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Projections of global anthropogenic CH_4 emissions up to 2030

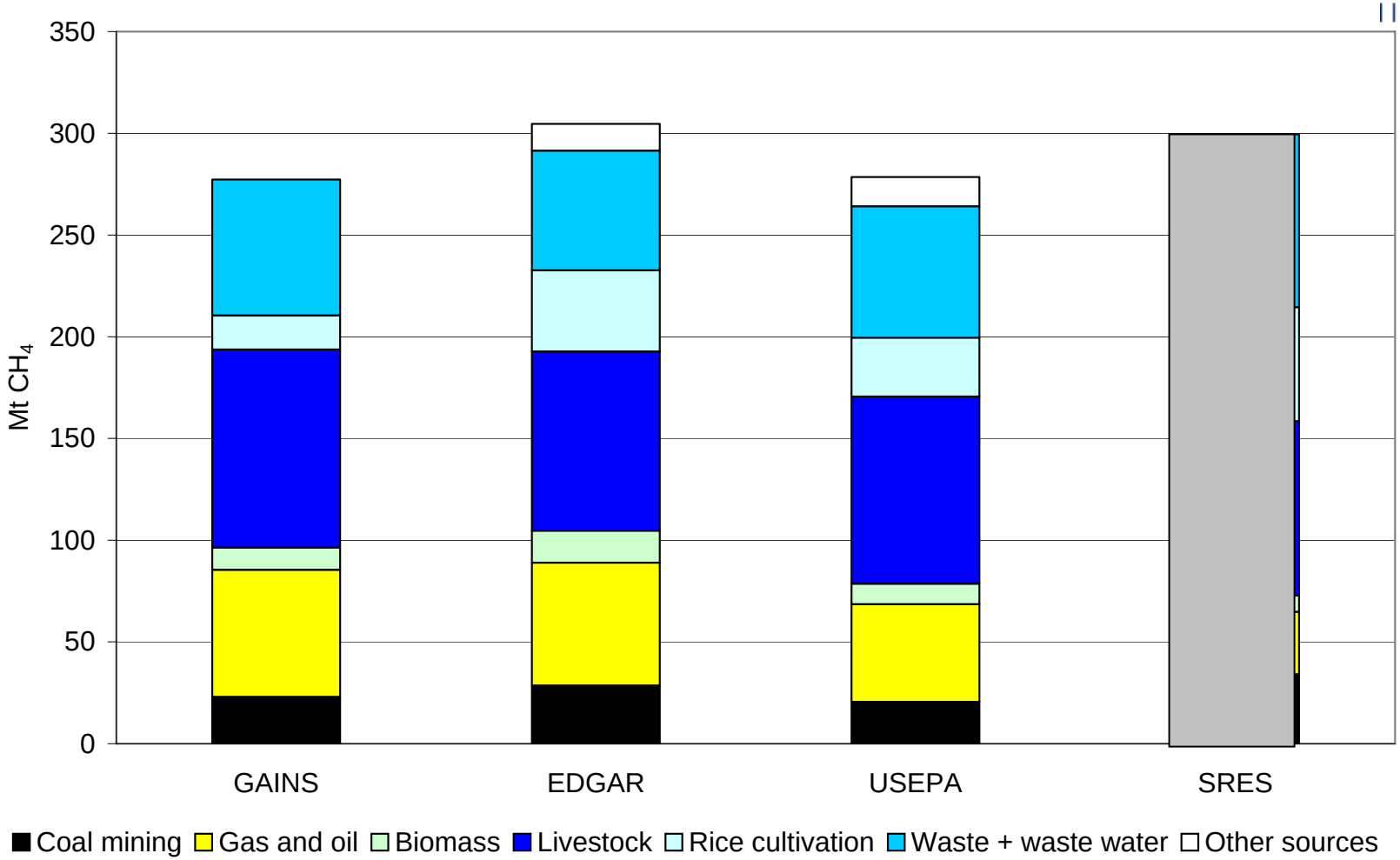
Methodology

- Estimates of CH_4 emissions with IIASA's GAINS (Greenhouse gas – Air pollution Interactions and Synergies) model
- Global GAINS implementation distinguishing 75 countries and country-groups
- Emissions estimates based on
  - activity data (national projections or SRES B2)
  - "uncontrolled" country-specific emission factors
  - CH_4 removal efficiencies of mitigation options
  - implementation rates of mitigation options
- More info: www.iiasa.ac.at/gains

Source category distinguished by GAINS for CH_4

GAINS sector	*GAINS sub sector*	*UNFCCC category*
Livestock	Enteric fermentation	4 A
	Manure management	4 B
Rice cultivation		4 C
Waste	Biodegradable solid waste	6 A
	Wastewater	6 B
Coal mining		1 B1
Gas	Gas production	1 B2
	Gas consumption	1 B2
Oil production		1 B2
Biomass	Biomass combustion for energy purposes	1 A1

Comparison of emission estimates for 2000



28 CH_4 mitigation options considered by GAINS

- **Gas sector**
  - **Reduced leakages during gas transmission and distribution**
  - **Flaring instead of venting**
- **Waste management**
  - **Recycling / composting of biodegradable waste instead of landfill**
  - **Methane recovery from landfills**
- **Enteric fermentation**
  - **Dietary changes for cattle coupled with livestock reductions**
- **Manure management**
  - **Anaerobic digestion plants and stable adaptation**
- **Coal mines**
  - **Upgraded gas recovery in coal mines**
- **Rice paddies**
  - **Modified rice strains**

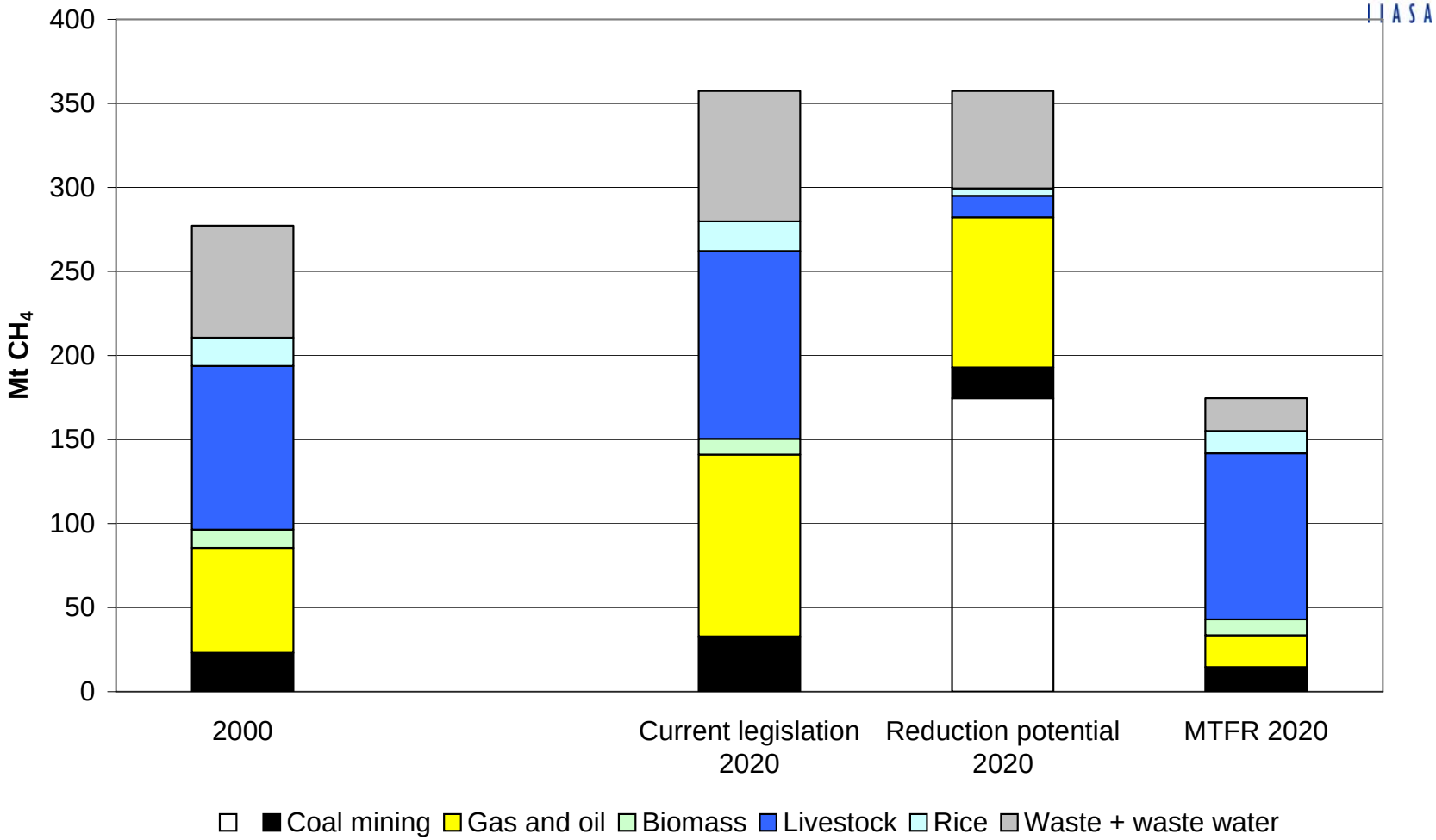
Assumptions for the 2020 projections

	Current legislation	Potential for further reductions
Europe	National legislation	National application limits
North America and Pacific OECD	•Coal mining gas recovery: 50% reduction •Reduced leakages from gas distribution networks: 50% reduction •Integrated sewage treatment implemented in all urban areas •Waste incineration instead of disposal	As for EU-12, except for the waste sector, for which reduction potentials corresponds to unregulated North-Western European levels

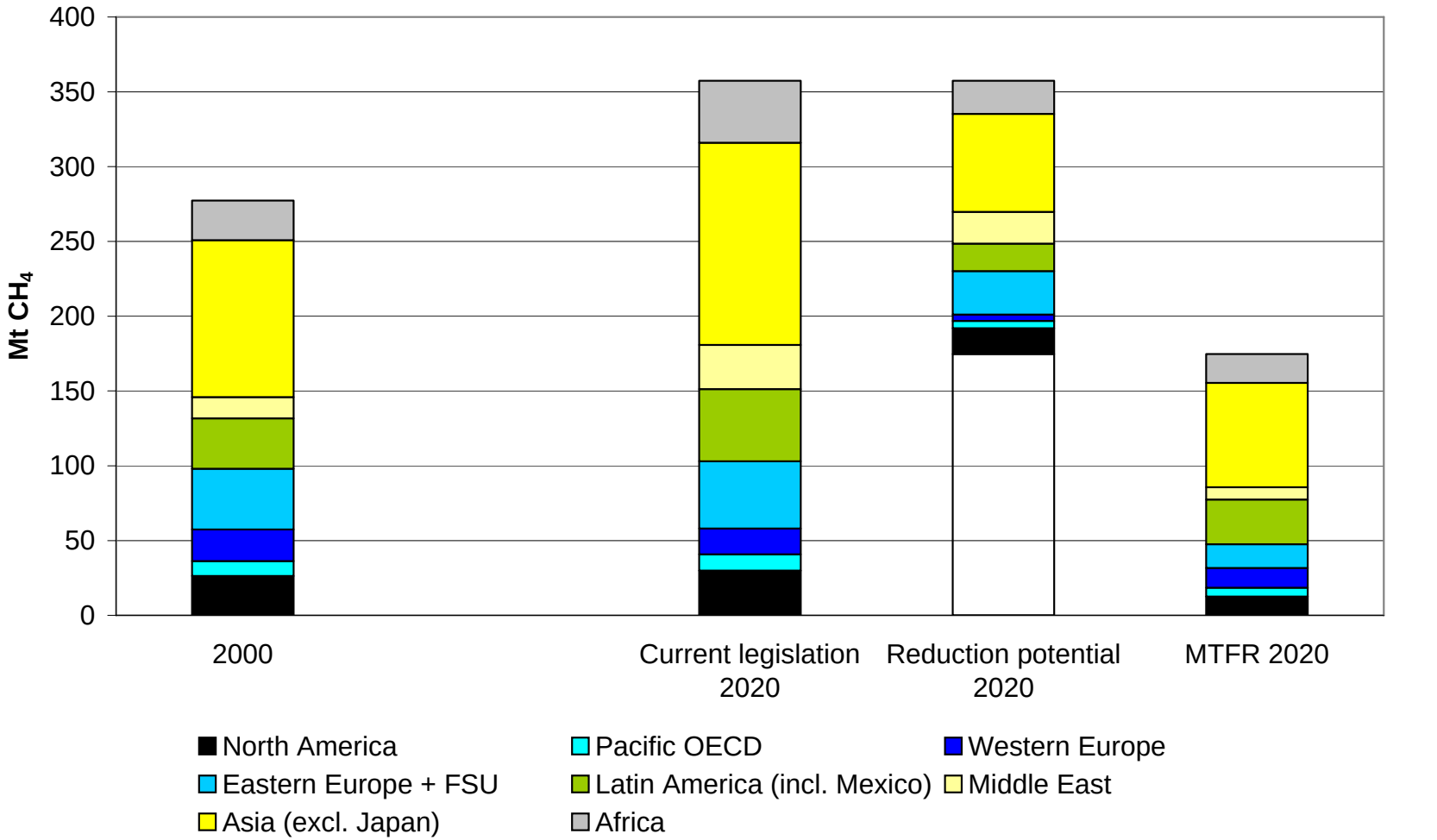
Assumptions for the 2020 projections

	Current legislation	Potential for further reductions
Former Soviet Union	Coal mining gas recovery: 40% reduction	Same average reduction potentials as calculated for European part of Russia and Ukraine.
Developing countries	Coal mining gas recovery: 30% reduction	As for non-EU Eastern Europe
Latin America, Middle East	Coal mining gas recovery: 40% reduction	Same average reduction potentials as calculated for non-EU Eastern Europe

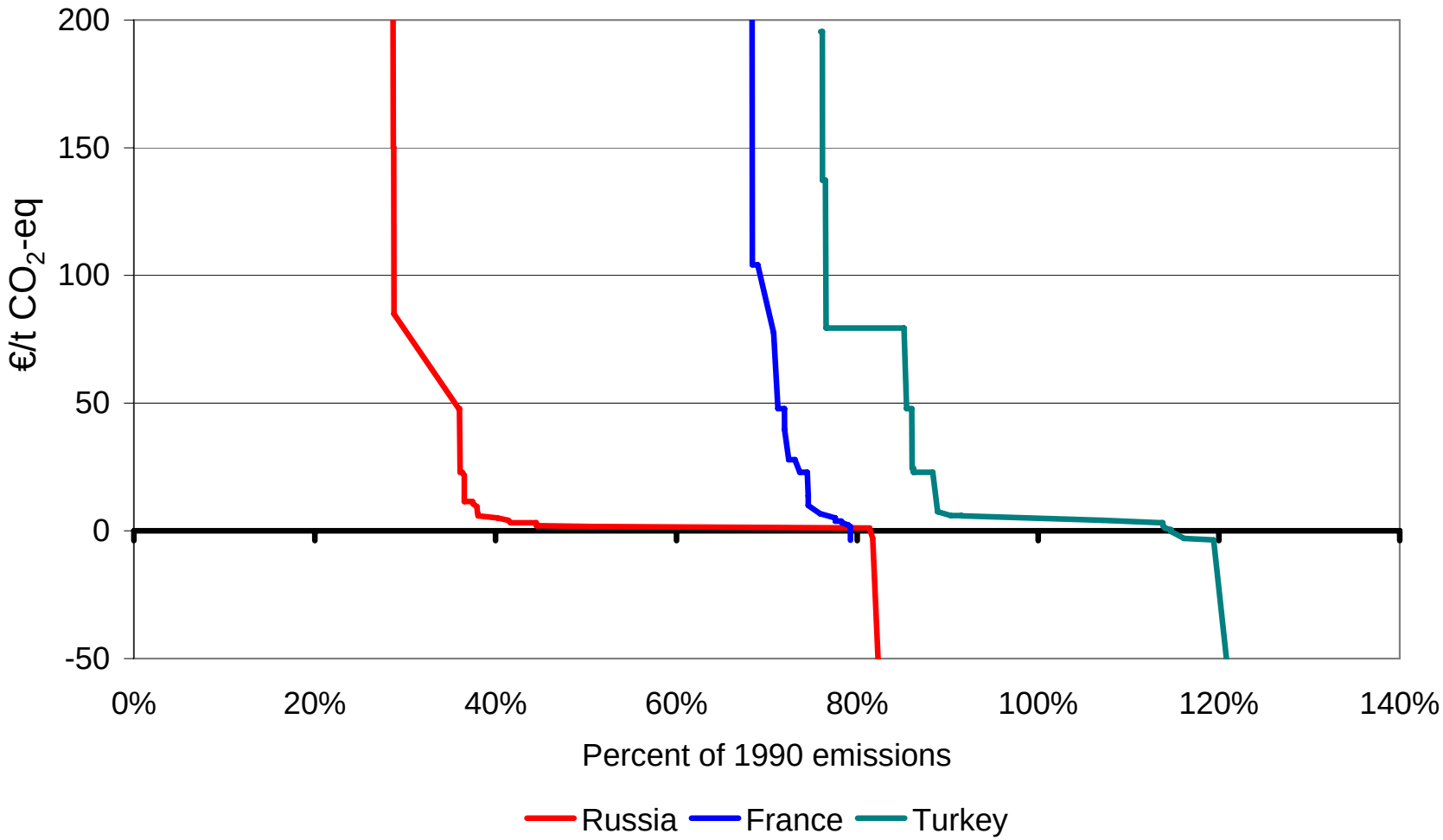
CH_4 emissions by sector



CH_4 emissions by region



Cost curves for 2020



Costs for additional reductions beyond current legislation

Conclusions

- **Under business as usual assumptions on economic development and mitigation policies, global CH_4 emissions are projected to grow by ~1.3%/year (or by 30% between 2000 and 2020).**

- **Technical measures are available to mitigate CH_4 emissions.**
  If fully implemented, they could reduce in 2020 baseline CH_4 emissions by 50% (or by 33 % relative to 2000).

- **~75% of the reduction potential emerges for gas distribution and waste treatment. 35% of the global reduction potentials occur in Asia, and 15% in FSU.**

- **Several of the mitigation measures are (very) cheap.**