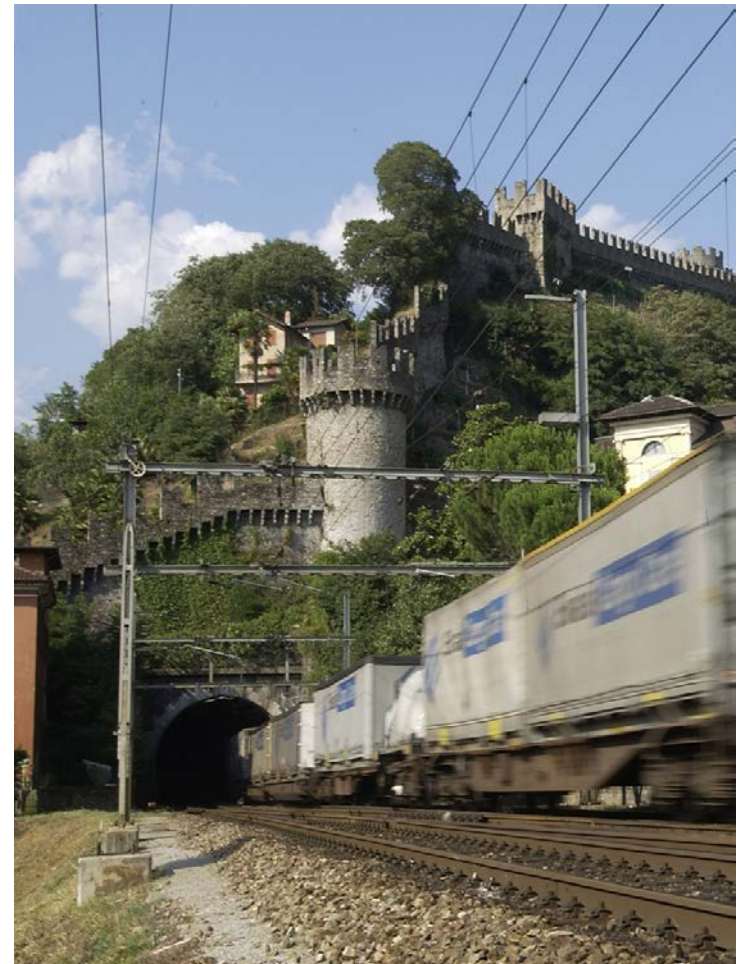





# Conclusion 2

- The key measure will be the ban on noisy freight wagons from 2020 (noise emission limits TSI)
- Swiss Parliament will pass the extended law by the end of 2013
- NDTAC in corridor 1: can compensate retrofitting costs and LCC disadvantage by frequent passages

Photo © SBB








**Switzerland has made strenuous efforts and serious investments to prevent protests against railway expansion.**

**Railway noise does not stop at the national borders. Only through joint action can we find a solution. It is now up to our European neighbours to play their part.**



An abstract graphic consisting of several thick, flowing lines in shades of orange and yellow, curving from the left side towards the center. These lines are layered, creating a sense of depth and movement. In the background, there are thin, light-colored concentric arcs radiating from the center, suggesting a sound wave or a stylized sunburst.

# 8<sup>th</sup> UIC Railway Noise Workshop

11 June 2013  
Paris, UIC Headquarters