



Conférence Européenne
des Directeurs des Routes

Conference of European
Directors of Roads

STEER

CEDR: Noise & Nuisance call 2019, final Event

07.06.2022

STEER-Project overview

**STEER: Strengthening The
Effect of quieter Tyres on
European Roads**

Who has done it?



Questions:

Go to www.menti.com and use the code **5026 3527**

Mentimeter

Instructions

Go to
www.menti.com

Enter the code

5026 3527



Or use QR code



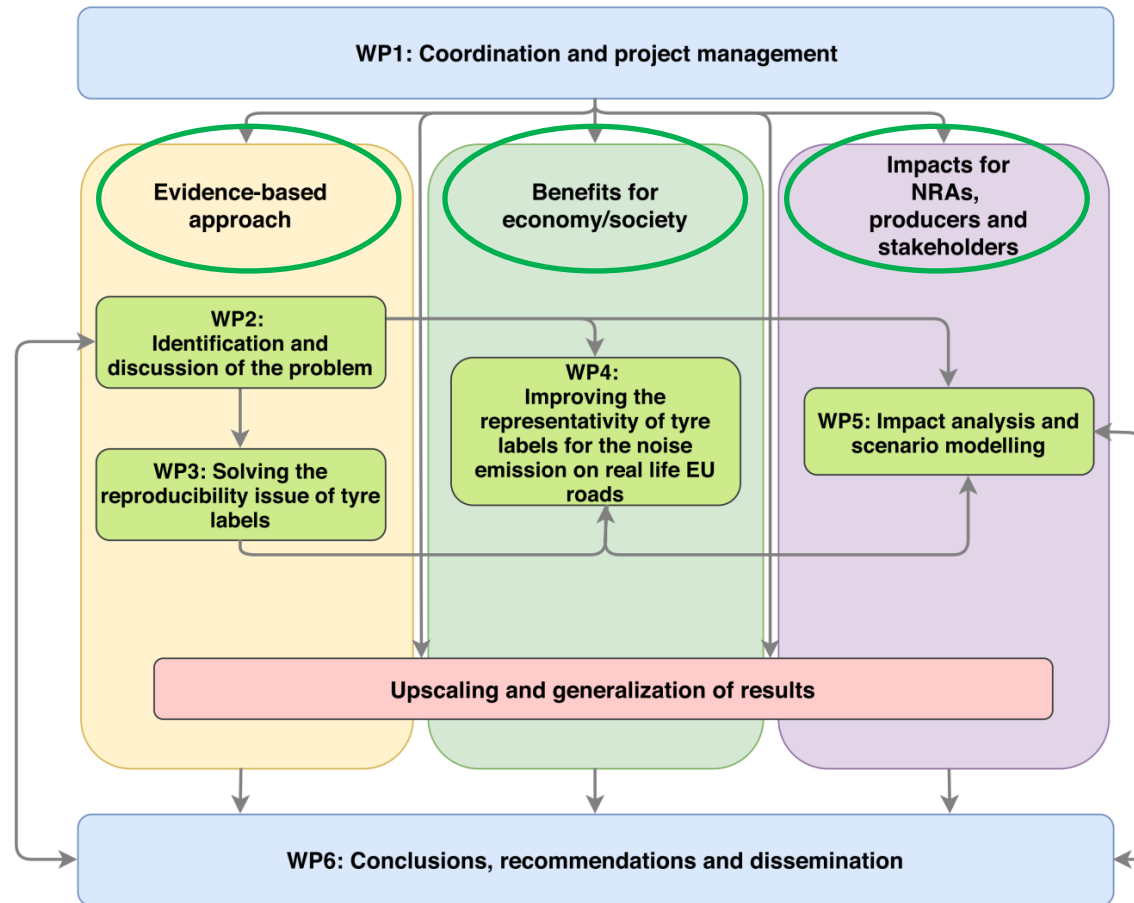
The Problem

The problem with quieter tyres today

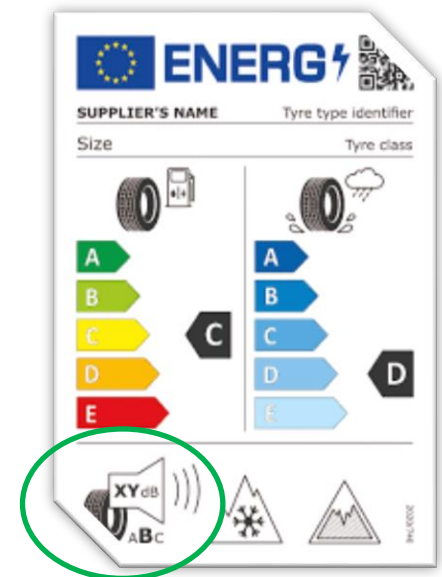
- Label values **currently not reproducible** (results from various studies)
- **Unknown** what **effect on real roads** can be achieved
- **Impediments by manufactures** to produce quieter tyres without trade-offs regarding safety and rolling resistance
- **Small market share** of quiet tyres and low consumer awareness

STEER project structure

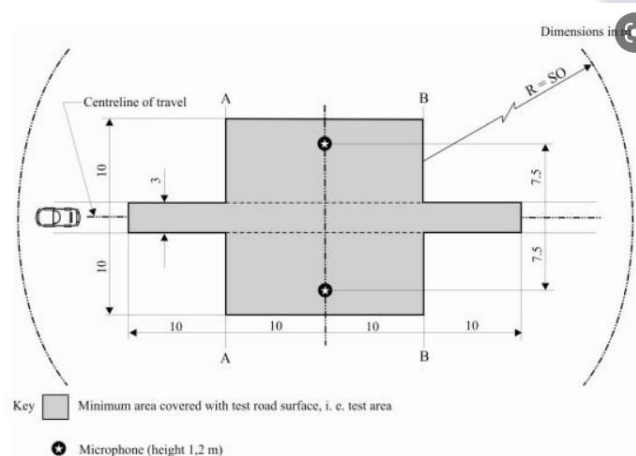
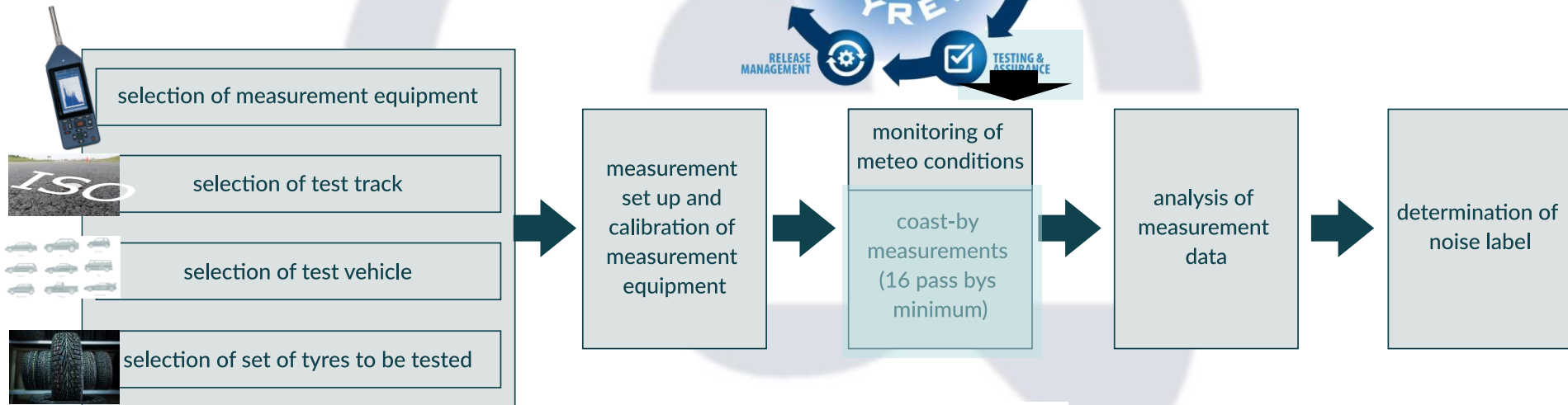
(STrengthening the Effect of quieter tyres on European Roads)



Review of current label

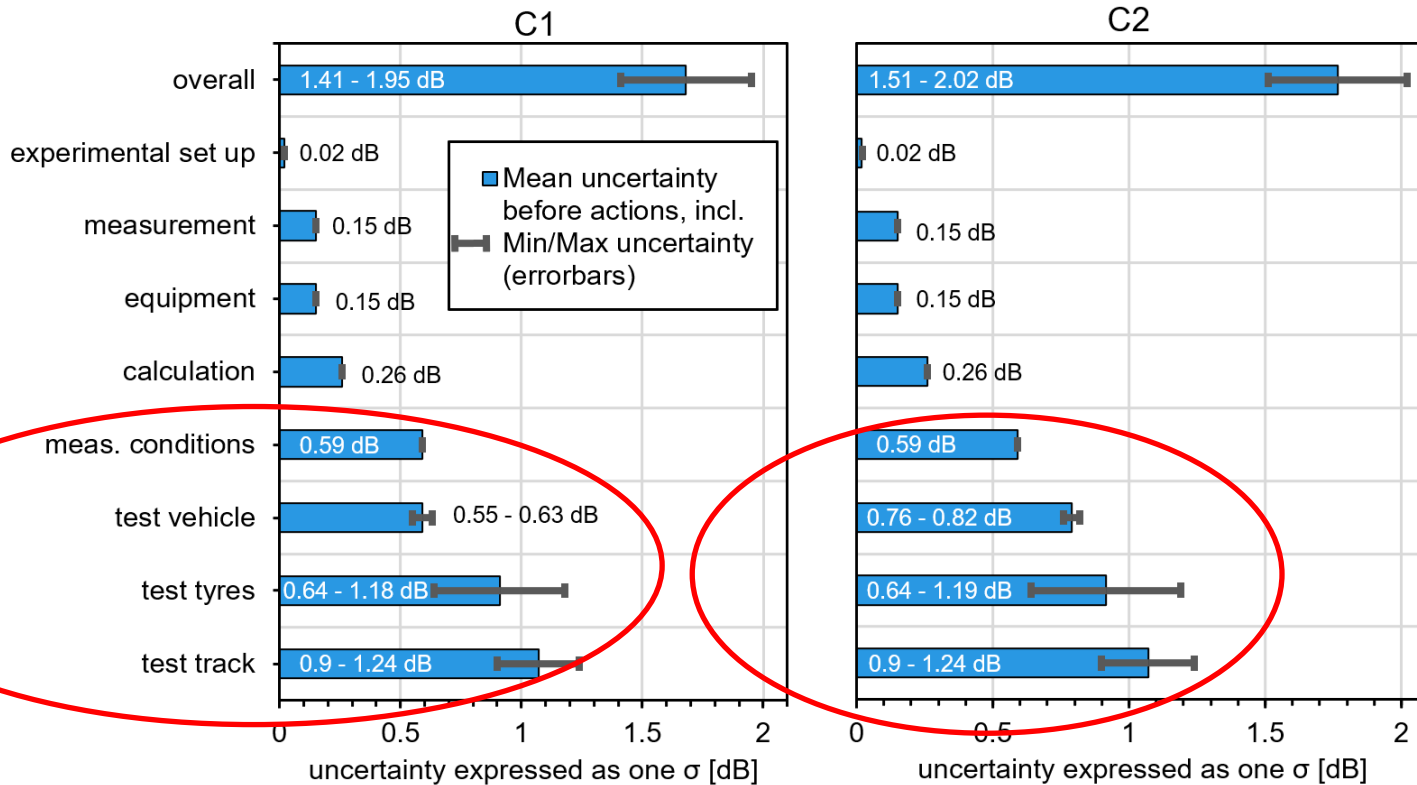


Tyre noise labelling procedure



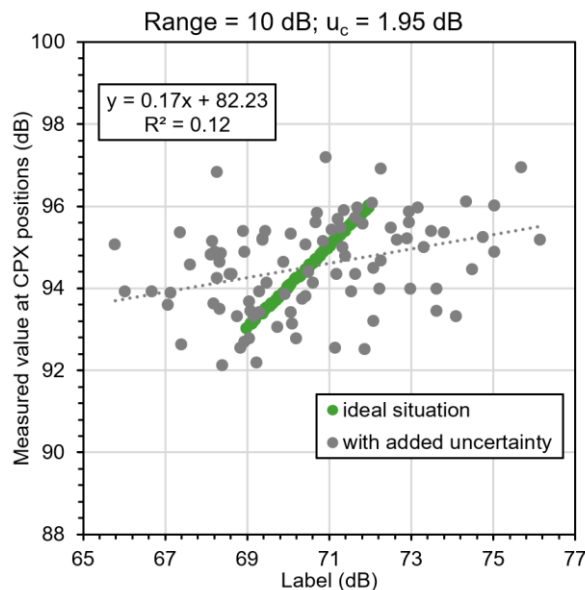
Coast-by (n=16)
at 70-90 km/h

Uncertainty of the current procedure (results from WP 2)

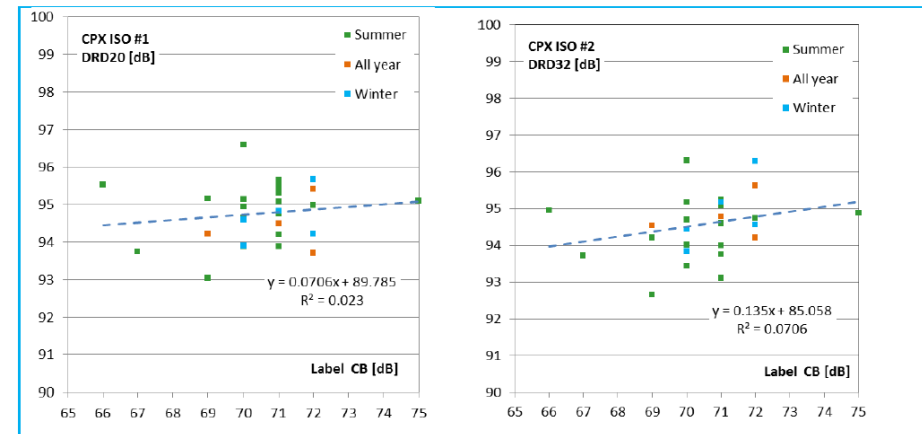


Implication of uncertainty of noise label

Scatter to expect for empirical studies



Scatter plots determined in the Nord Tyre Project



Low correlation coefficients are to be expected!

Uncertainty of current procedure

- Overall uncertainty compared with other measurement principles

	SPB	Noise label (R117)	CPX	Drum
standard	1.1 dB (cat. P)	1.41-1.95 dB (C1)	0.3 dB (tyre P1)	0.1 dB
uncertainty	1.6 dB (cat. H)	1.51-2.02 dB (C2)	0.5 dB (tyre H1)	



Level of standardization

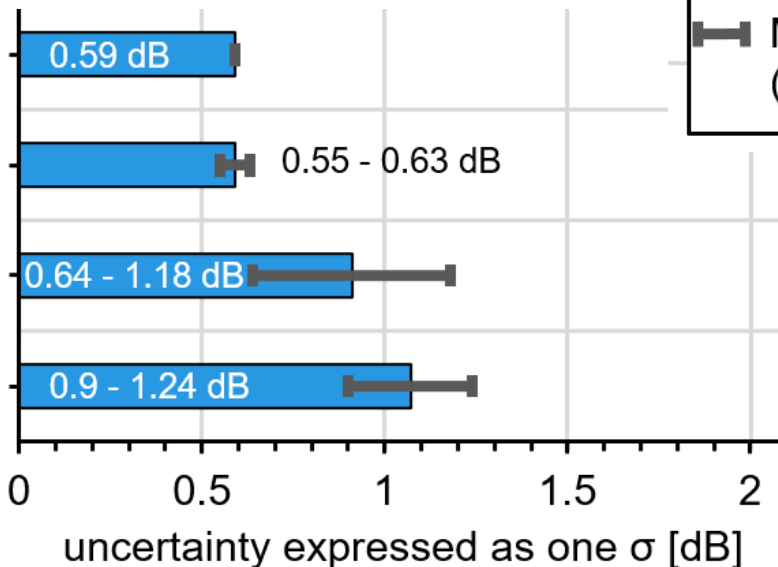
→ Uncertainty of current labelling procedure too high

Improving the reproducibility of the tyre label

Focus on important uncertainty contributions



meas. conditions



test vehicle



test tyres



test track

The STEER solution

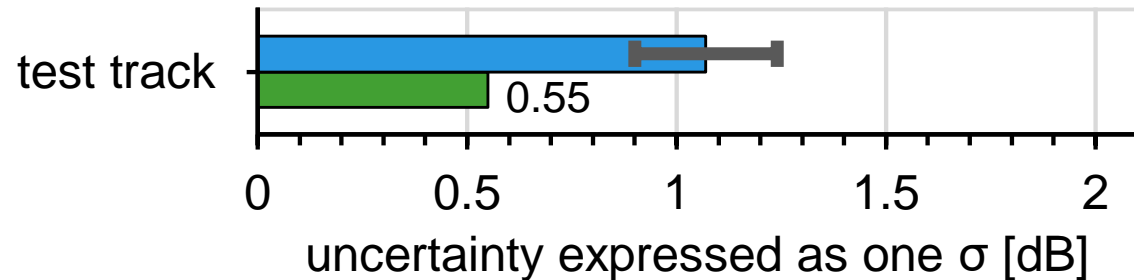


Solution:

Reference tyre calibration procedure



IMPROVEMENT



→ Uncertainty contribution can be halved!

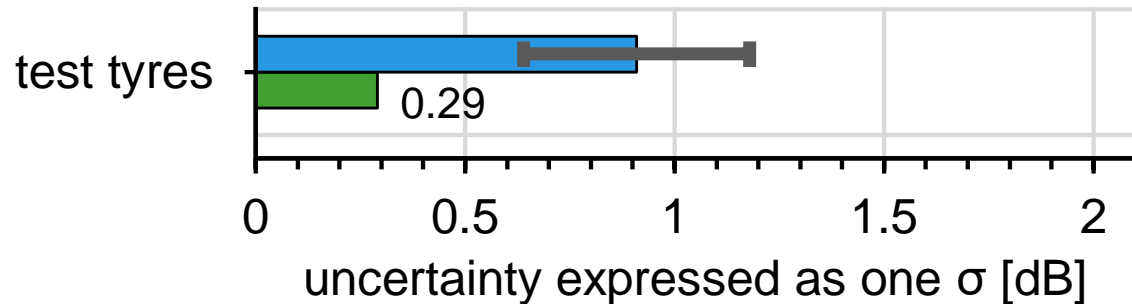


Solution:

Implement indoor testing on laboratory drum



IMPROVEMENT

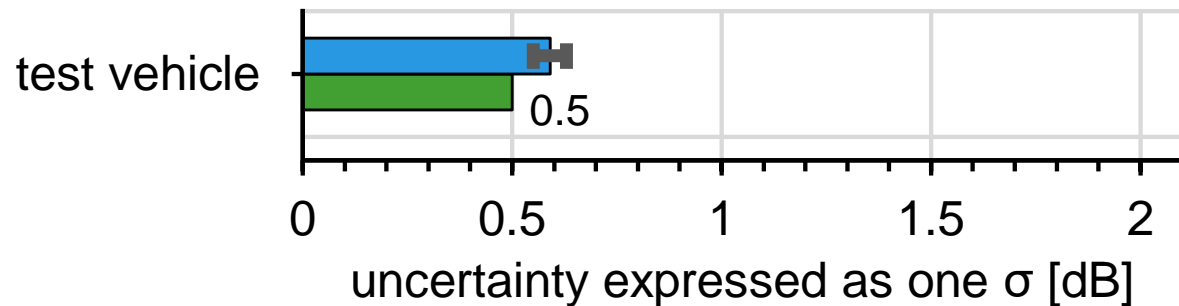


→ Uncertainty contribution can be reduced by two thirds!

Solution: Implement stricter requirement for test vehicle



IMPROVEMENT



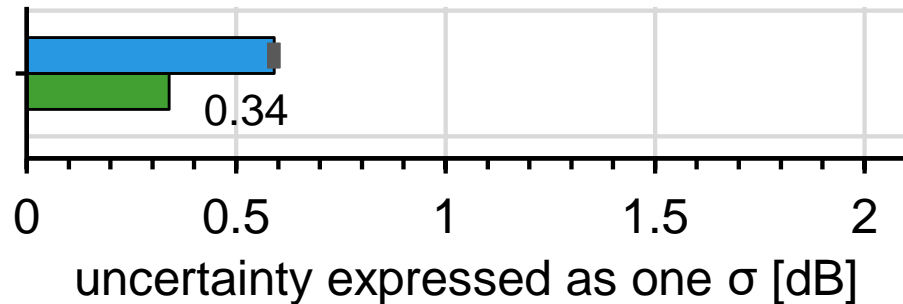
- Uncertainty contribution from vehicle only slightly reduced!
- Main focus on car underbody

Solution: **Implement improved temperature correction procedure**



IMPROVEMENT

meas. conditions



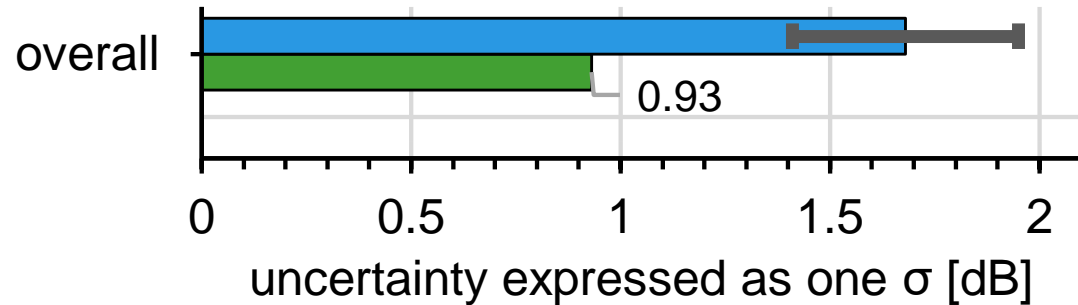
- Uncertainty contribution can be reduced by halved!
- constitutes a «low-hanging fruit», as it is easy to improve



Solution: Improvement of overall uncertainty



IMPROVEMENT



Overall uncertainty can be halved by implementation of STEER recommendations

Representativity of the tyre label
--> validity for predicting effect on real roads

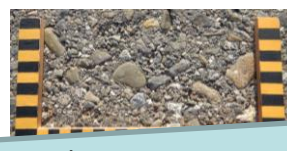
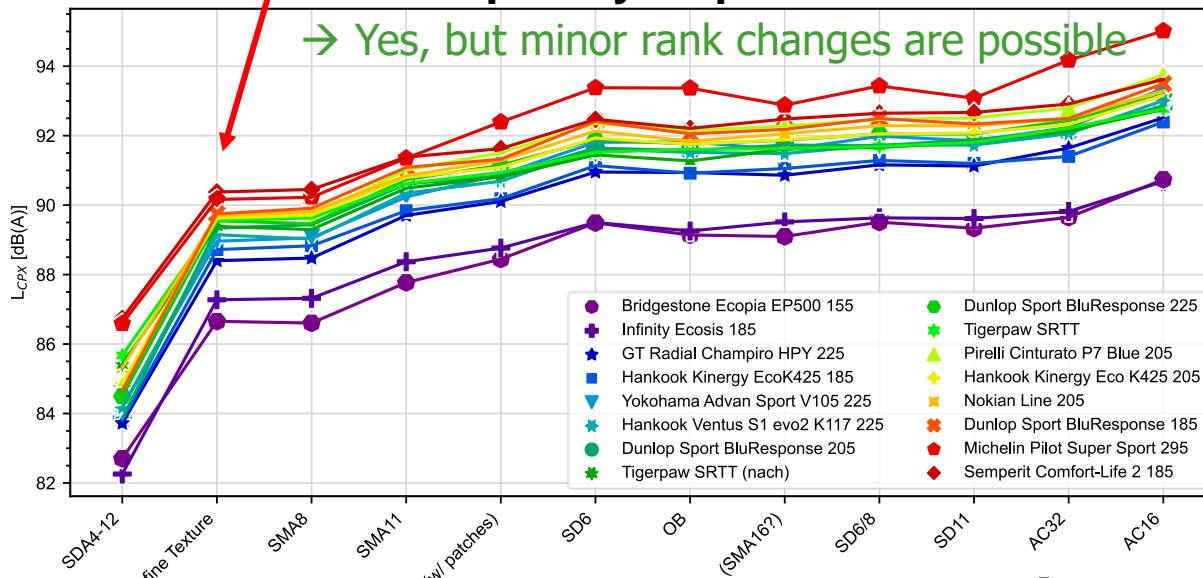
Representativity of tyre label

~ ISO test surface

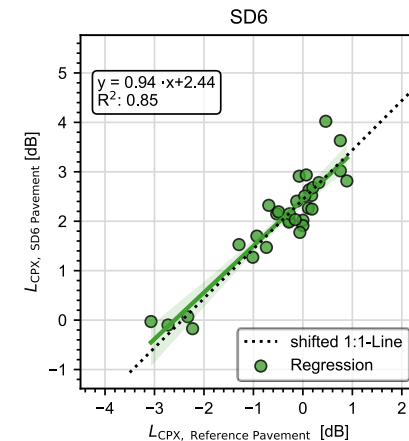
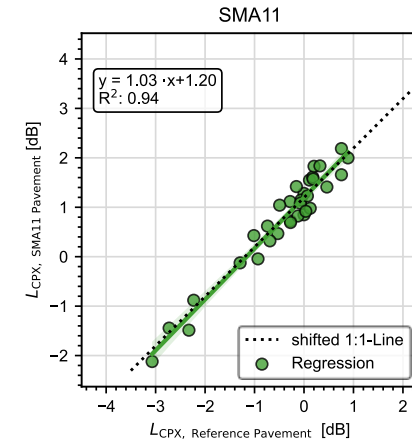


Is a quiet tyre quiet on all surfaces?

→ Yes, but minor rank changes are possible

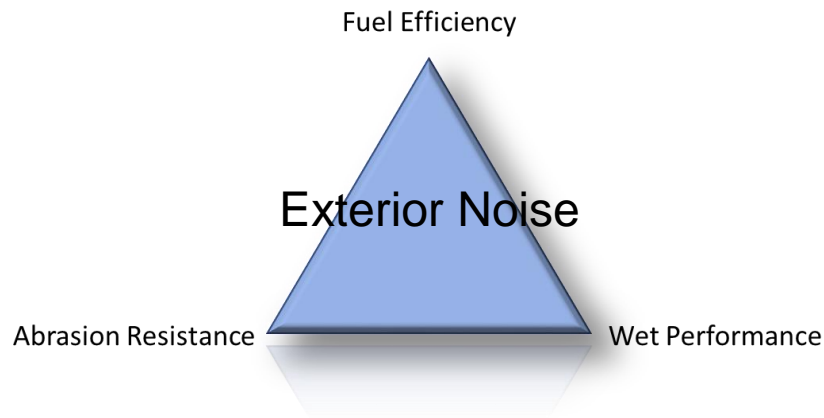


noise level / roughness



Impediments for tyre manufacturers: Trade-offs in designing a low noise tyre:

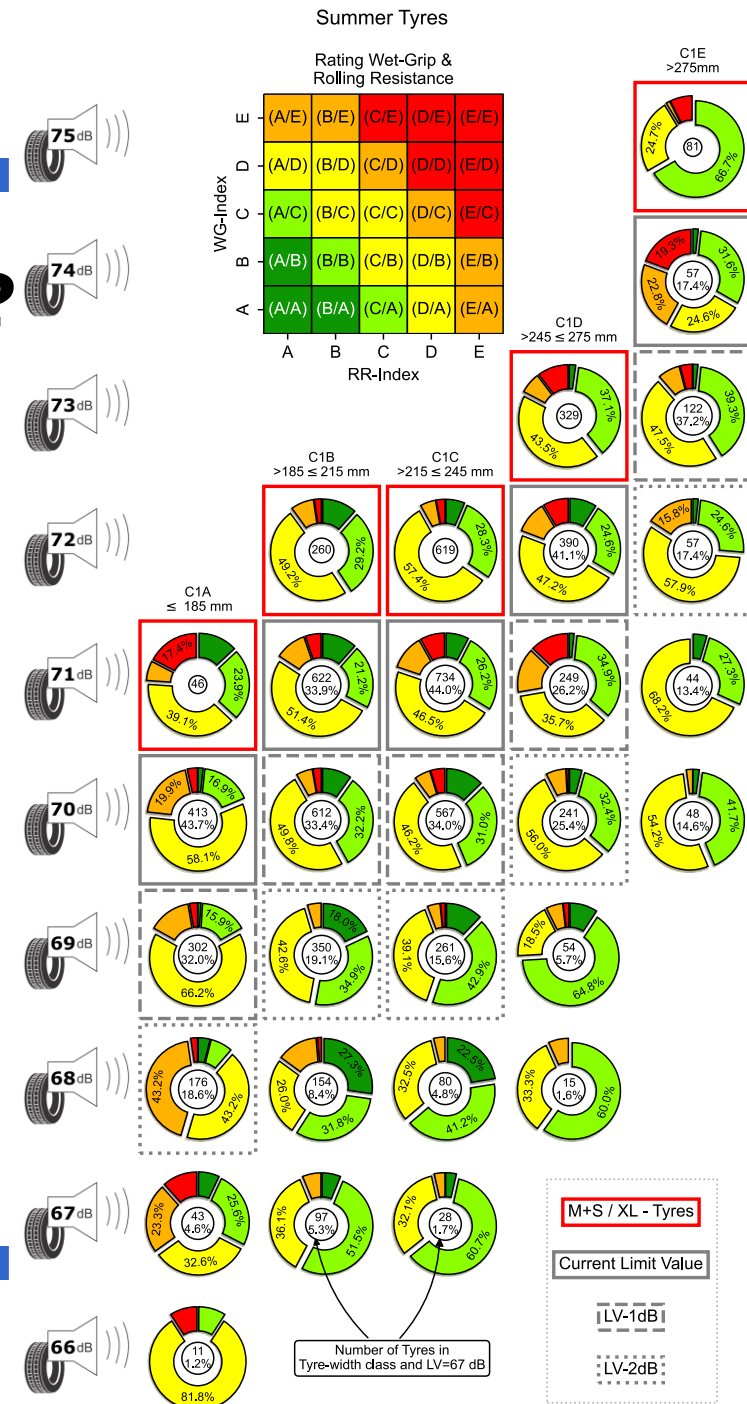
Impediments for tyre-manufacturers, or how to construct a low noise tyre.



- Optimization of one tyre performance parameter has always an impact on other parameters.
- **Target conflicts** between safety (wet grip) and noise according to ETRTO (European Tyre and Rim Technical Organisation) and ACEA (European automobile manufacturers association)
- Confirmed by prototyping by Nokian Tyres

What tyres are on the market?

- Target conflicts between multiple categories? → Analysis of swiss database of tyres.
- Majority tyres are labelled close to the limit value (red boxes)
- Share of top performing (green colors) tyres is increasing with lower noise label values.



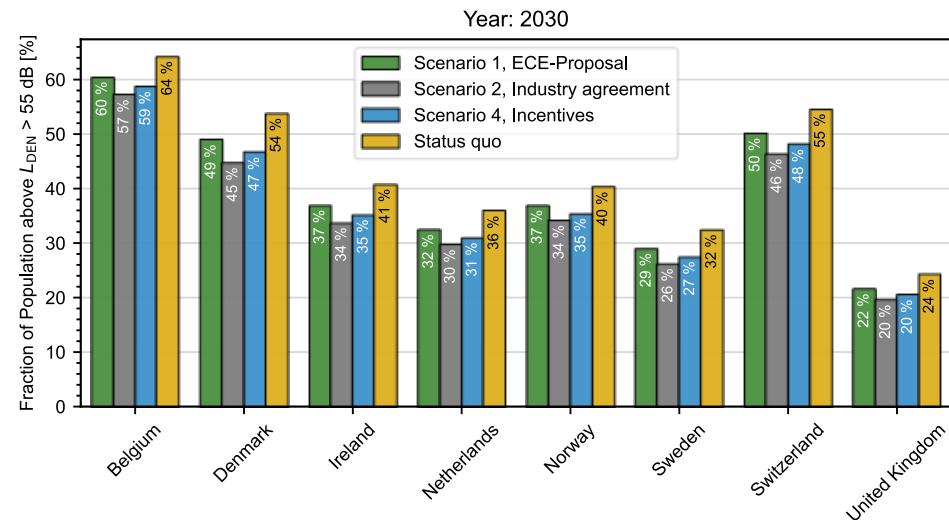
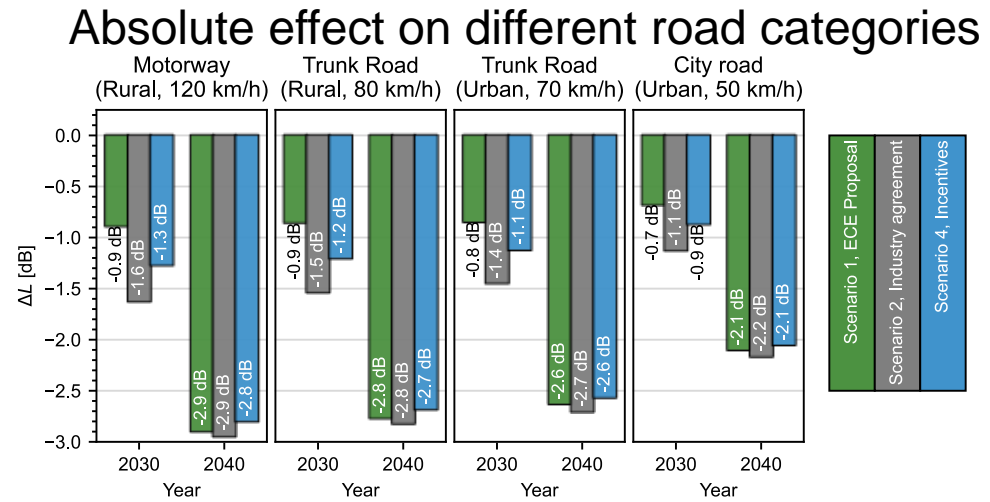
Increasing the market share of quieter tyres

Scenarios for proliferation of quieter tyres

Scenario Name	Short description
Reference (Status quo)	Defined in 2009/661/EC, status quo, business as usual
Scenario 1, Baseline ECE Proposal	ECE Proposal 2022
Scenario 2, Industry agreement	Output-oriented noise levels average for tyres
Scenario 3, Subsidies for tyre manufacturers	Subsidies for tyre manufacturers to produce tyres with LV-3 (LV = noise limit value)
Scenario 4, Consumer incentives	Potential incentives to consumers buying class A tyre (LV-3 tyre)

Effect of scenarios

- High reduction potential for all scenarios (effects of up to 3 dB) are possible
- For some countries, ca. 10% of the population can be protected from harmful noise





How to increase market share of quieter tyres



Act as early as possible
(increasing electro mobility
trend)



Industry agreement and
consumer incentives are
effective measures



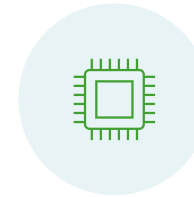
Raise awareness for the
noise problem in the
population



Consider support of consumer
organisations to promote
quieter tyres



Investigate and test measures for a
possible implementation of *consumer
incentives* to buy AAA-Tyres



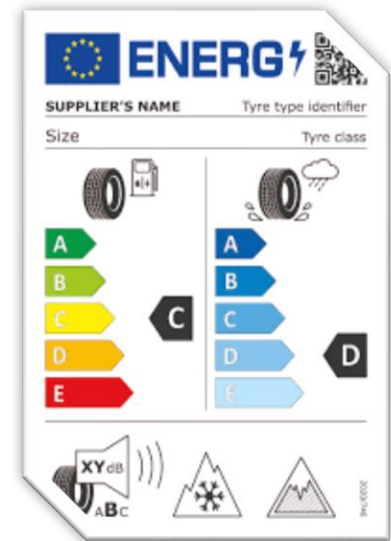
Implement use of RFID systems to detect and
encourage the use of low noise tyres in traffic

Conclusions

Recommendations: Regarding the European tyre label

Urgent need for improvements of the current labelling procedure

- Implement a **Reference Tyre Calibration Procedure**
- Implement a **procedure for testing entire tyre lines** on laboratory drum
- Implement **stricter requirements for test vehicles** (ground clearance and wheelbase)
- Improve **temperature correction** procedure
- Add **three legal noise classes** to label. (As before 2021)
- **Measurement uncertainty can be halved** if the improvements proposed by STEER are implemented now



Recommendations: Regarding the impact of quieter tyres on European roads

NRA:

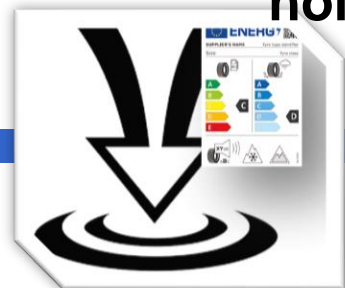
- Choose the optimal standard pavement of the road network
 - Consider choosing smooth to medium textured road surfaces
 - Avoid «rough-textured» road surfaces.
→ High noise exposure, reduced effectiveness of quieter tyres



Recommendations: Raise awareness and inform consumers

Quieter tyres could reduce noise emission by up to **3 dB with considerable financial benefits.**

- **Raise awareness through information campaigns:** Labelling should be used as information tool to support consumers
- **Implement scenarios:** Industry agreement / Consumer incentives
- **When procuring road vehicles, consider requiring low-noise tyres**
 - Use RFID systems to track vehicles with certain tyres.



Why is it urgent?

- Benefits will likely offset the costs
- Act now to benefit from market trends → EV:s
- Act now to avoid jeopardising the benefits of new EU regulation by aftermarket tyres



**Thank you for your attention
... and the good
cooperation!!**

