

Preliminary outcomes of the PAREST project

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UFOPLAN-project-206 43 200/01

Agenda

- Problem description
- Assessment methodology
- Feasible reduction potentials for Germany
- Preliminary results
- Conclusion

Current situation

- Exceedances of limit values for PM10, PM2.5 and NO2 in Germany and other EU-Countries
- New concentration limits from the Air quality directive (2008/50/EC)
- NEC-Directive: PM2.5 Emission ceiling

Aims of PAREST

- Analysis of causes for the exceedances of limit values
- Identification of cost-effective mitigation measures and bundles for PM10, PM2.5 and aerosol precursors (NO_x, SO₂, NH₃ and NMVOC)
- Modelling of implications on concentration of PM10, PM2.5 and NO₂

Project structure of PAREST

- AP1: Emissions und mitigation measures: IER, IZT, vTi, TNO
- AP2: Modelling of air quality: FU Berlin, IfT, TNO
- AP3: Assessement, Conclusions and recommendations : all
- AP4: Projectmanagement: TNO

Assessment Methodology

German official emission data 2005

Reference scenarios for 2010, 2015 and 2020 (Current legislation)

Measures and bundles
Germany

High spatial resolved emission data set
for Germany 1' x 1'

GAINS NEC6_CP Scenario (2005,
2010, 2015 and 2020) for EU27+2
+ National projections from non-EU
Countries

High spatial resolved emission data set
for Europe 5' x 5'

Consistent European Emission data sets with an German specific data set

CTMs (mainly REM-CalGrid, LOTOS-EUROS, LM-COSMOS, LM-Muscat)

Assesment => Identification of cost-effective measure bundles

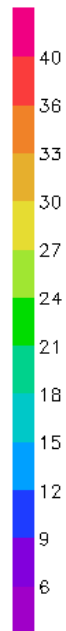
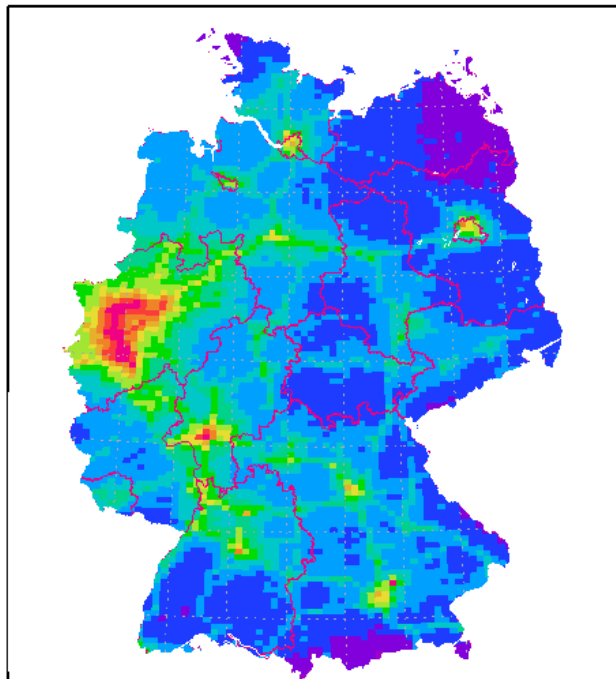


Maximum feasible abatement potential in comparison to the CLE-Scenario 2020

Sektor	SO ₂	NO _x	NMVOC	PPM ₁₀	PPM _{2,5}	NH ₃
78 measures regarded	kt/a					
Combustion in energy and transformation industries	88.3	43.4		3.5	3.1	
Non-industrial combustion plants		12.3		9.9	9.2	
Production processes	21.6	30.1		4.7	2.1	
Solvent use and other product use			72.7			
Road transport	0.1	21.9	7.1	2.7	0.7	0.2
Other mobile sources and machinery	0.4	24.2	15.4	0.5	0.5	0.2
Agriculture				2.9	0.4	100
<u>Sum</u>	<u>110.3</u>	<u>131.9</u>	<u>95.2</u>	<u>24.2</u>	<u>16.0</u>	<u>100.4</u>

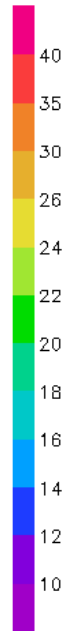
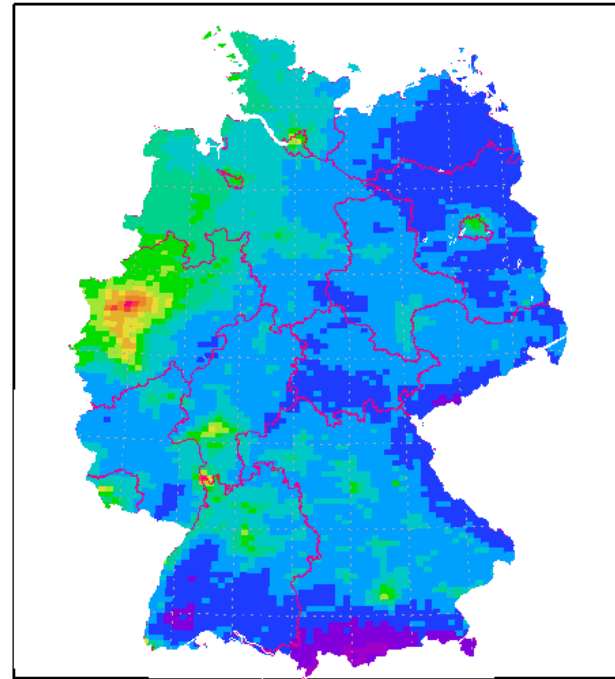
Base calculation 2005, Parest-emissions Resolution 8 x 7 km²

NO₂ DF Base 2005 $\mu\text{g}/\text{m}^3$ PAREST



2009-GrADS: COLA/IGES

PM₁₀ DF Base 2005 $\mu\text{g}/\text{m}^3$ PAREST



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Gradient urban-rural for NO₂ more distinctive as for PM₁₀ concentrations

Assessment/analyzing of the calculated scenarios

- Calculation of the (changes in) air quality for 300 – 400 scenarios (including measure based reduction scenario, sensitivity and hypothetical calculations)
- Analyzing of the calculated results
 - Visualization of the concentrations
 - Deriving of averaged indicators for a scenario
 - Averaging over the whole area of Germany
 - Stations: Averaging over the AEI-stations (Average Exposure Indicator)
 - Indicator weighted by the population density (aggregated in 4 classes)

Population density in Germany inhabitants/km²

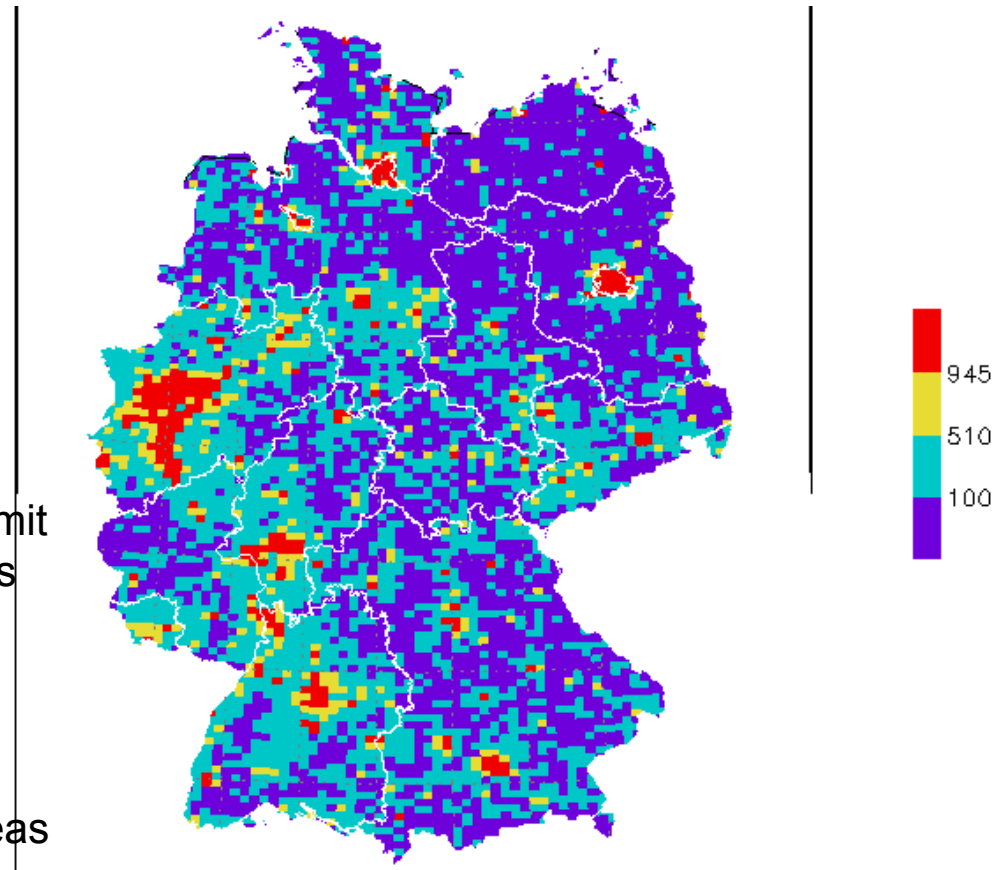
Population density in 4 classes in Nest 2

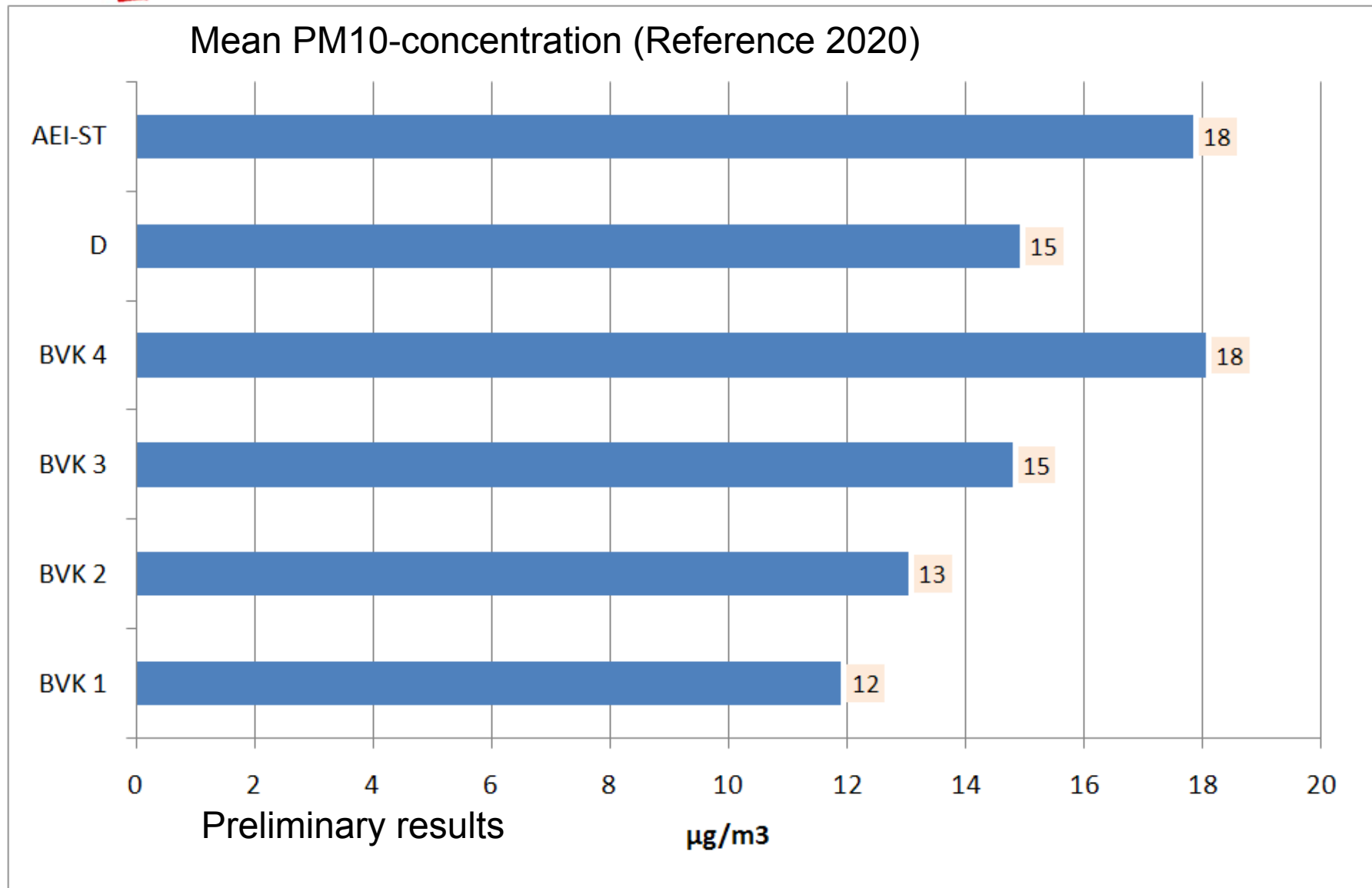
Class 1: rural area, low density
population density < 100 inhabitants/km²

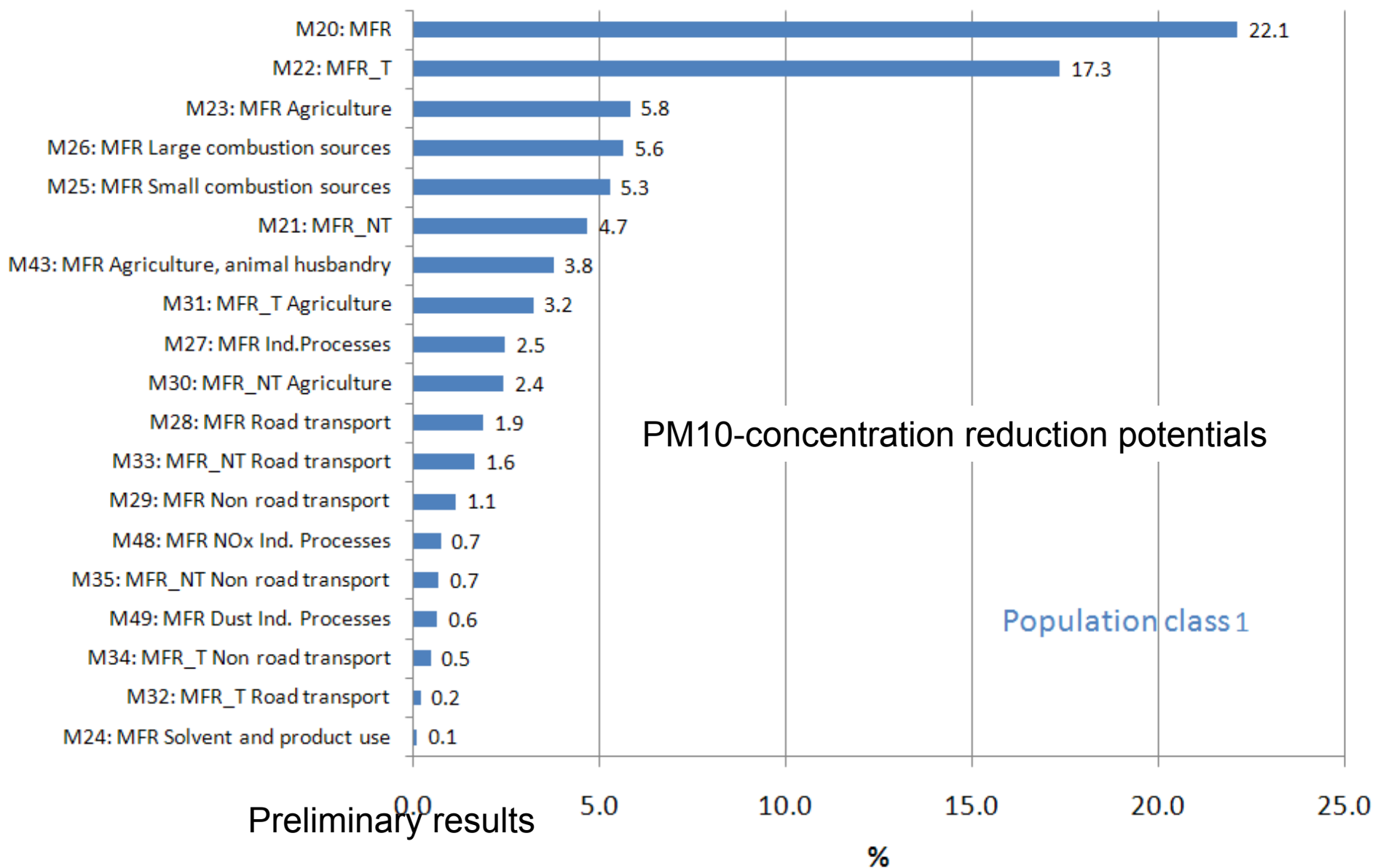
Class 2: top class threshold define the
50%-threshold of population
population density > 100, < 510
inhabitants/km²

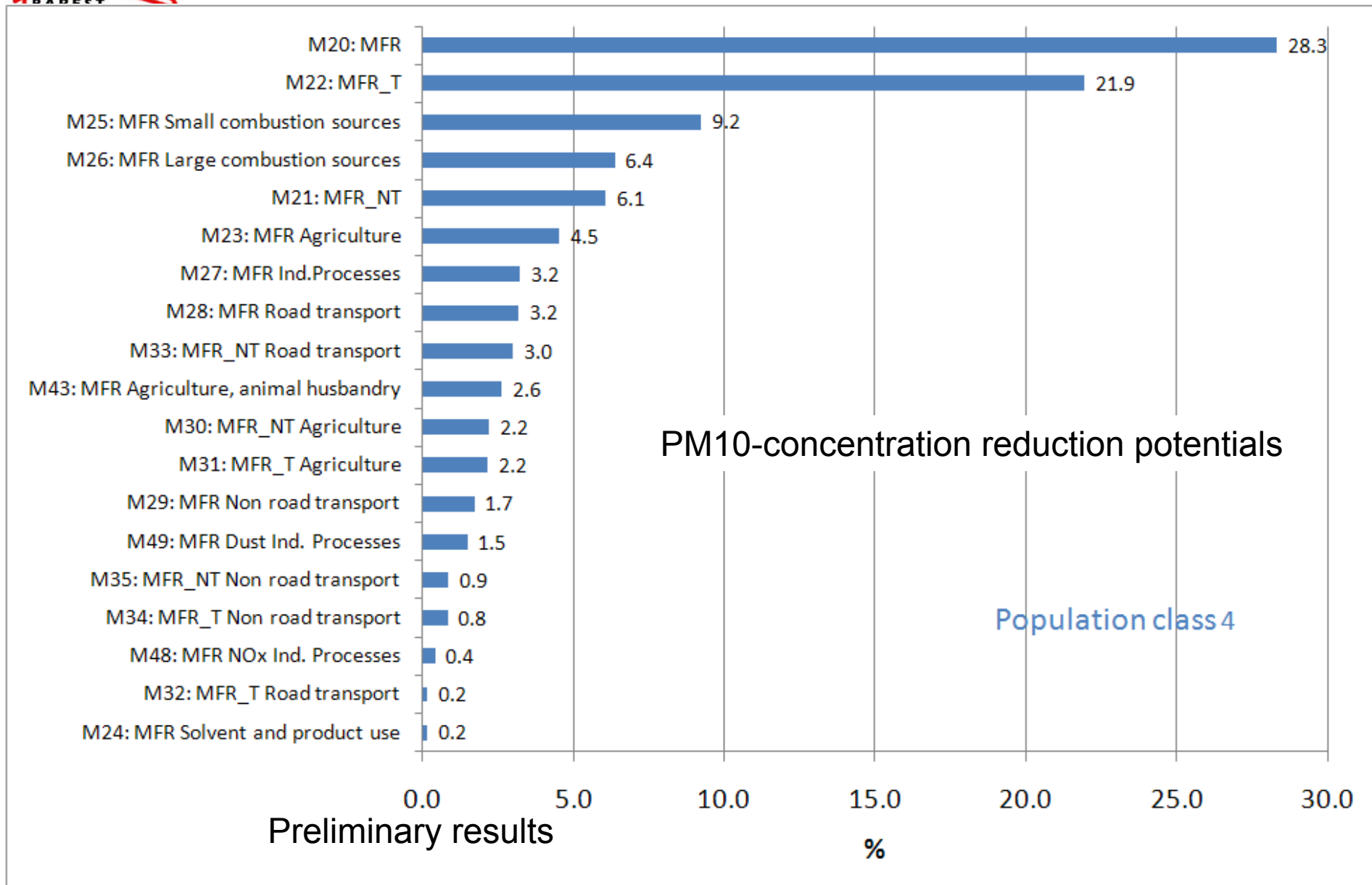
Class 3: top class threshold define the lower limit
of population density in metropolitan areas
population density > 510, < 945
inhabitants/km²

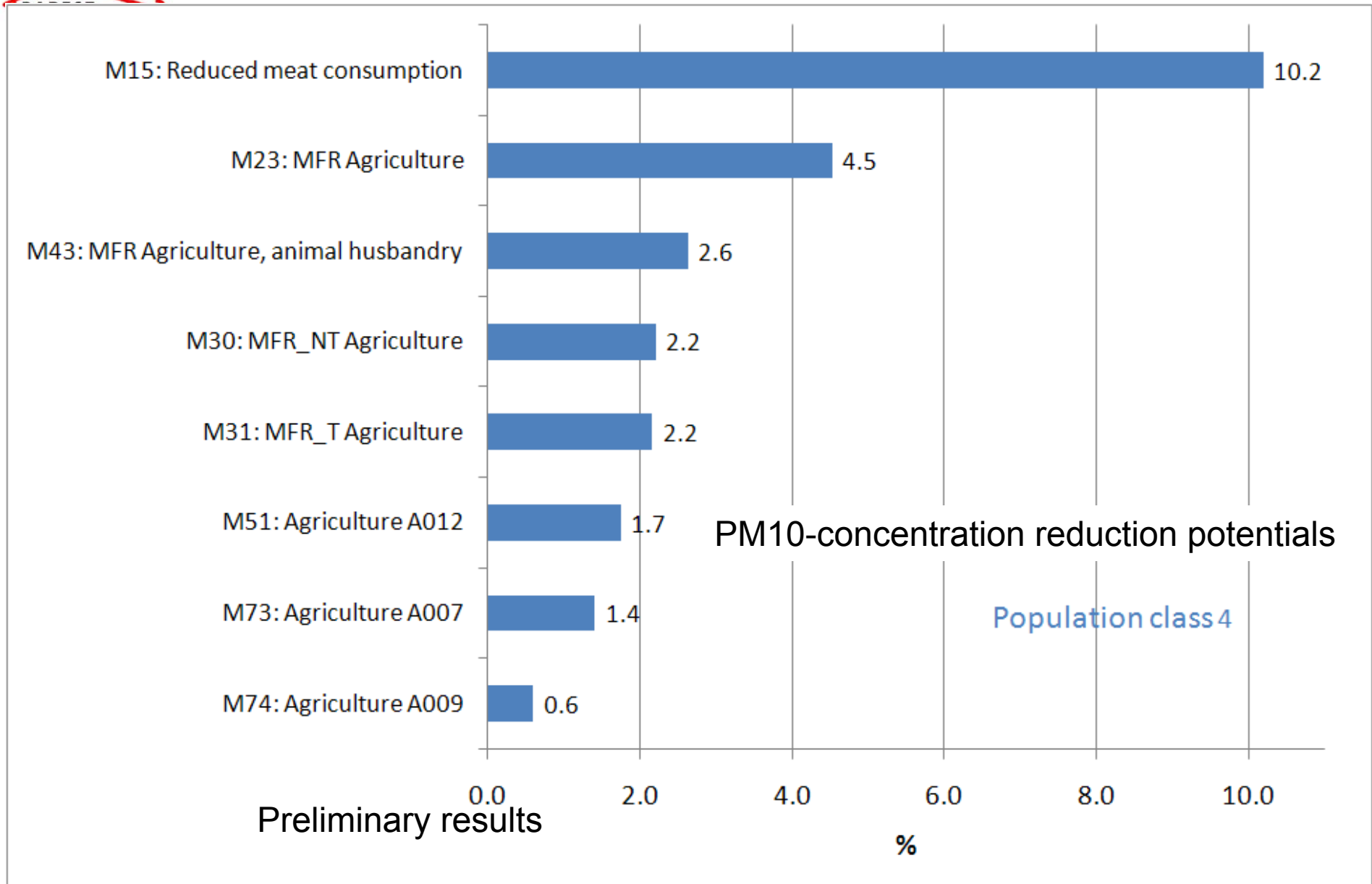
Class 4: Population density in metropolitan areas
population density > 945 inhabitants/km²

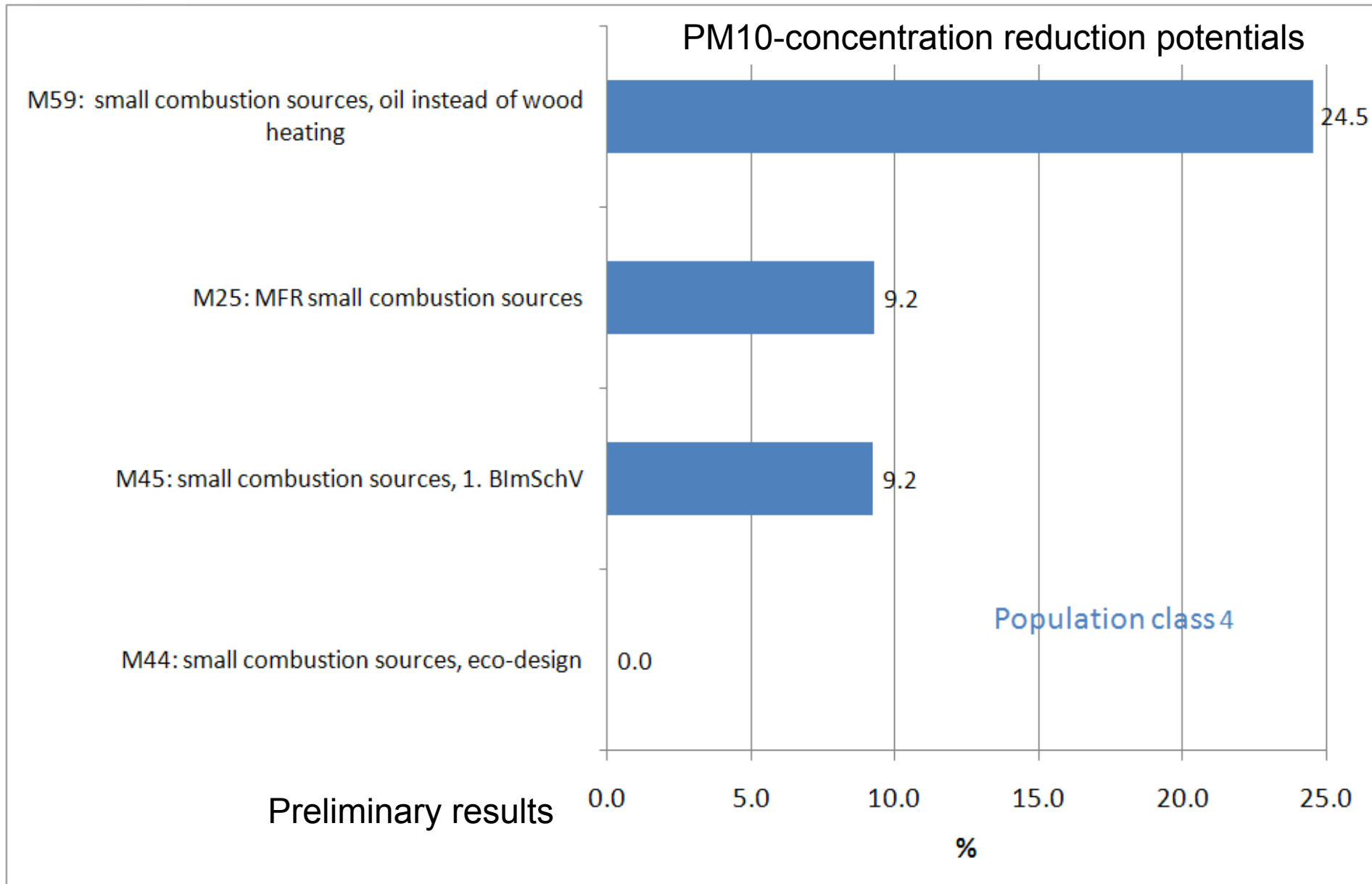


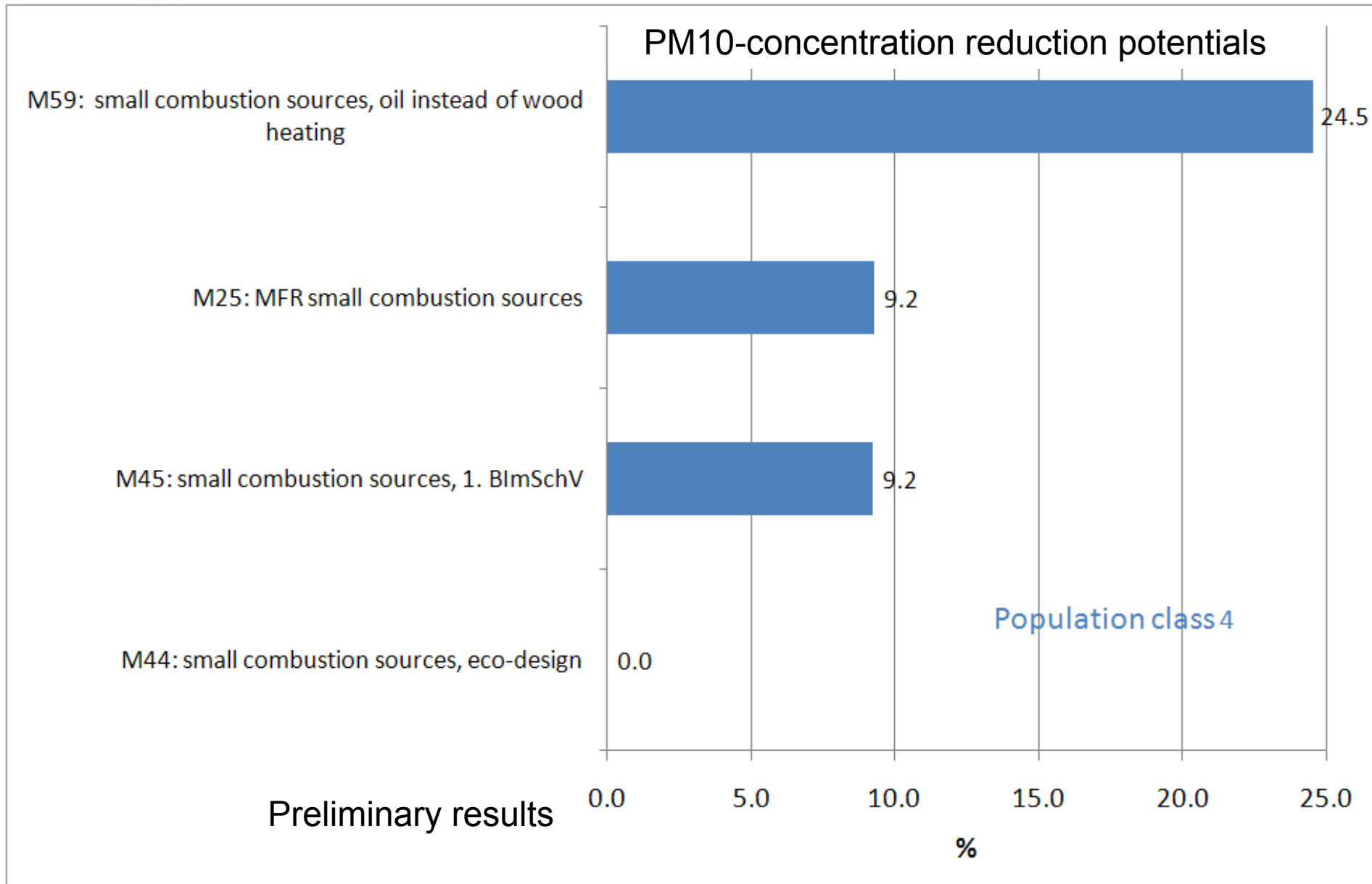






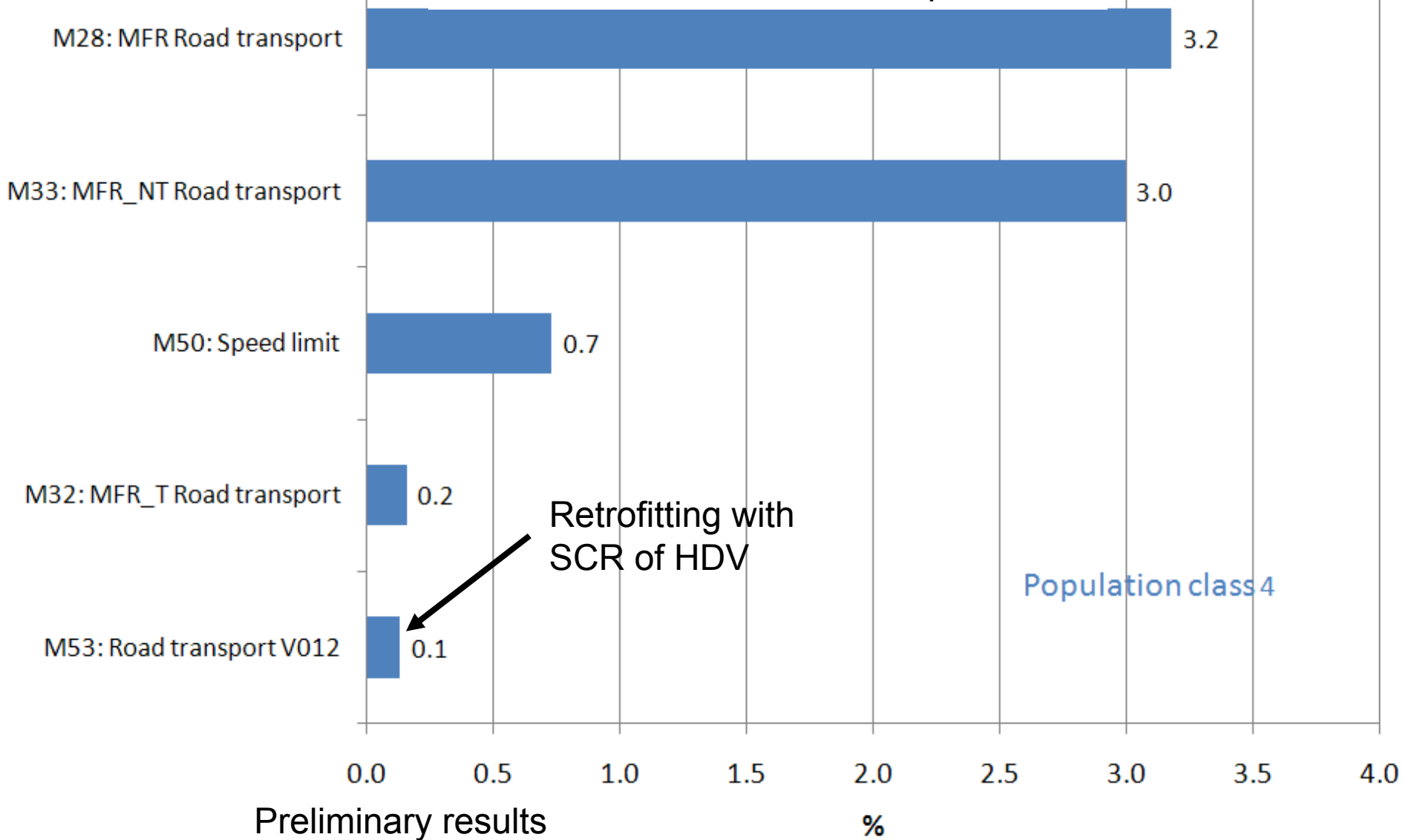








PM10-concentration reduction potentials



Conclusion

- **An integrated approach on national level has been developed to assess reduction strategies for PM and NO₂ for Germany.**
- **This methodology make it possible to assess the impact of suited reduction measure bundles to concentrations of PM₁₀, PM_{2.5} and NO₂ on base of a few indicators.**
- **Preliminary results give hints that reduce the PM emissions from small combustion sector is most effective for population density areas and reduction of NH₃ is most effective for rural areas (here focussed PM_{2.5} and PM₁₀)**
- **The development of an sector overarching measure cost assessment methodology is in progress.**
- **Presentation of the final results is planned for the 10. June 2010 in Dessau**

Thank you for your attention!

Further questions to:

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And also have a look to:

<http://www.parest.de>