International Institute for Applied Systems Analysis
IIASA www.iiasa.ac.at

LRTAP
Long-range Transboundary Air Pollution

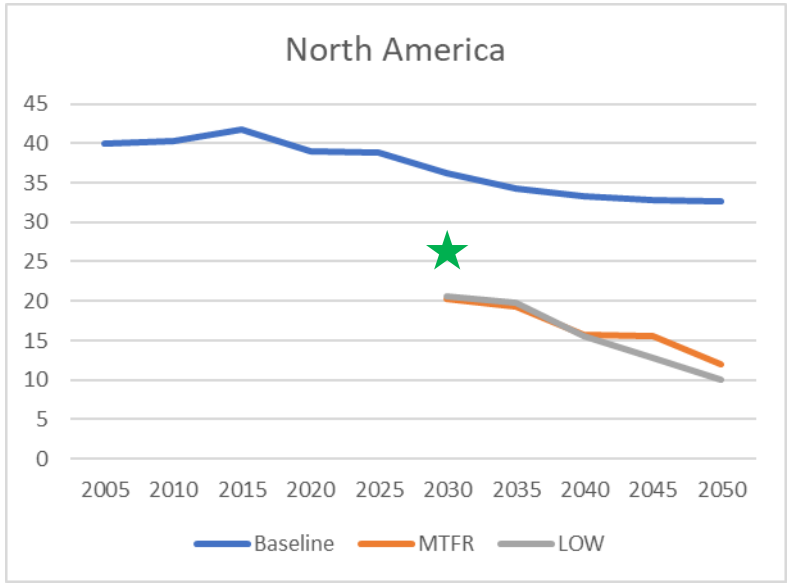
Methane mitigation options

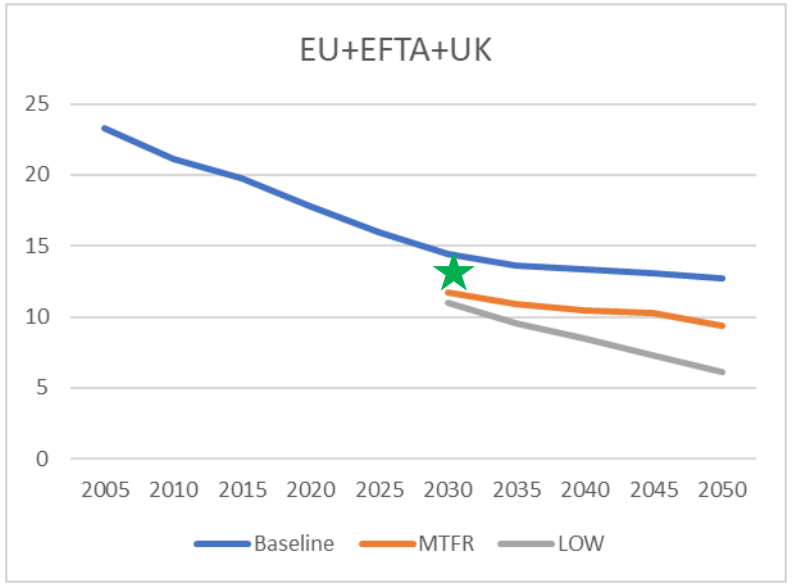
Outlook for UNECE and thoughts from global modelling

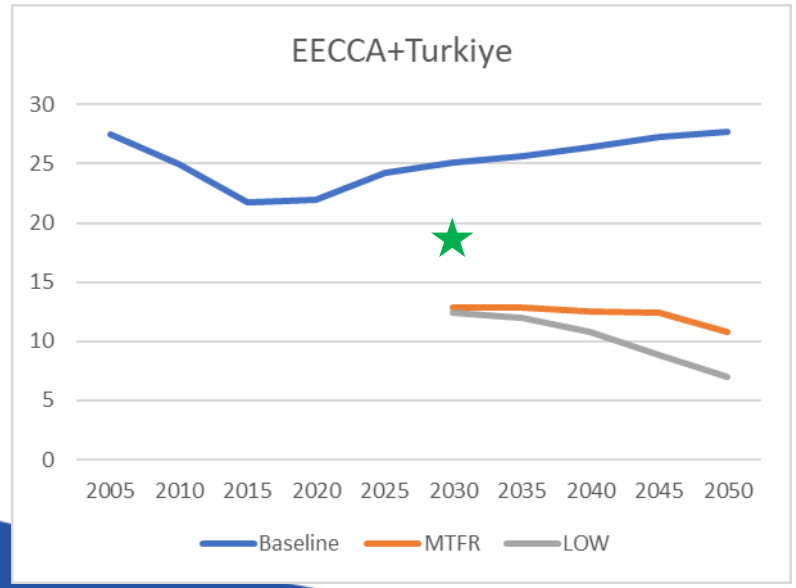
Z. Klimont, **L. Hoglund-Isaksson**
EMEP Center for Integrated Assessment Modelling (CIAM)

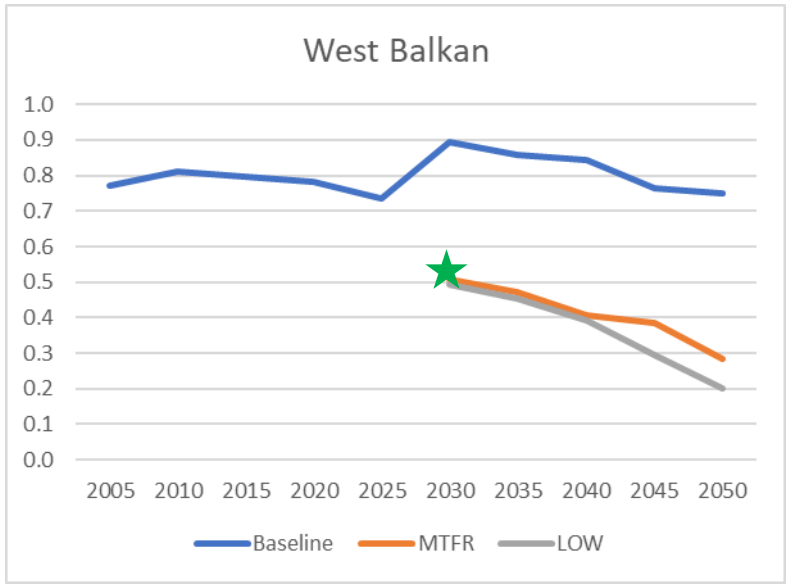
Informal delegations meeting, Leuven, 21-24 Oct 2024

Anthropogenic methane emissions outlook for the UENCE region (million tons)



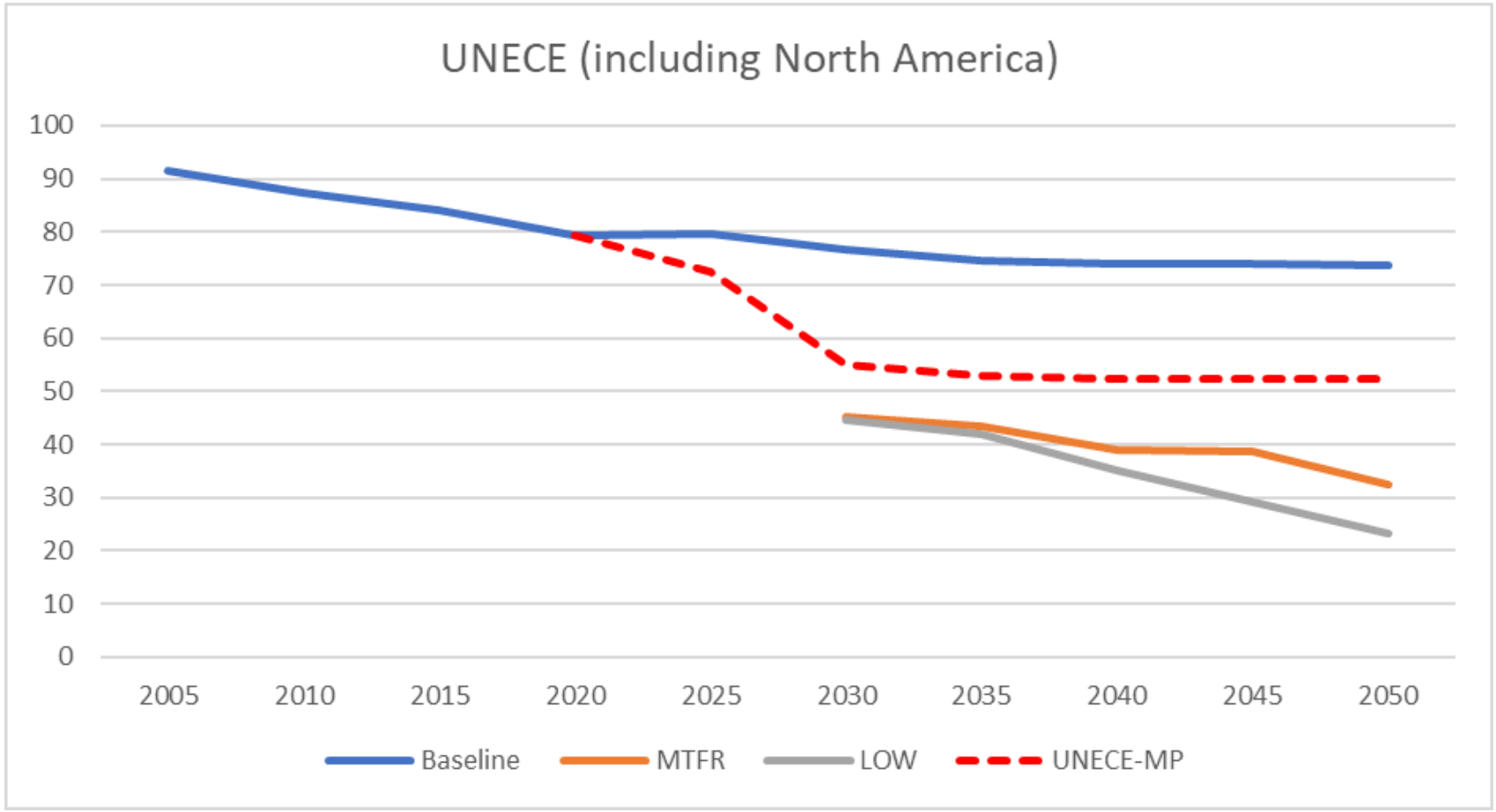






★ *Methane pledge* - assuming that signatories reduce 2020 emissions by 30%

UNECE Methane emissions outlook (million tons)



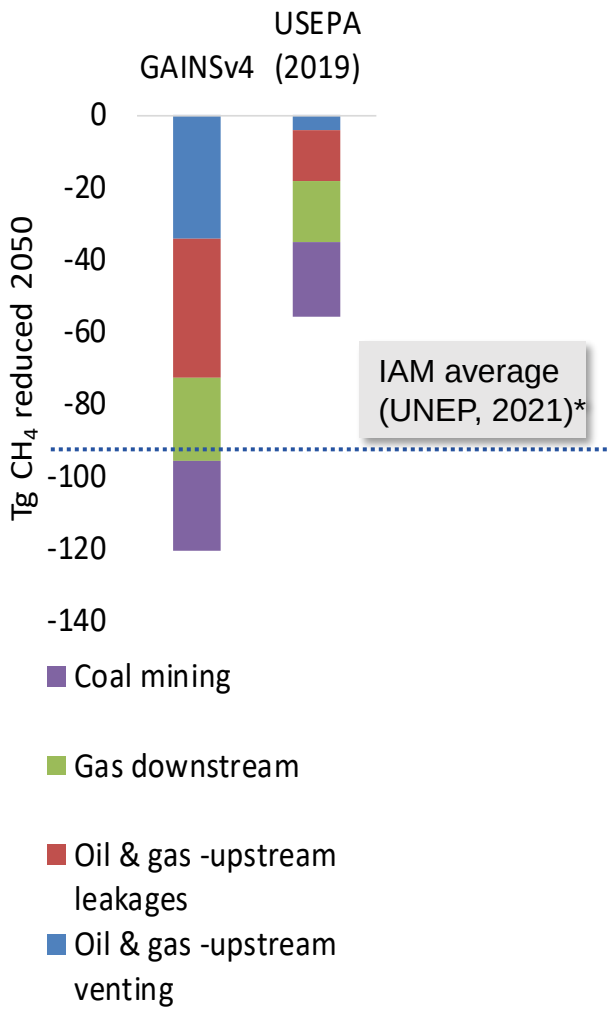
*Definition of **UNECE–MP** case*

- Methane pledge UNECE signatories -> 30% reduction of 2020 *Baseline* from 2030 onwards; for 2025 10% reduction arbitrarily assumed
- UNECE non-signatories remain at Baseline

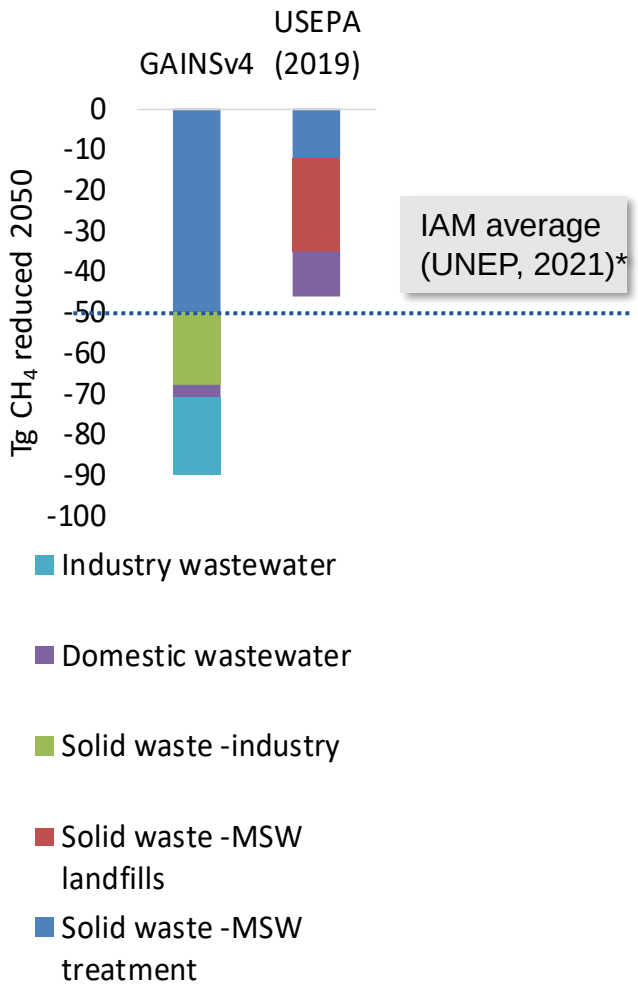
Global CH_4 mitigation potential estimates – 2050

(estimates of mitigation potential for 2030 are quite similar)

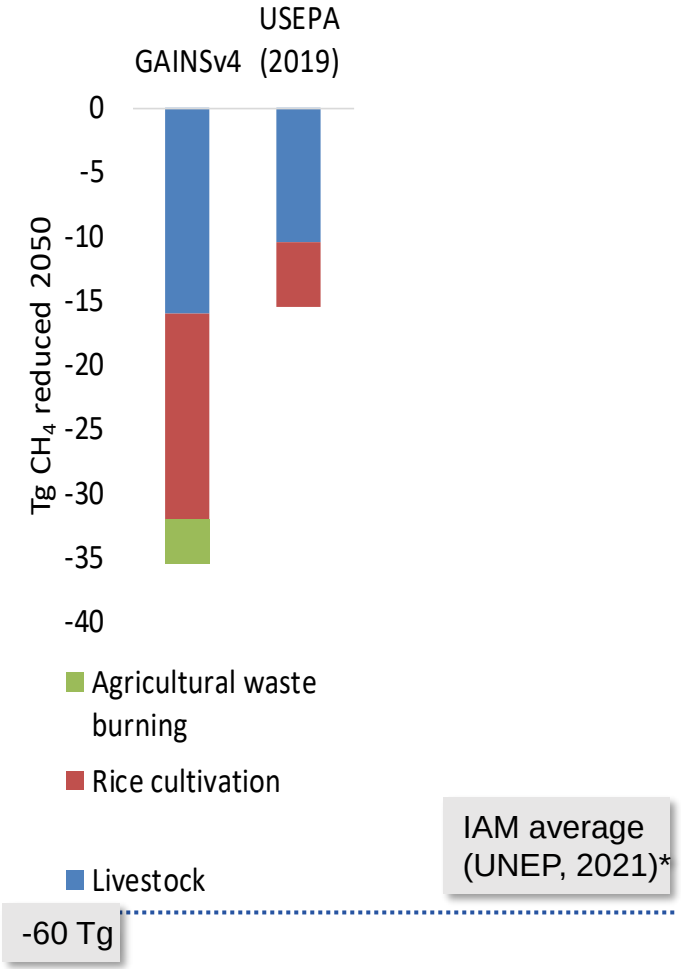
Energy



Solid waste and wastewater



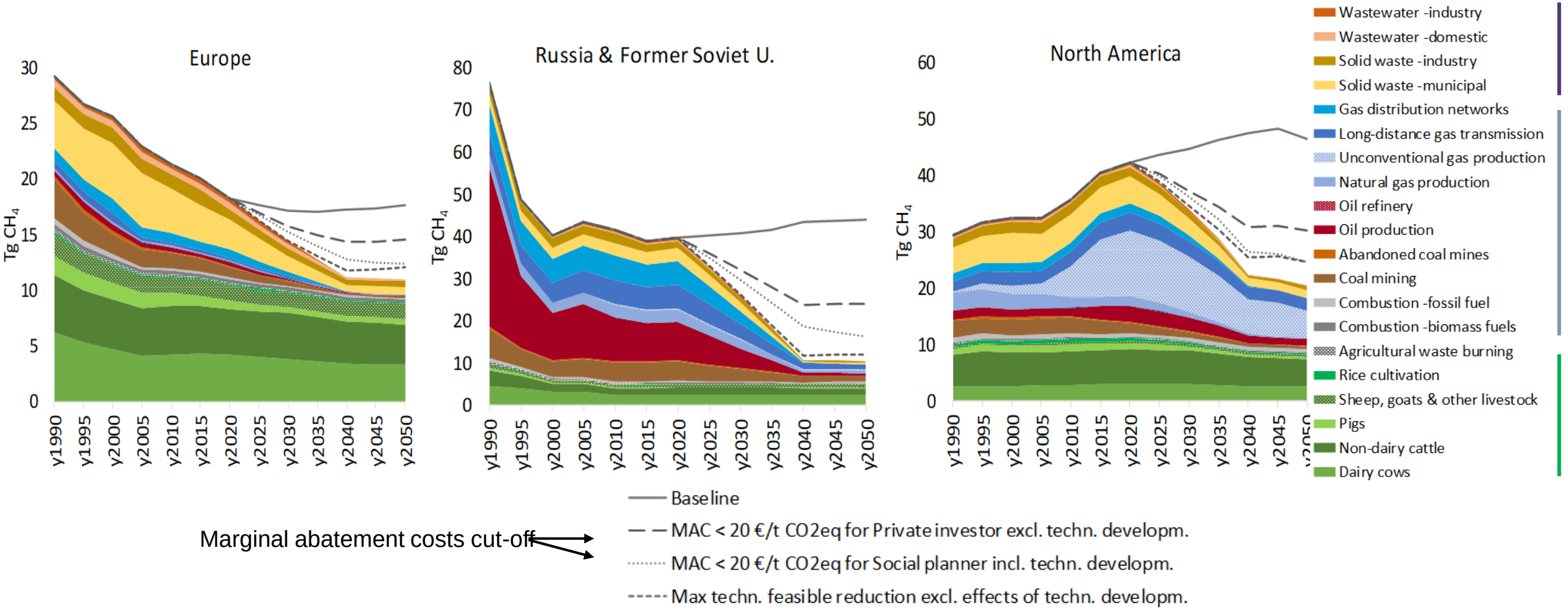
Agriculture



* Global Methane Assessment (UNEP, 2021)

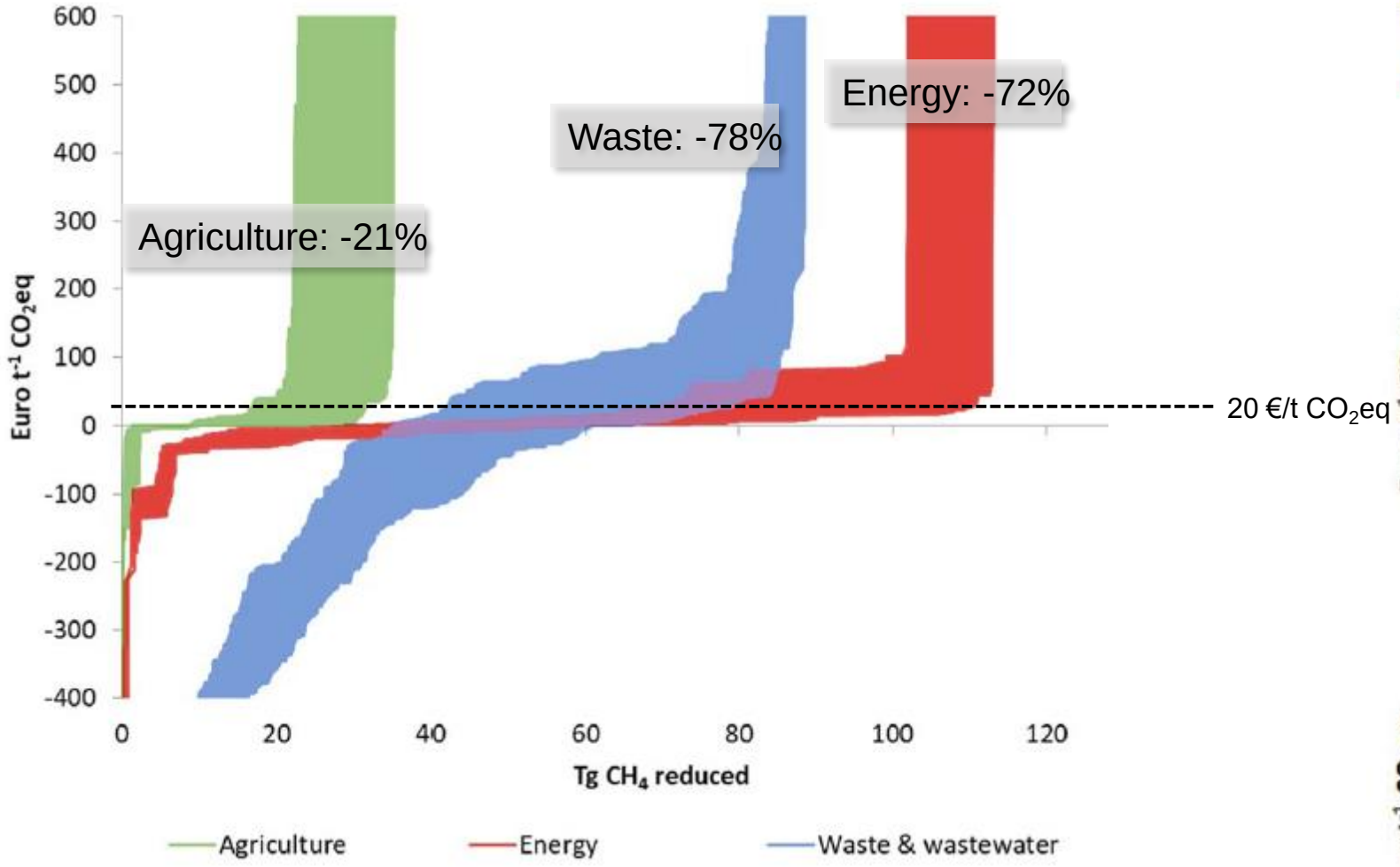
Source: GAINSv4; Höglund-Isaksson et al., 2020 (https://doi.org/10.1088/2515-7620/ab7457)

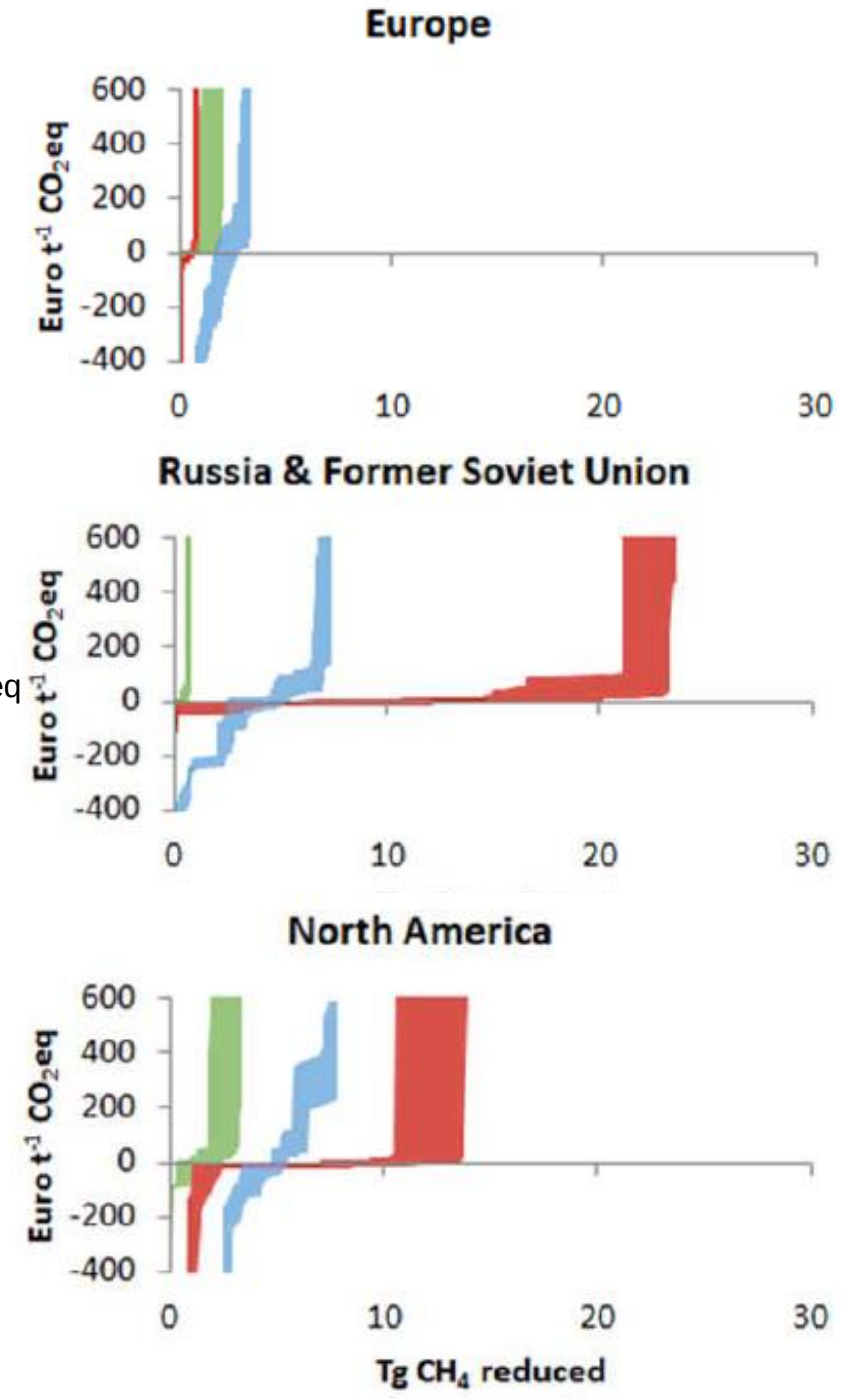
Large regional variation in sectoral emissions and mitigation potentials



Source: GAINSv4; Höglund-Isaksson et al., 2020 (https://doi.org/10.1088/2515-7620/ab7457)

Marginal abatement cost curves (ranges*) for global and regional CH_4 mitigation in 2050





* Ranges reflect private sector (upper) and social planner (lower) investment perspectives as well as inclusion of technological progress/development

Source: GAINSv4; Höglund-Isaksson et al., 2020 (https://doi.org/10.1088/2515-7620/ab7457)

Summary

- Current baseline estimates show continued growth of global methane emissions with strong regional variation
- Energy transition – decarbonization policies – essential element of successful methane reduction strategy
- Undeniably mitigation potential exists and is well understood in some sectors, e.g., fossil fuel production and distribution, waste management
- Scope and cost of mitigation varies significantly across the regions, but energy, waste, and agriculture are always key
- Large uncertainties in estimates and feasibility of methane mitigation from agriculture sector
- Understanding of scope and costs of non-technical measures (including important regional sensitivities) appears high priority