



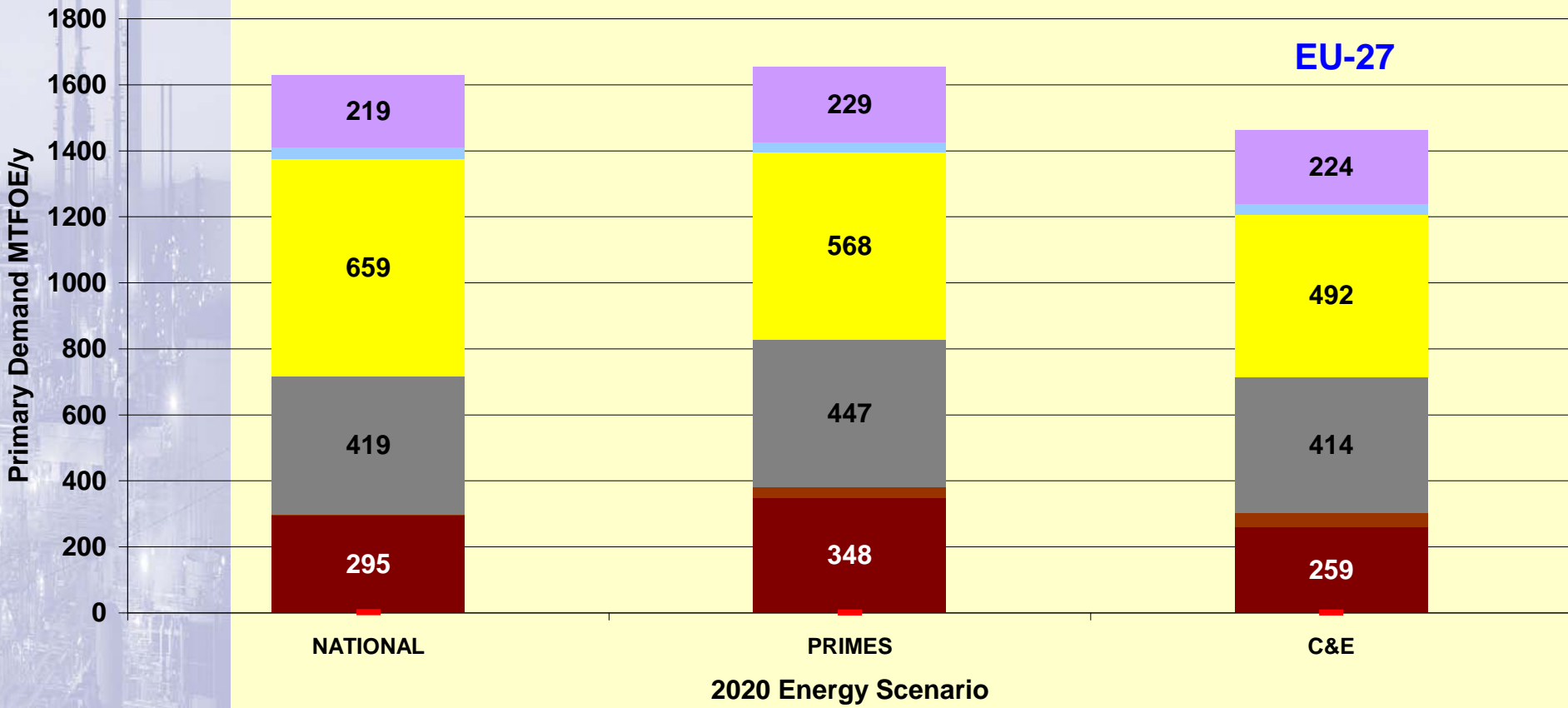
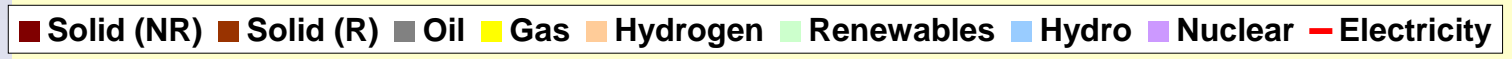
Gothenburg Protocol Revision: The wisdom of a dual energy scenario approach illustrated

TFIAM Meeting, February 24th 2010

Les White

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Primary Energy Demand For Various Energy Scenarios Used in NECD Review Process (Source IIASA)





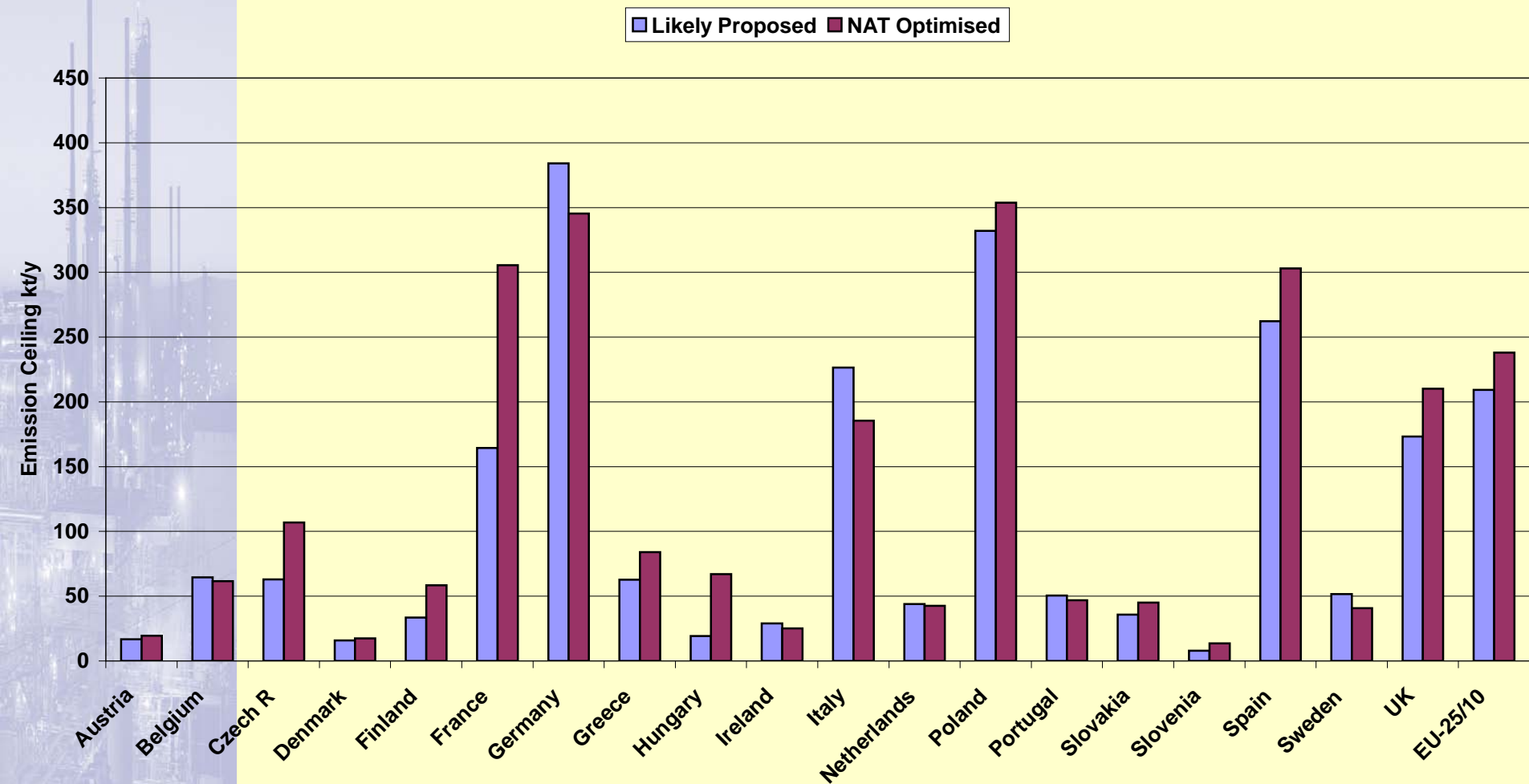
The C&E Optimised Ceilings v “NAT Optimised” Ceilings (2008 View)

Note: In Both Cases, TSAP Objectives Are Met!

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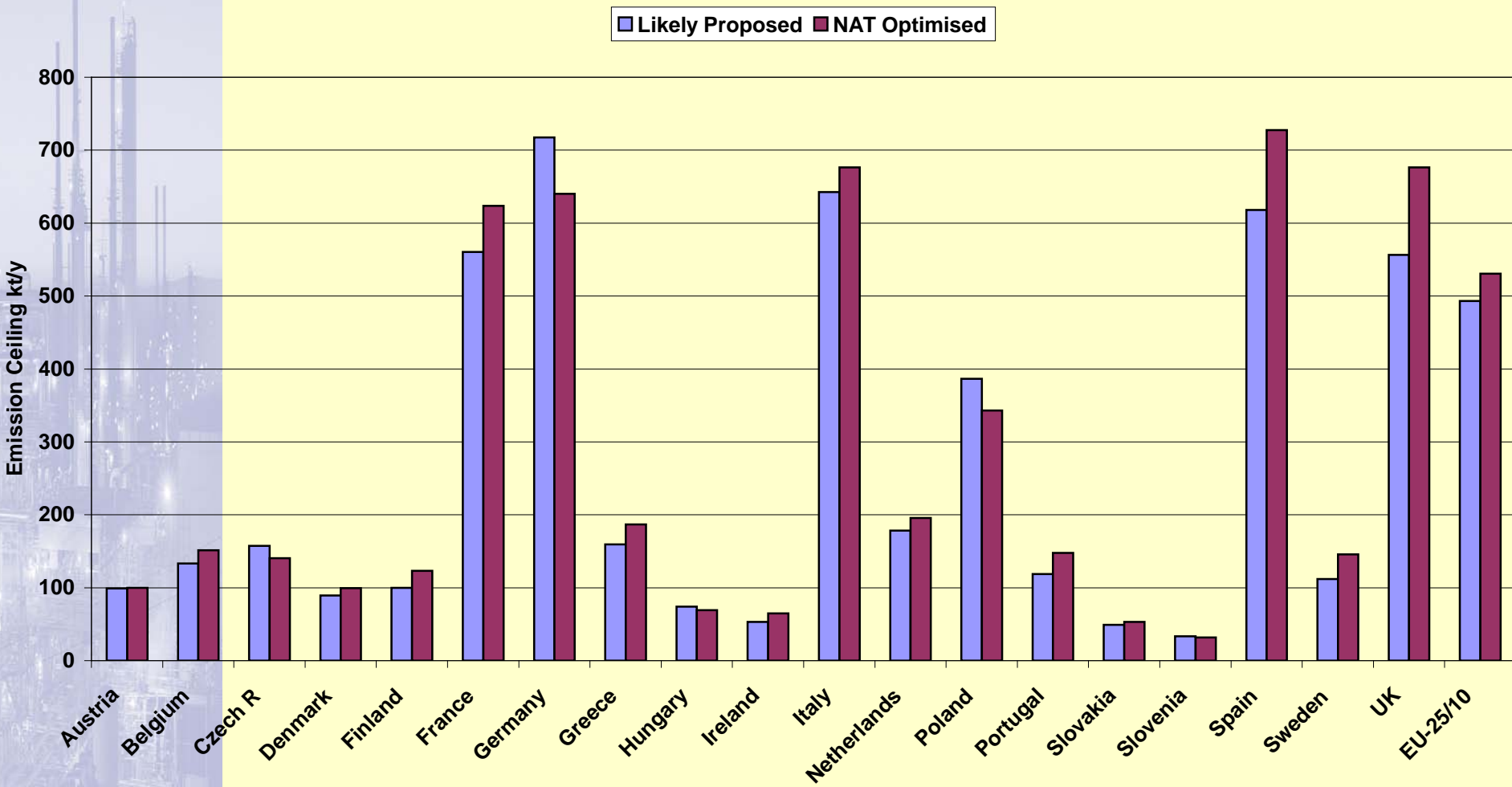
SO2 Ceilings: C&E vs NAT

Comparison of "Likely to be Proposed" Revised NECD SO2 Ceilings With Optimised Ceiling Under "National Scenarios"



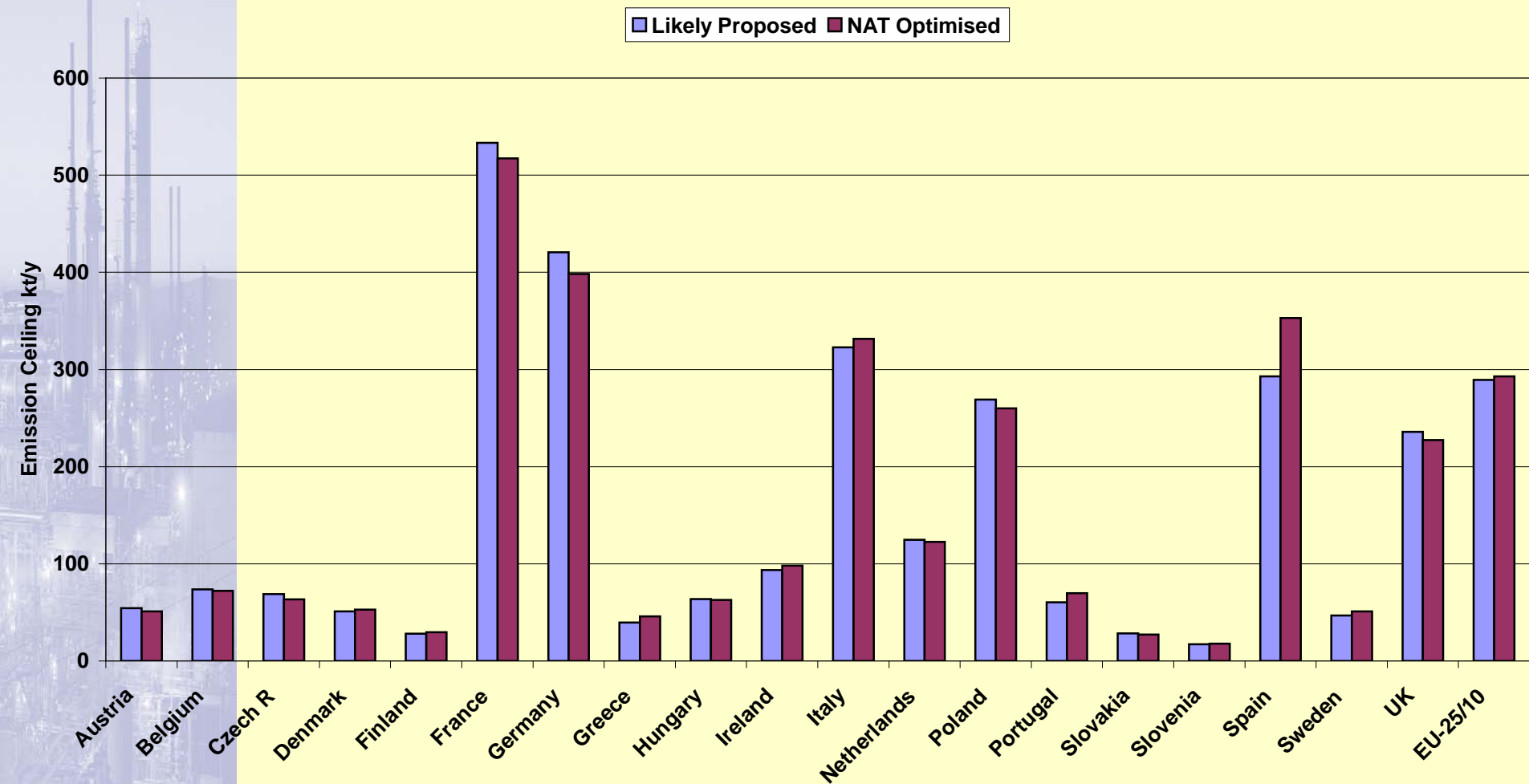
NOx Ceilings: C&E vs NAT

Comparison of "Likely to be Proposed" Revised NECD NOx Ceilings With Optimised Ceiling Under "NationalScenarios"



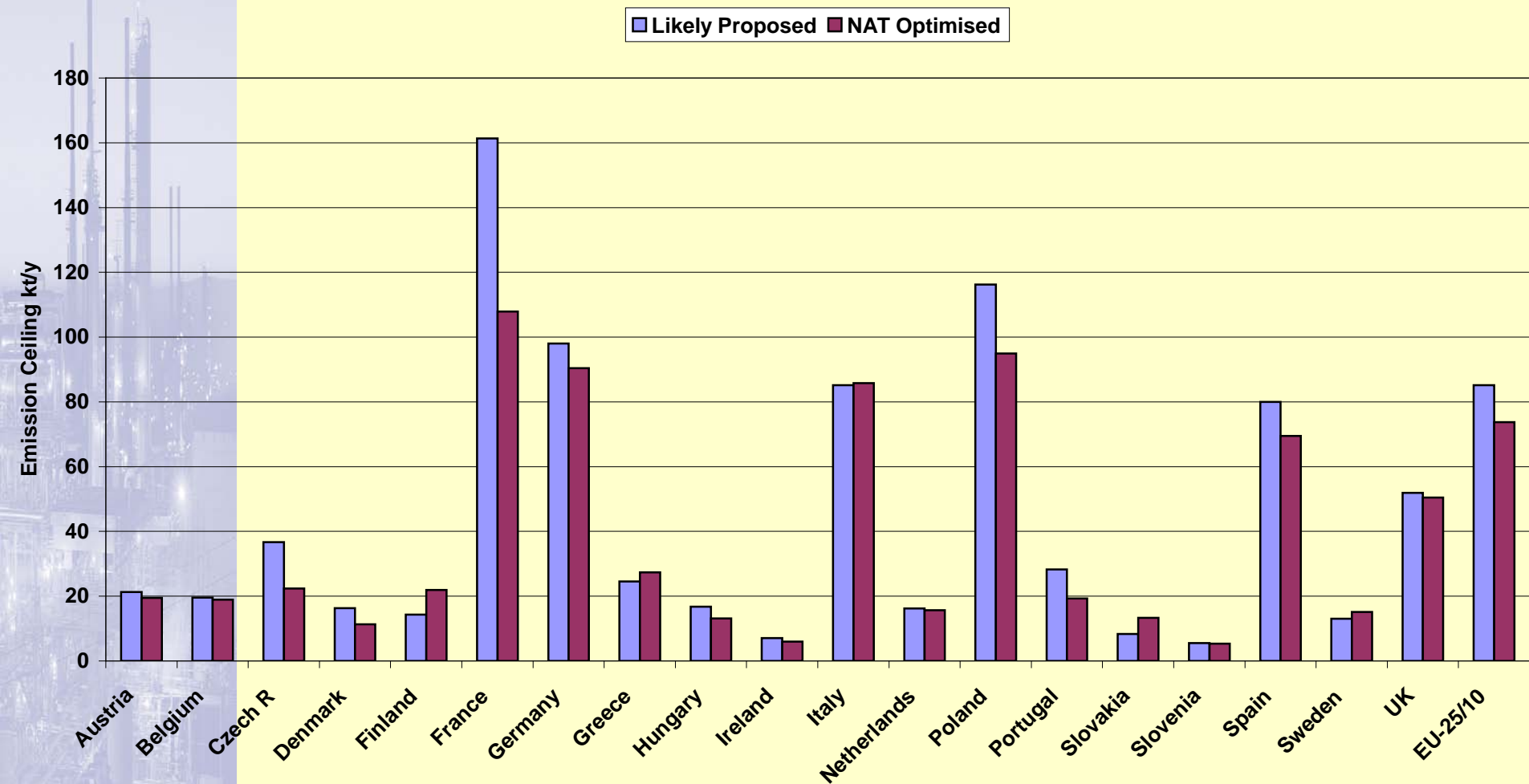
NH3 Ceilings: C&E vs NAT

Comparison of "Likely to be Proposed" Revised NECD NH3 Ceilings With Optimised Ceiling Under "National Scenarios"



PM2.5 Ceilings: C&E vs NAT

Comparison of "Likely to be Proposed" Revised NECD PM2.5 Ceilings With Optimised Ceiling Under "National Scenarios"



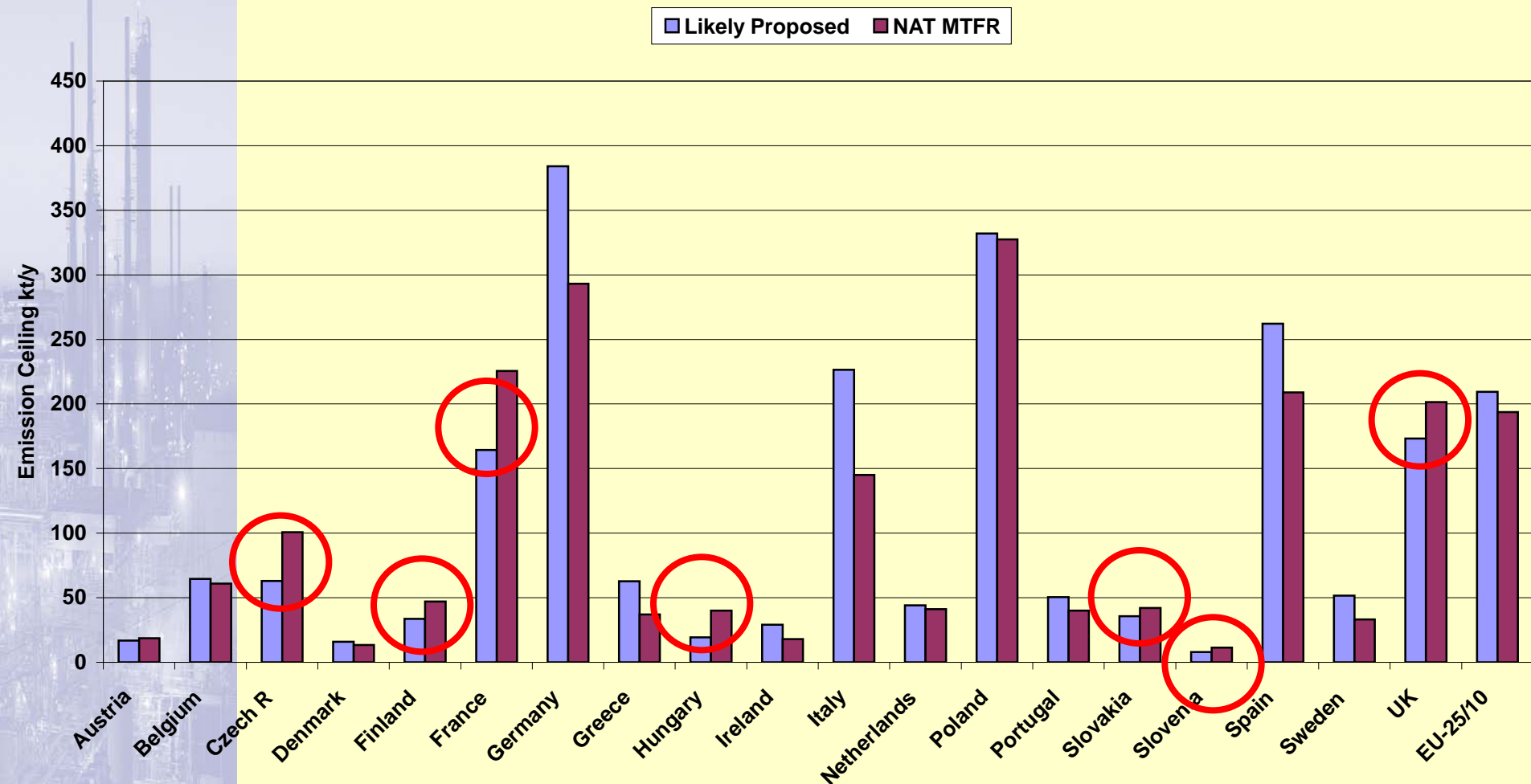


**Attainability of C&E Ceilings Under
NAT Scenario
IN THIS ILLUSTRATIVE CASE**

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SO2 Ceilings: C&E vs MTRF NAT

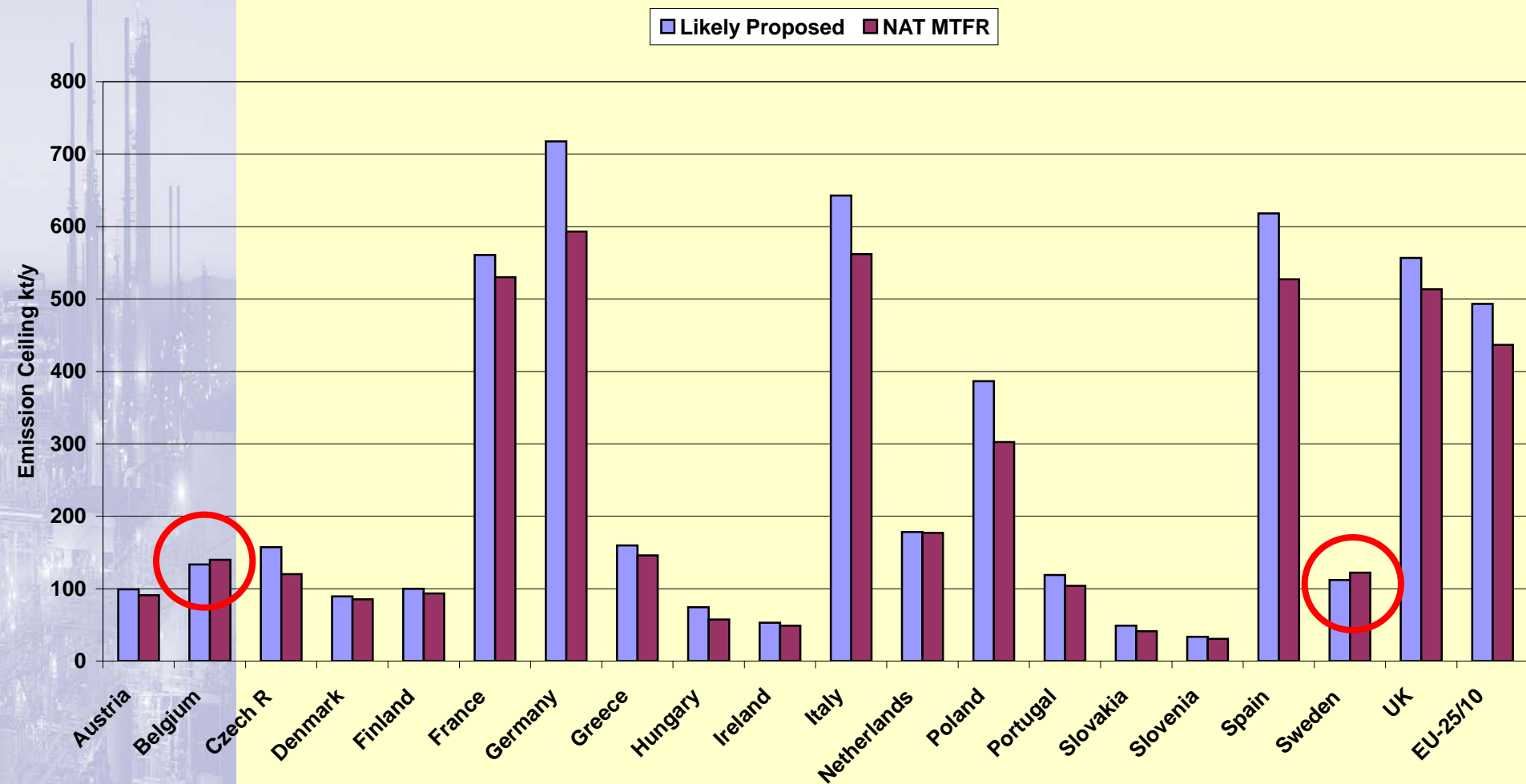
In Some Seven MS, SO2 Ceilings would be unachievable under the National Scenario



Note: This would result in underachievement of TSAP Targets through inability to meet ceilings

NOx Ceilings: C&E vs MTRF NAT

In two MS, NOx Ceilings would be unachievable under the National Scenario
 In many others ceiling are close to MTRF with significant cost implications



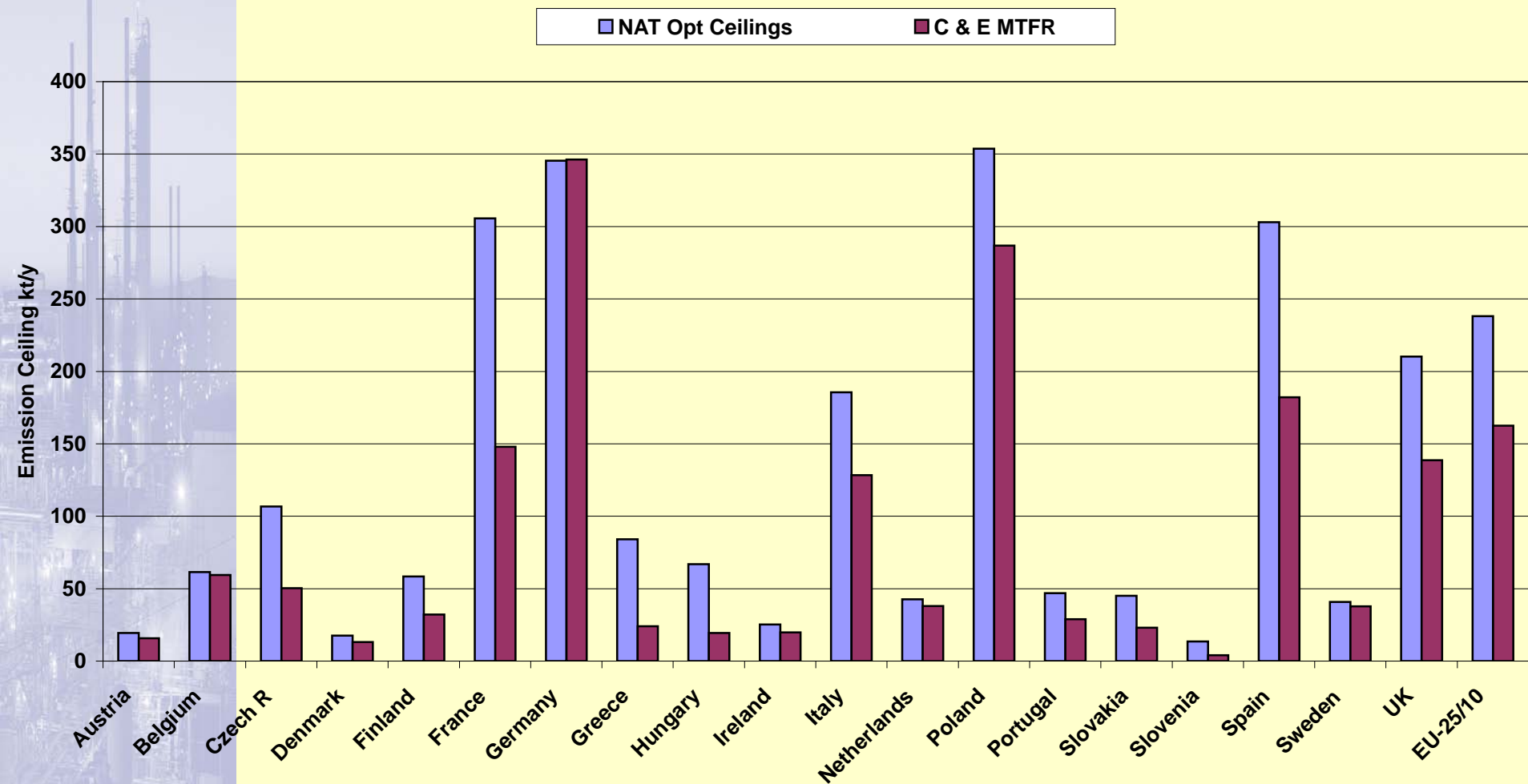


**Attainability of NAT Ceilings Under
C&E Scenario
IN THIS ILLUSTRATIVE CASE**

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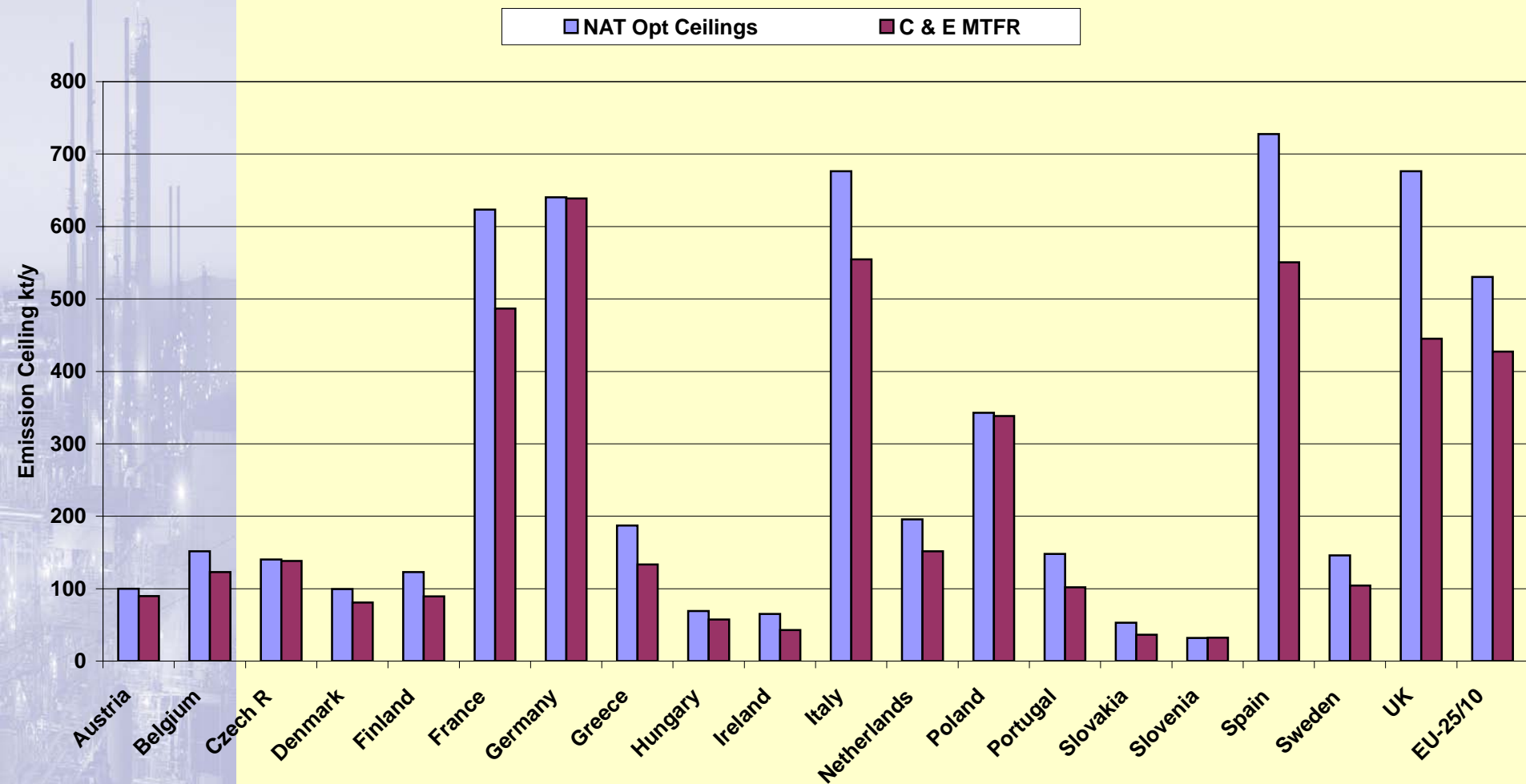
Optimised NAT Ceilings Can Be Achieved In All MS Under C&E Scenario


Comparison of Op SO2 Ceilings With MTRF SO2 Emissions Under "National Scenarios"



Optimised NAT Ceilings Can Be Achieved In All MS Under C&E Scenario

Comparison of Op NOx Ceilings
With MTRF NOx Emissions Under "National Scenarios"





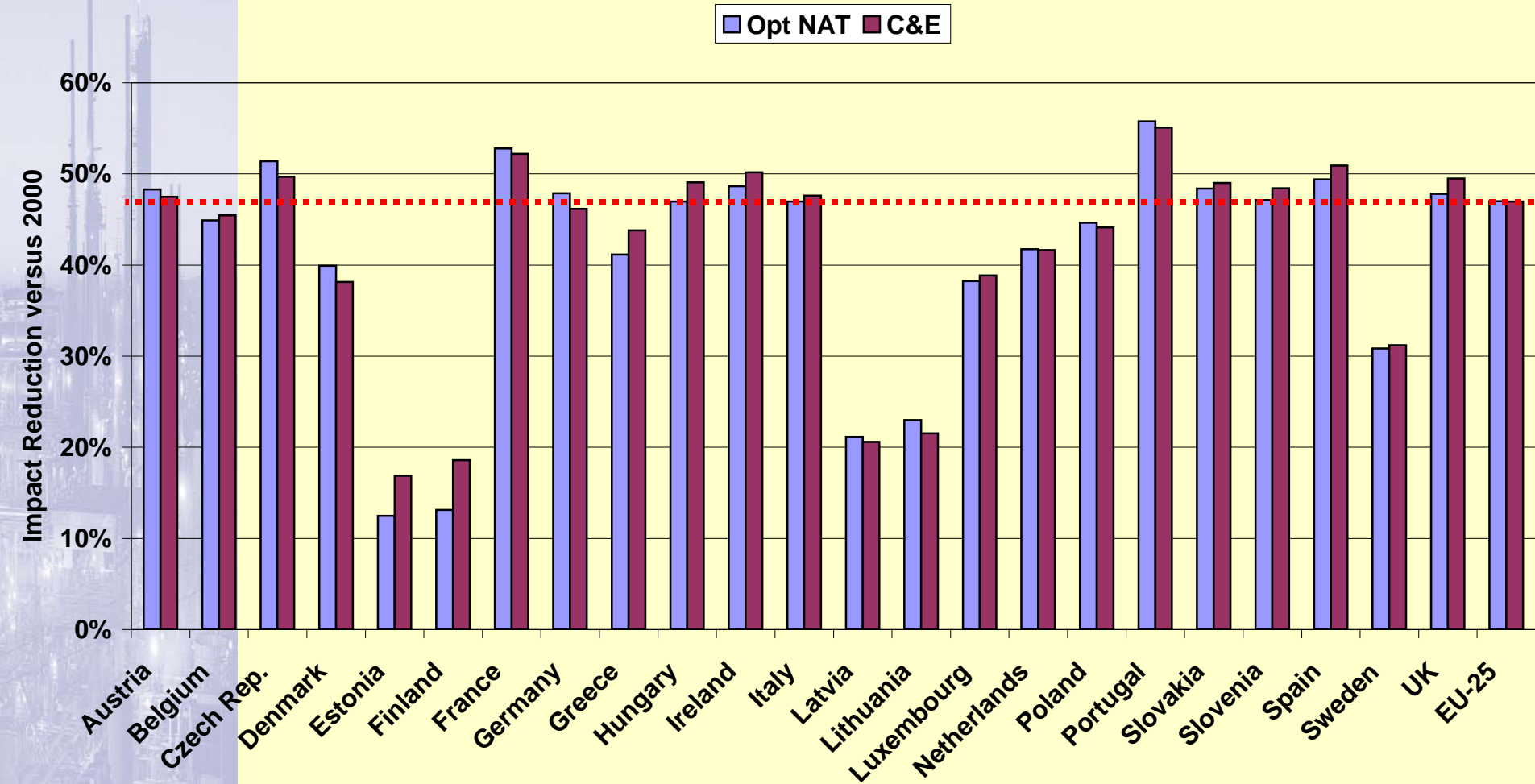
**But is there Health/Environmental
“Giveaway” if,
IN THIS ILLUSTRATIVE CASE
Ceilings are Based on National
Scenarios?**

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Overall TSAP Goals Met in Both Cases

Differences in Given MS << Differences Between MS

PM Impact Reductions v 2000: Comparison of "Optimised National" and "C&E Likely Ceilings"



Overall TSAP Goals Met in Both Cases

Differences in Given MS << Differences Between MS

Ozone Impact Reductions v 2000: Comparison of "Optimised National" and "C&E Likely Ceilings"

