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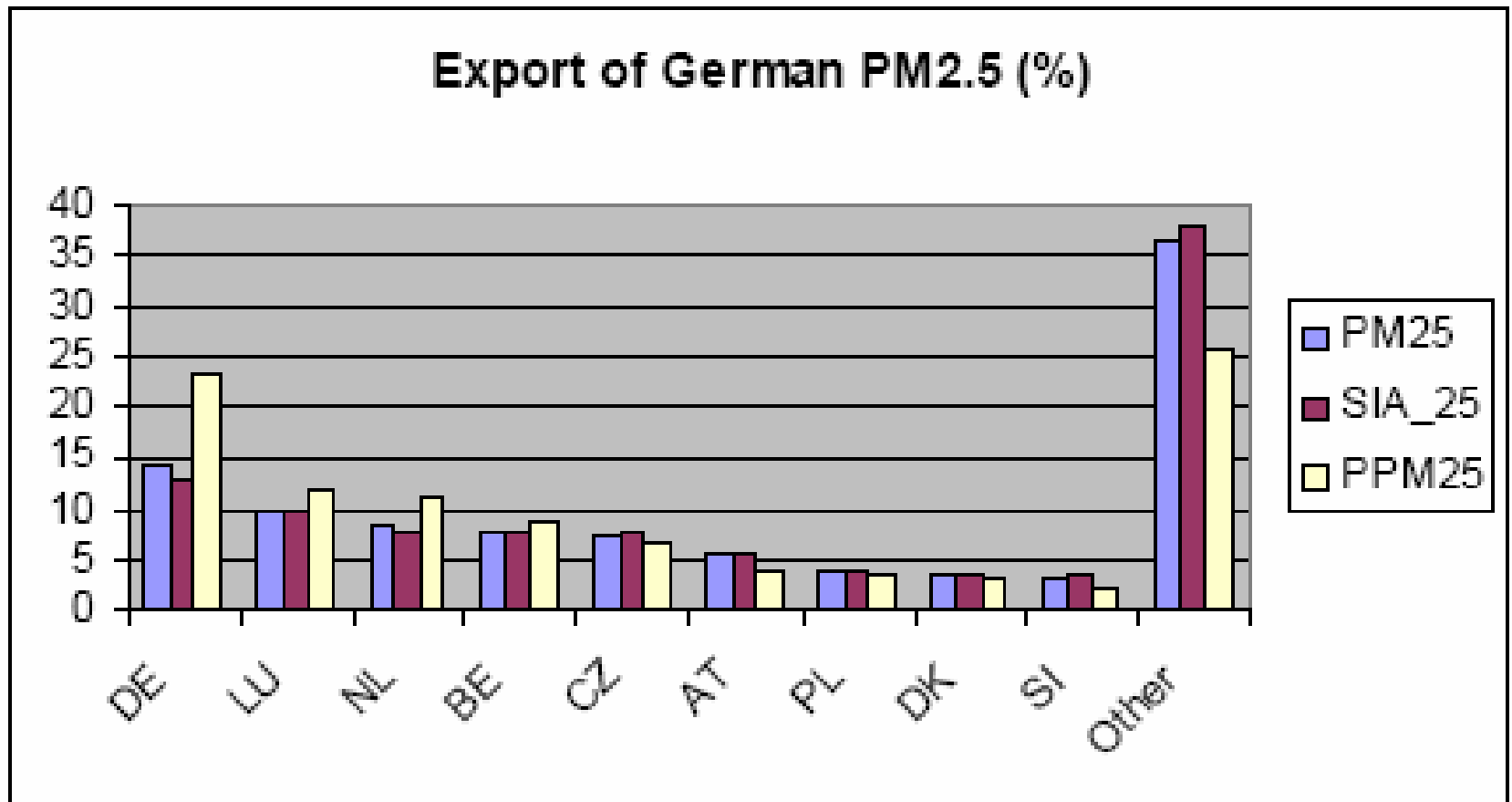


Transboundary Air Pollution in Europe

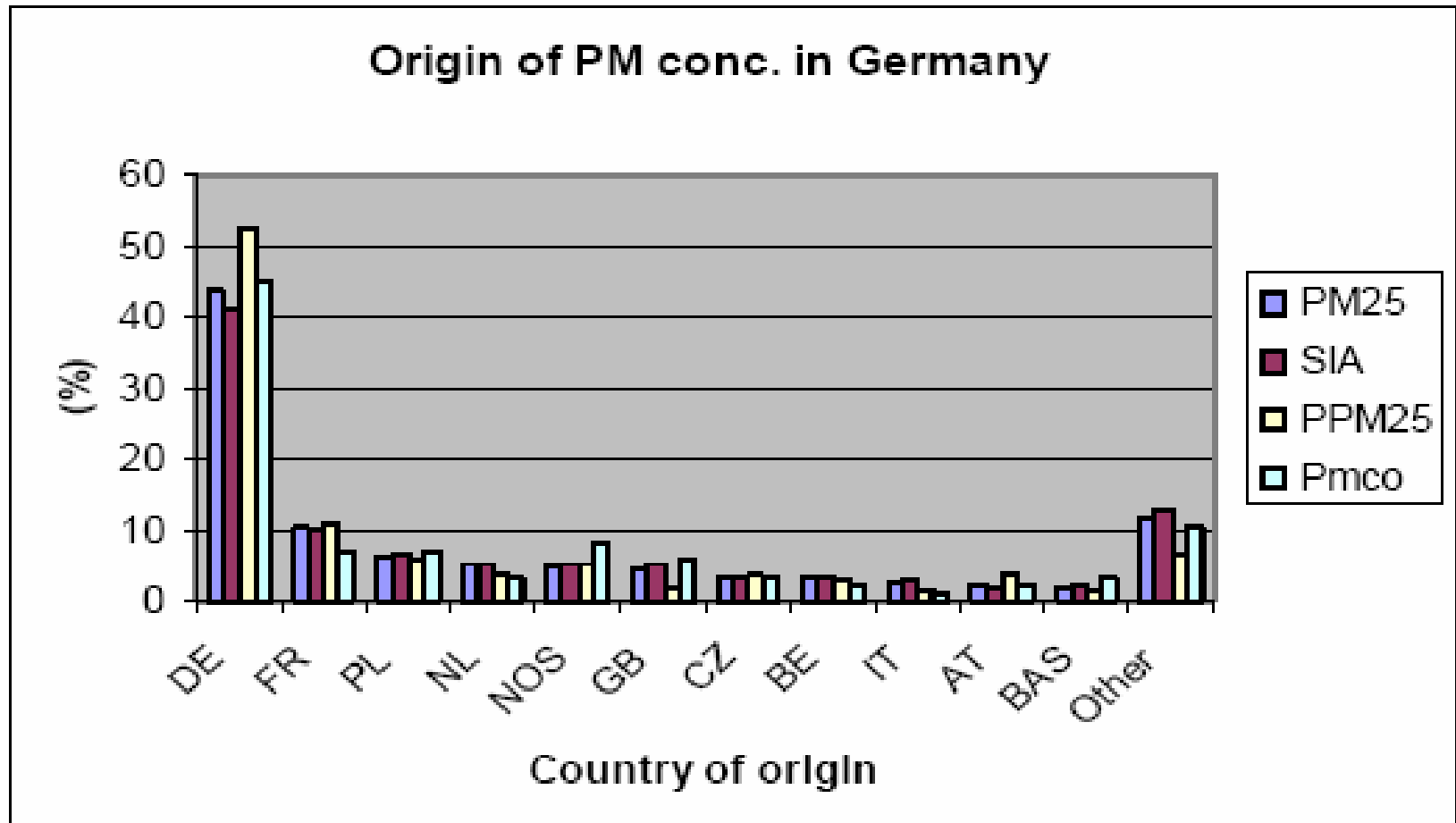
Perception, Solutions, Future

4th JCAP Conference, Tokyo, 1-2 June, 2005

Where does the German PM2.5 go?



Where does German PM2.5 come from?

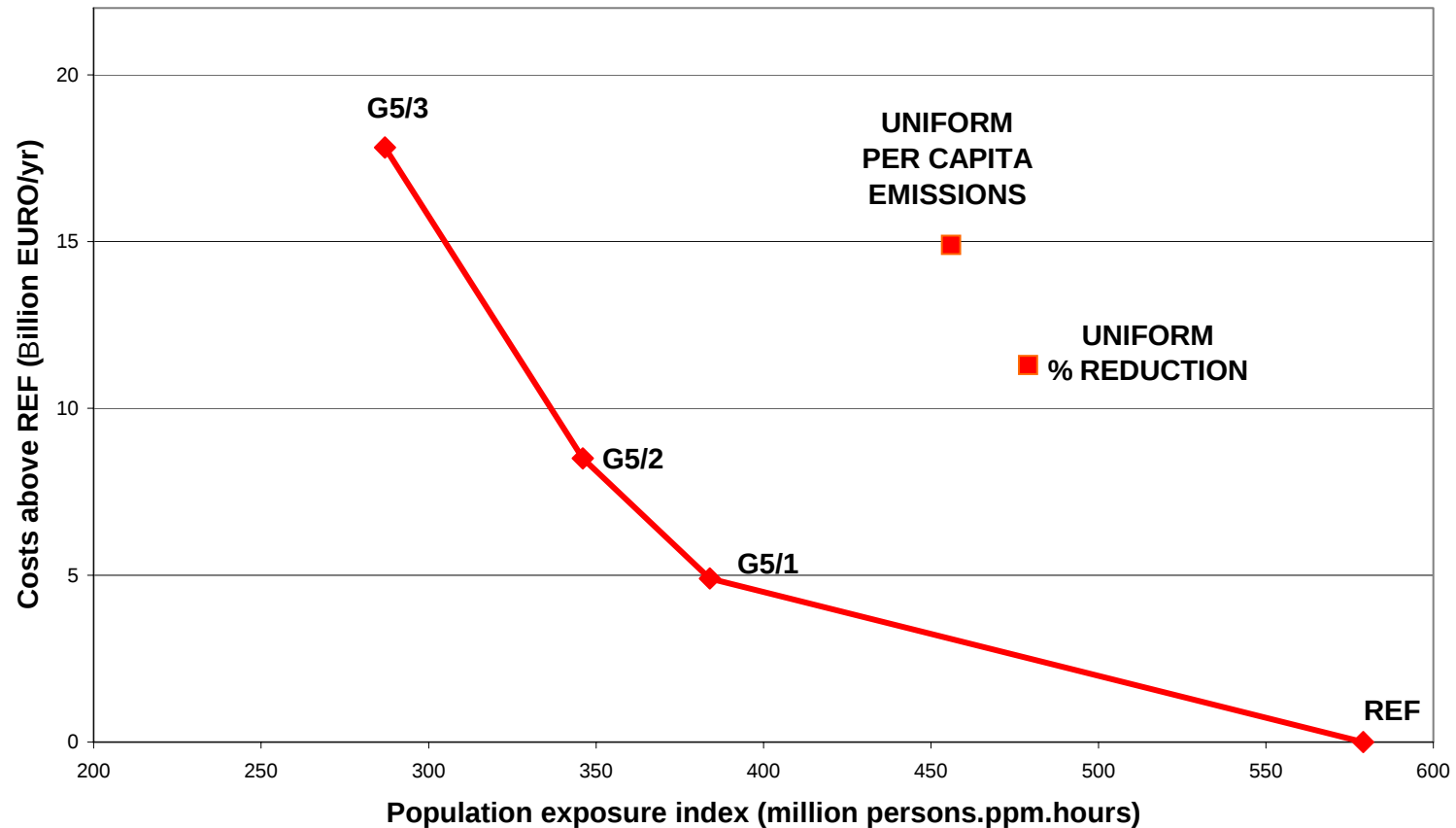


Air pollution policy process in Europe



- 1979:** UN/ECE Convention on Long-range Transboundary Air Pollution (CLRTAP) signed
- 1981:** European Monitoring and Evaluation Programme (EMEP) established
- 1985-1994:** A number of Protocols signed under the CLRTAP; SO₂, NO_x, NMVOC, HM
- 1997:** EU Acidification Strategy
- 1999:** Protocol to Abate Acidification, Eutrophication and Ground-level Ozone of CLRTAP (*Gothenburg Protocol – ratified 17 May 2005*)
- 2001:** EU National Emission Ceilings Directive (SO₂, NO_x, NH₃, NMVOC)
- 2005:** EU Clean Air For Europe (CAFE) strategy proposed (*includes for the first time targets for Particulate Matter emissions*)
- 2006:** Review of the EU NEC Directive

Uniform or effect-based scenarios?



Models help to separate policy and technical questions



**Decide ambition level -
environmental objectives**

**Value the importance of
uncertainties/risk**

Identify cost-effective and robust measures:

- Balance controls over different countries, sectors and pollutants
- Regional differences in Europe
- Side-effects of present policies
- Maximize synergism with other air quality problems
- Search for robust strategies

GAINS: GHG-Air pollution INteractions and Synergies

Synergies between air pollution control and greenhouse gas mitigation



- **Focus on cost-effective mitigation measures and co-benefits**
- **Focus on policy-relevant scales of analysis:**
 - Up to 2030
 - Country-by-country. Currently implemented for 43 countries in Europe, plans for China and India
- **Extension of RAINS(-Asia) integrated assessment model for air pollution to GHGs:**
 - Model the chain of (air) pollution from sources to effects
 - Assessment of emission reduction potentials and costs:
 - RAINS: SO₂, NO_x, VOC, NH₃, PM (~400 control options)
 - GAINS: CO₂, CH₄, N₂O, HFC, PFC, SF₆ (260 control options)