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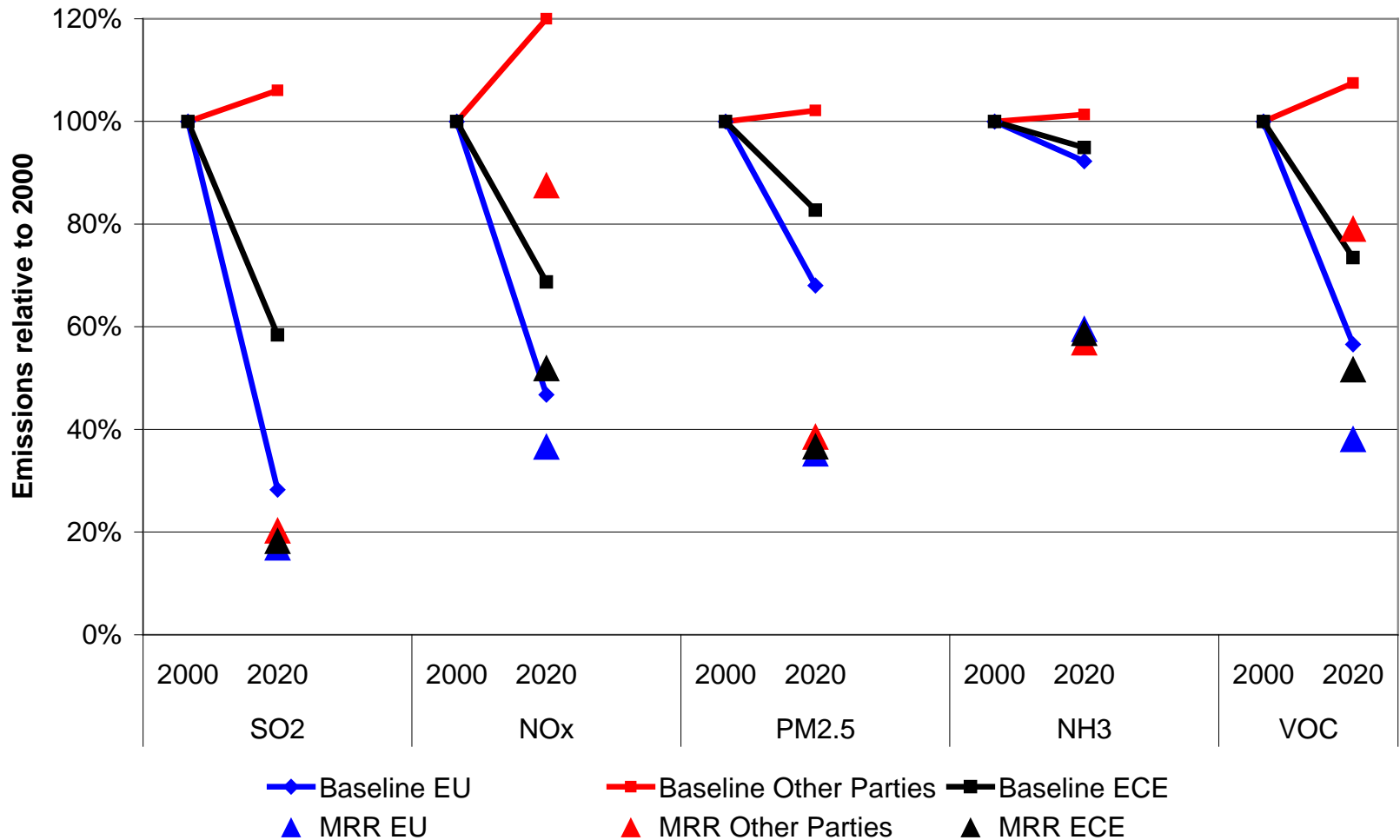
Centre for Integrated Assessment Modelling (CIAM)

Task Force Integrated Assessment Modelling (TFIAM)

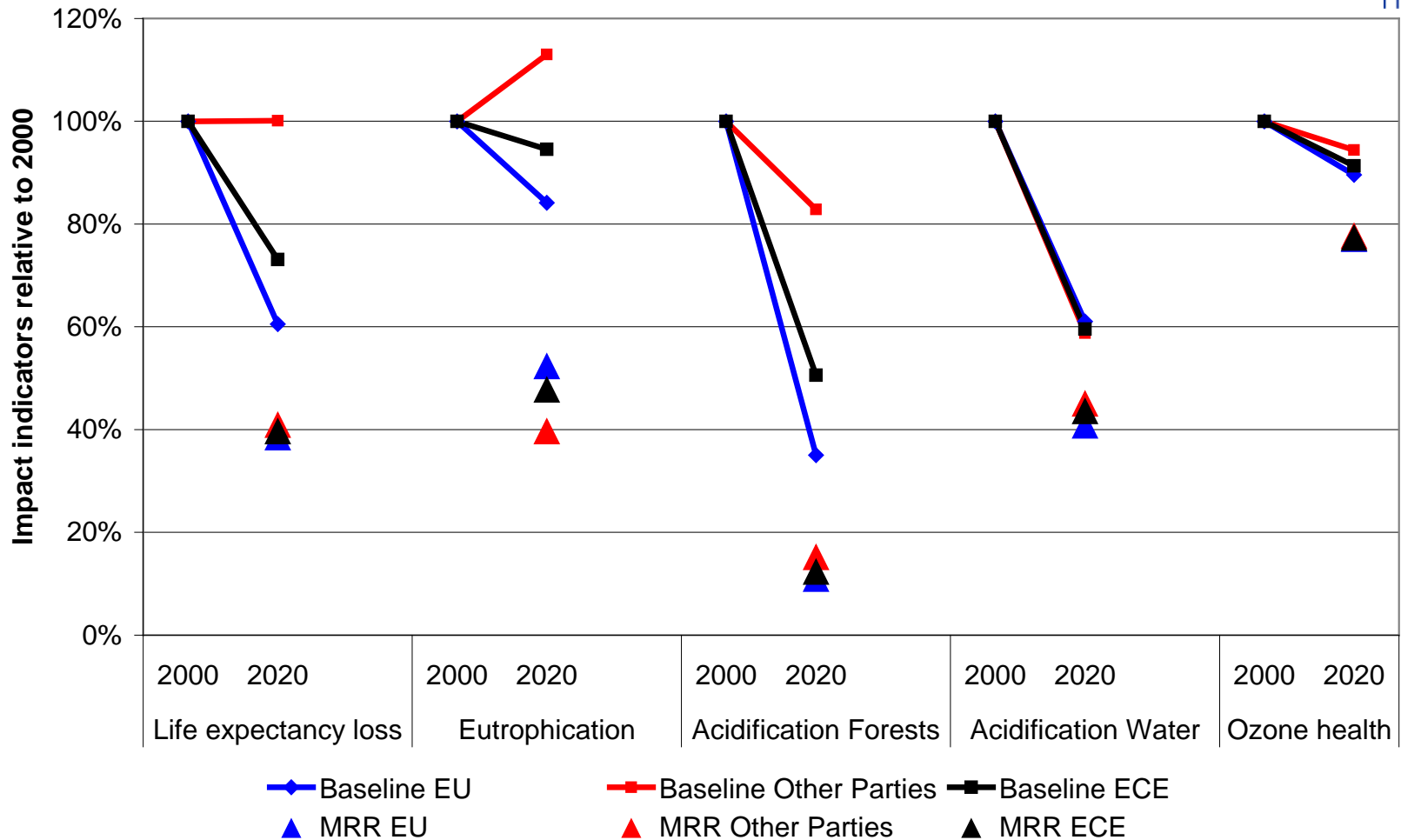
Key measures for the revision of the Gothenburg
Protocol

April, 2009

Baseline and MRR emissions relative to 2000



Baseline and MRR impact indicators relative to 2000

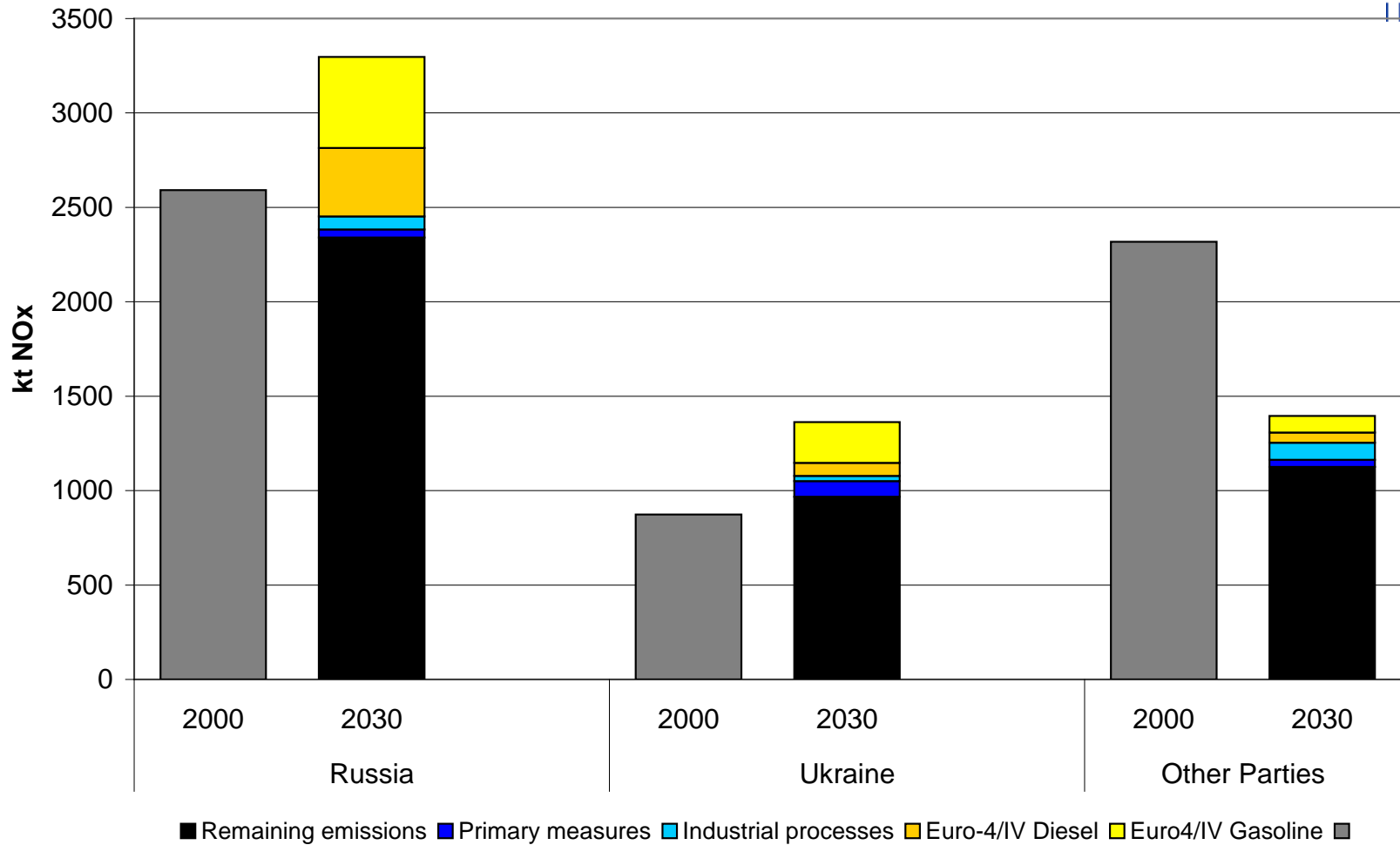


Analysis for non-EU countries that have not ratified the Gothenburg Protocol

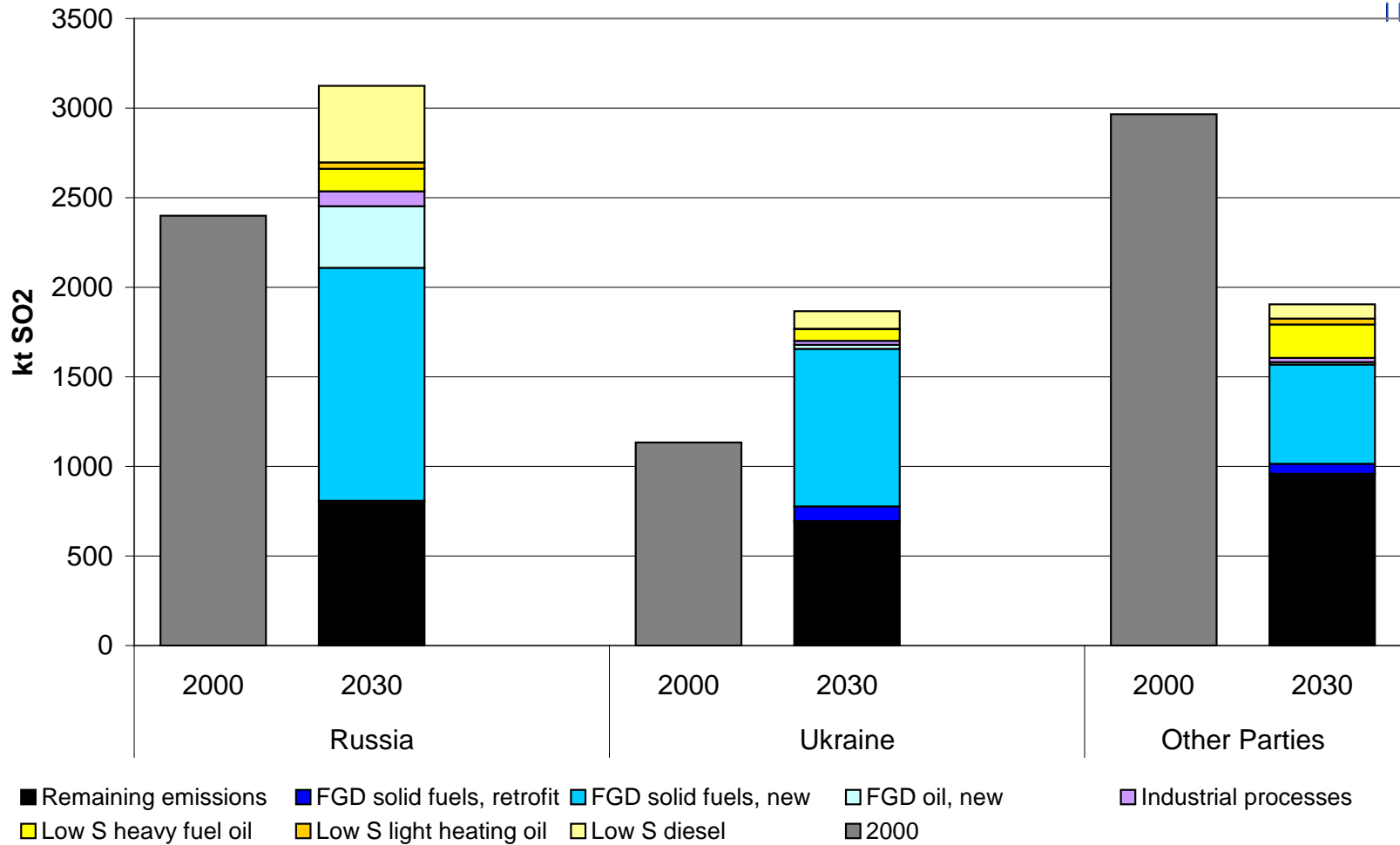


- “With measures” scenario:
 - FGD for new and retrofit of 50% of old plants in 2020
 - Low sulphur fuels (1% heavy fuel oil, 0.1% light fuel oil, 0.05% diesel)
 - Industrial processes: -50% SO₂ , -40% NO_x, and current EU PM emission standards for new Member States
 - Primary NO_x measures for boilers
 - Euro 4/IV for diesel and gasoline vehicles
 - Improved electrostatic precipitators for large boilers

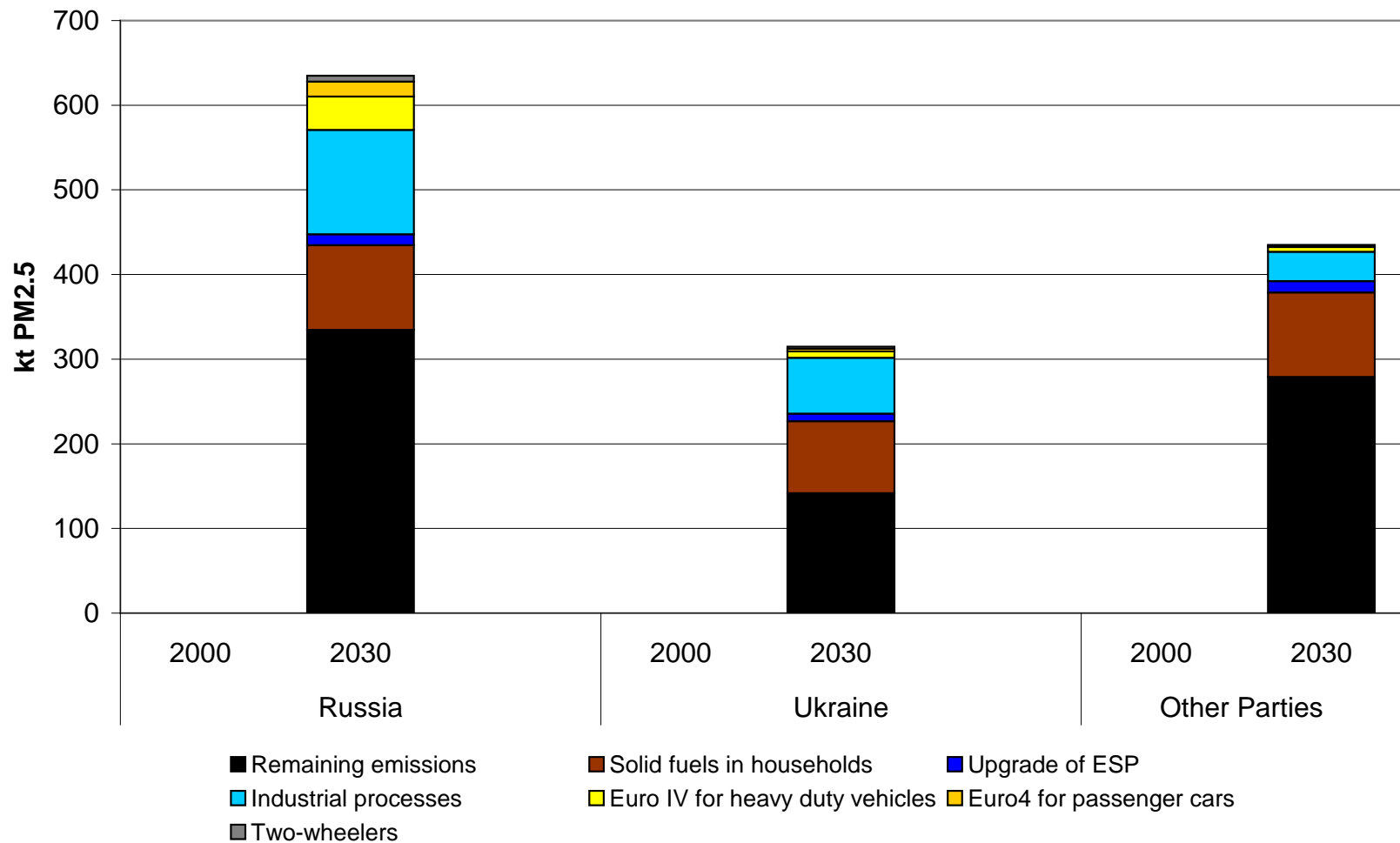
Emission control potentials for NO_x



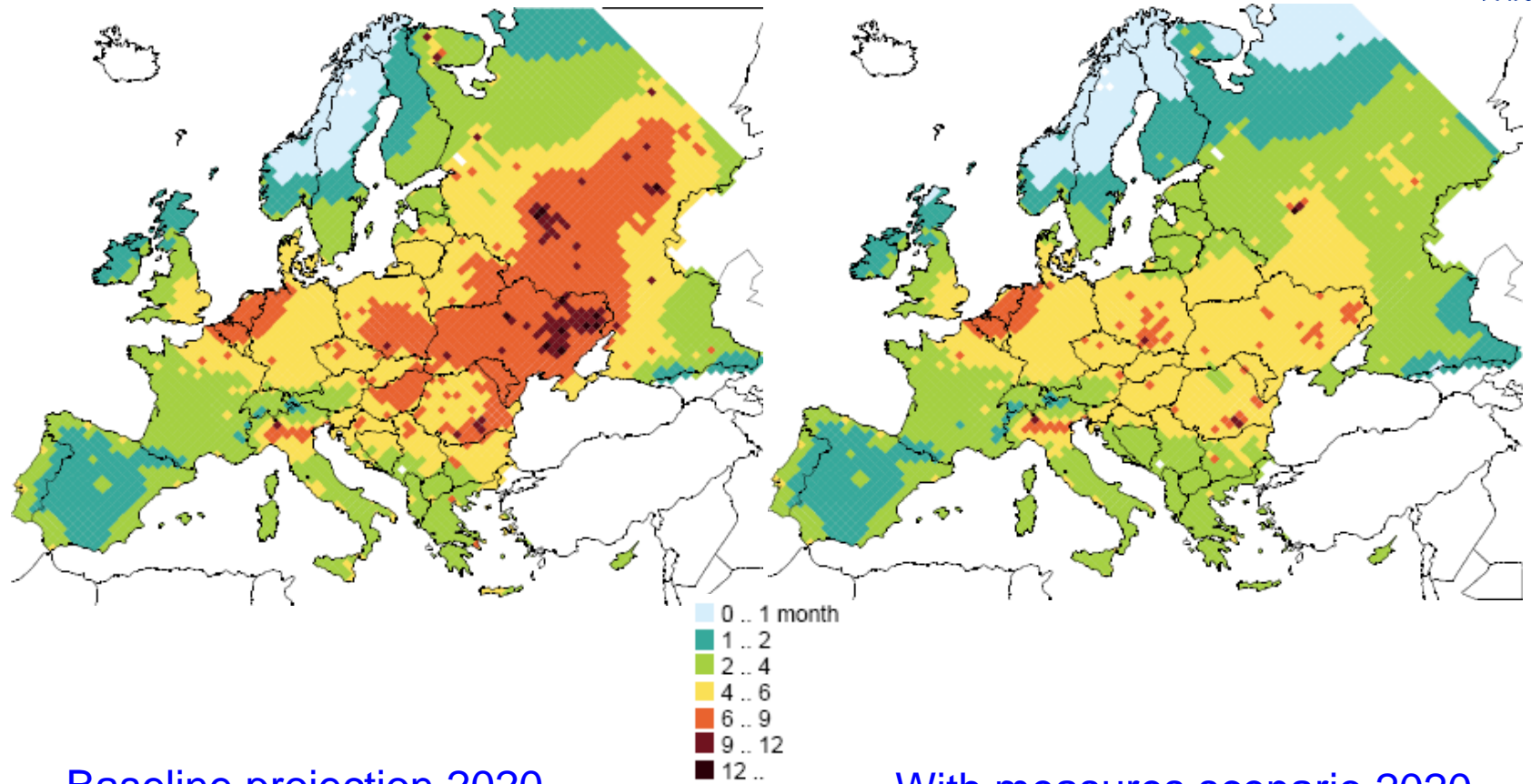
Emission control potentials for SO₂



Emission control potentials for PM



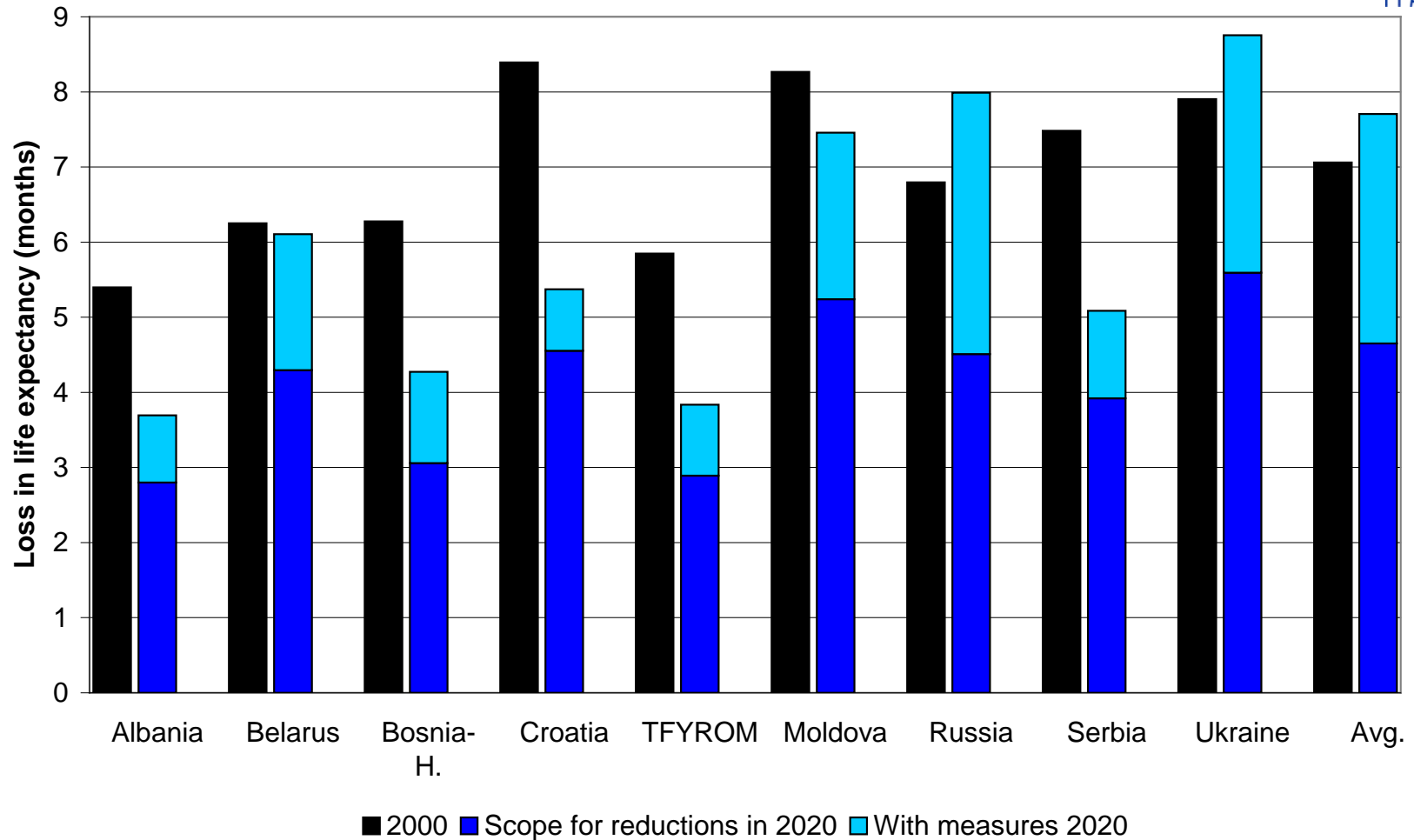
Loss in statistical life expectancy due to anthropogenic PM2.5



Baseline projection 2020

With measures scenario 2020

Loss in statistical life expectancy due to anthropogenic PM2.5



Potentials of major control measures compared to 2020 baseline projection



- SO₂: FGD for new plants
- 0.05% S diesel

- Euro-4 for passenger cars:
- Euro-IV for heavy duty vehicles:

- PM emission limit values for stationary sources
- VOC emission reduction from agricultural waste burning

- In 2020, implementation of these measures would reduce health impacts from PM by 40 percent.

- In addition, major health improvements would result from a phase-out of solid fuels in households

Elements for a broad agreement

How could every party win from a new protocol?

- EU27 would benefit from lower emissions in esp. Ukraine & Russia → up to 3 month increase in life expectancy in Poland, Hungary and Romania.
- Implementing the less expensive EU-emission standards in non-EU countries would be very cost-effective for health and nature protection in the ECE-region.
- Harmonizing emission limit values throughout the ECE-region would either be too ambitious for non-EU countries or prevent environmental improvements in the EU-region → maintain separate paces for EU and non-EU.
- Agreements on technology transfer and financial burden sharing (with WB & EBRD?) could encourage a new protocol?

Key additional measures for the EU27?



- Euro-VII/7 ?
- IED ++ ?
- NH₃ measures for pigs, poultry and cattle (feed, spreading, housing)