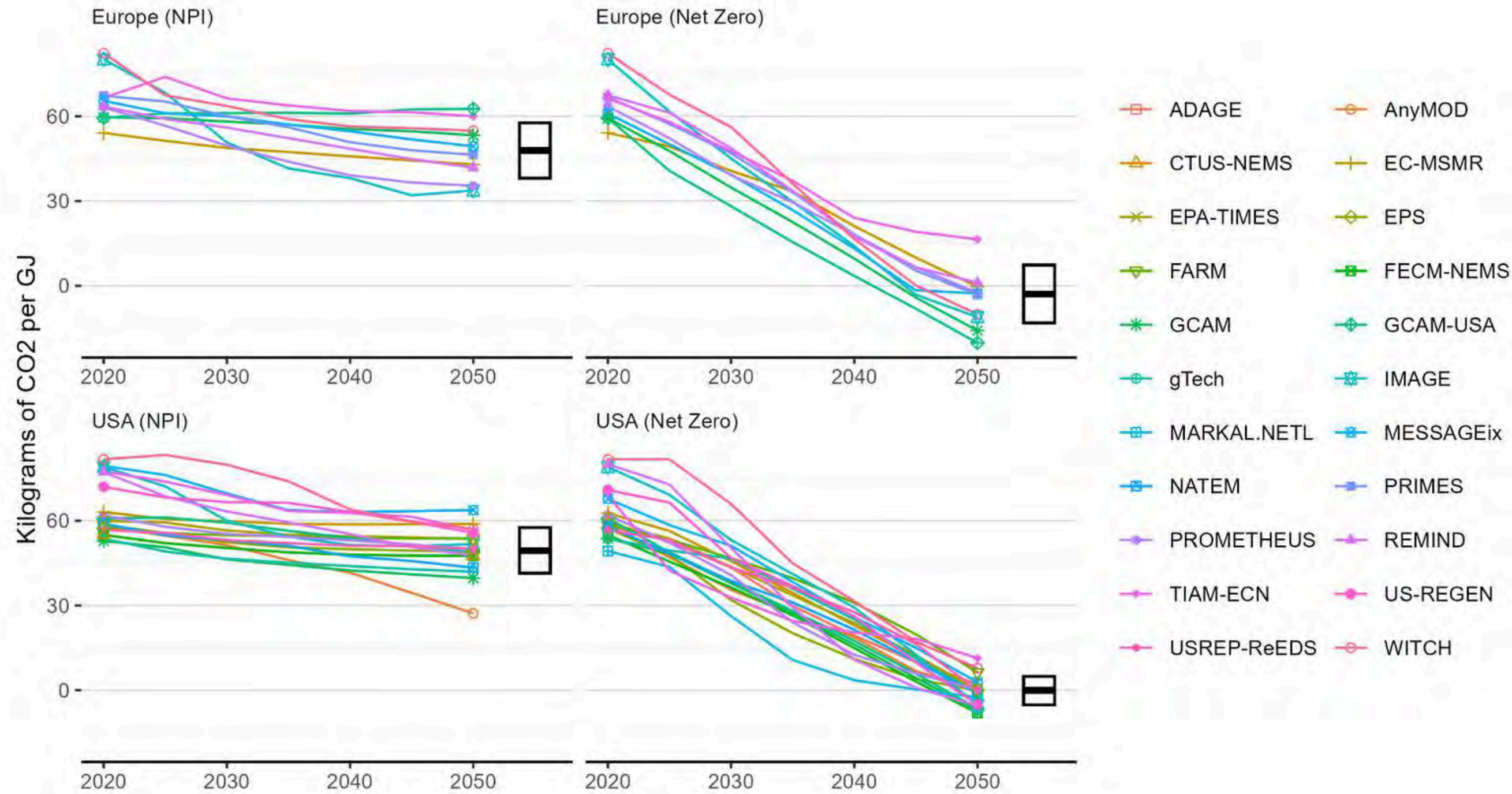




# CARBON INTENSITY



## Main Takes:

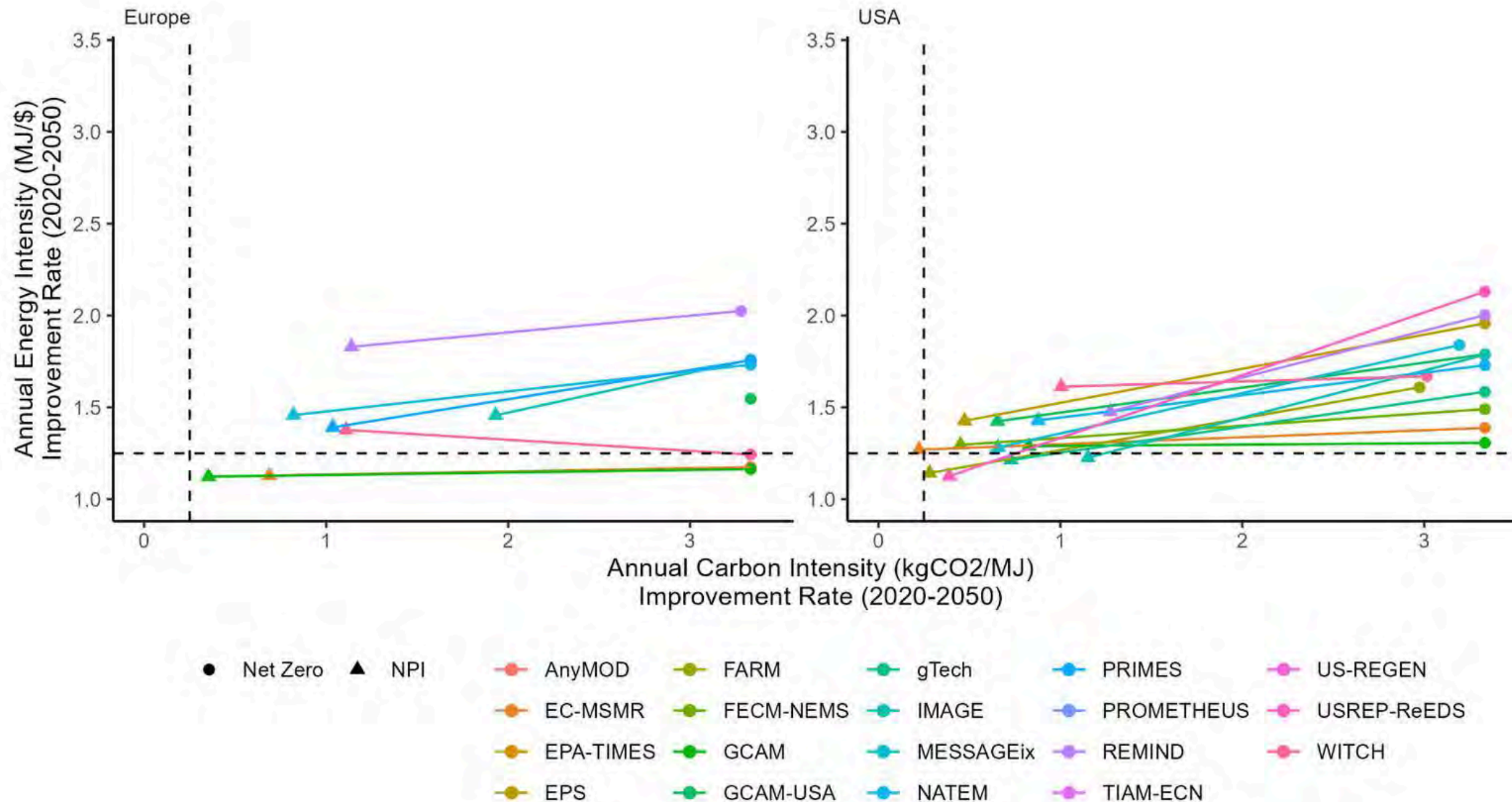
- Similar carbon intensity in 2020 (60kgCO<sub>2</sub>/GJ)
- NPI leads to a reduction of about ten kgCO<sub>2</sub>/GJ.
- Net zero leads to a carbon intensity of zero for the US and -3 for Europe.



# ANNUAL ENERGY AND CARBON INTENSITY IMPROVEMENT RATES

## Main Takes:

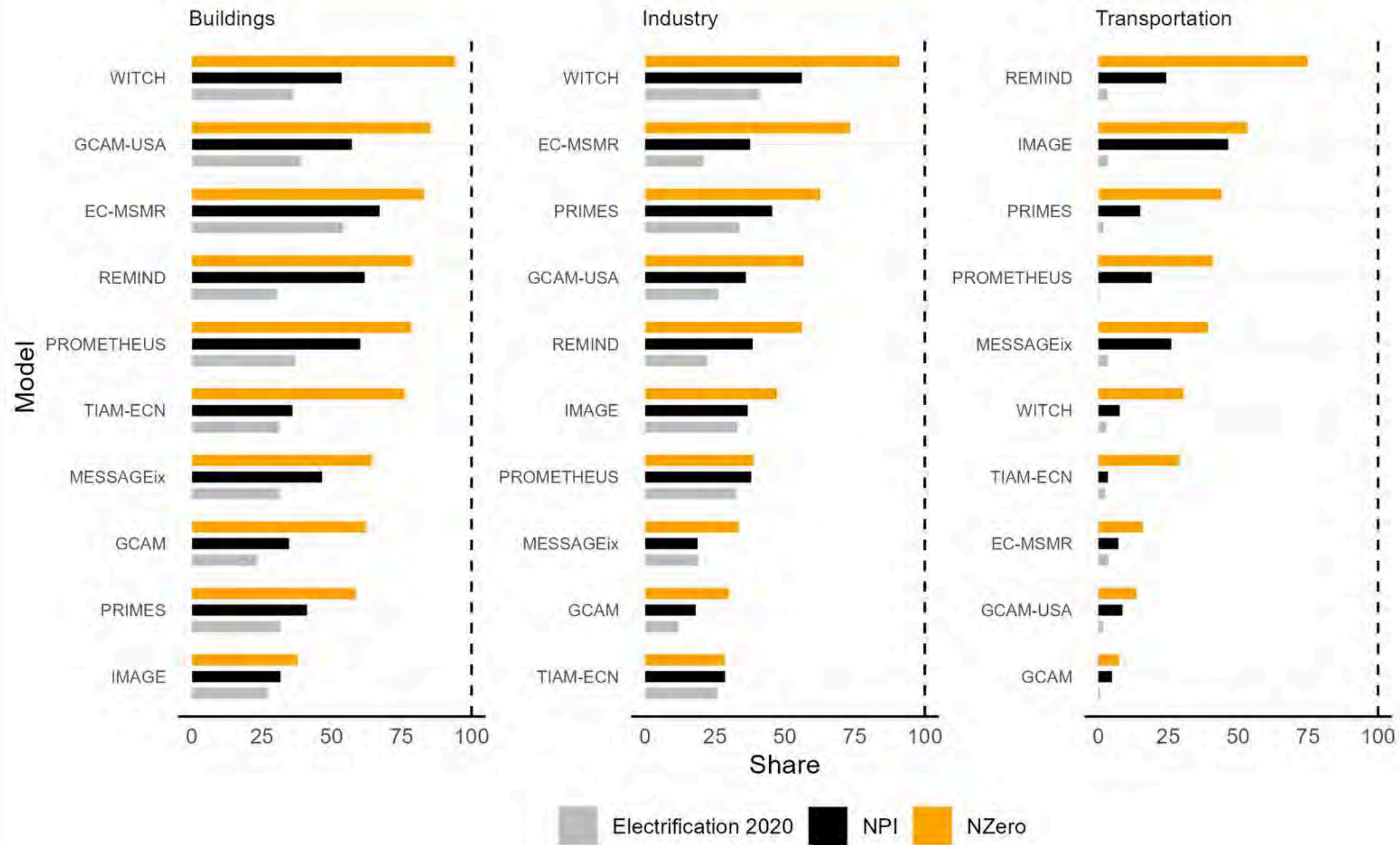
- The median improvement in energy intensity in the NPI scenario between 2020 and 2050 is 1.4% and 1.3%, respectively.
- In the Net Zero scenario, the rate of improvement increases to 1.64% and 1.73%.
- Regarding carbon intensity, the median improvement in the NPI scenario is 0.9% and 0.7%.
  - This value is three to four times larger than the historical.
- For the Net Zero scenario, the carbon intensity improvement rate increases dramatically to 3.3% in both regions.







# ELECTRIFICATION IN EUROPE

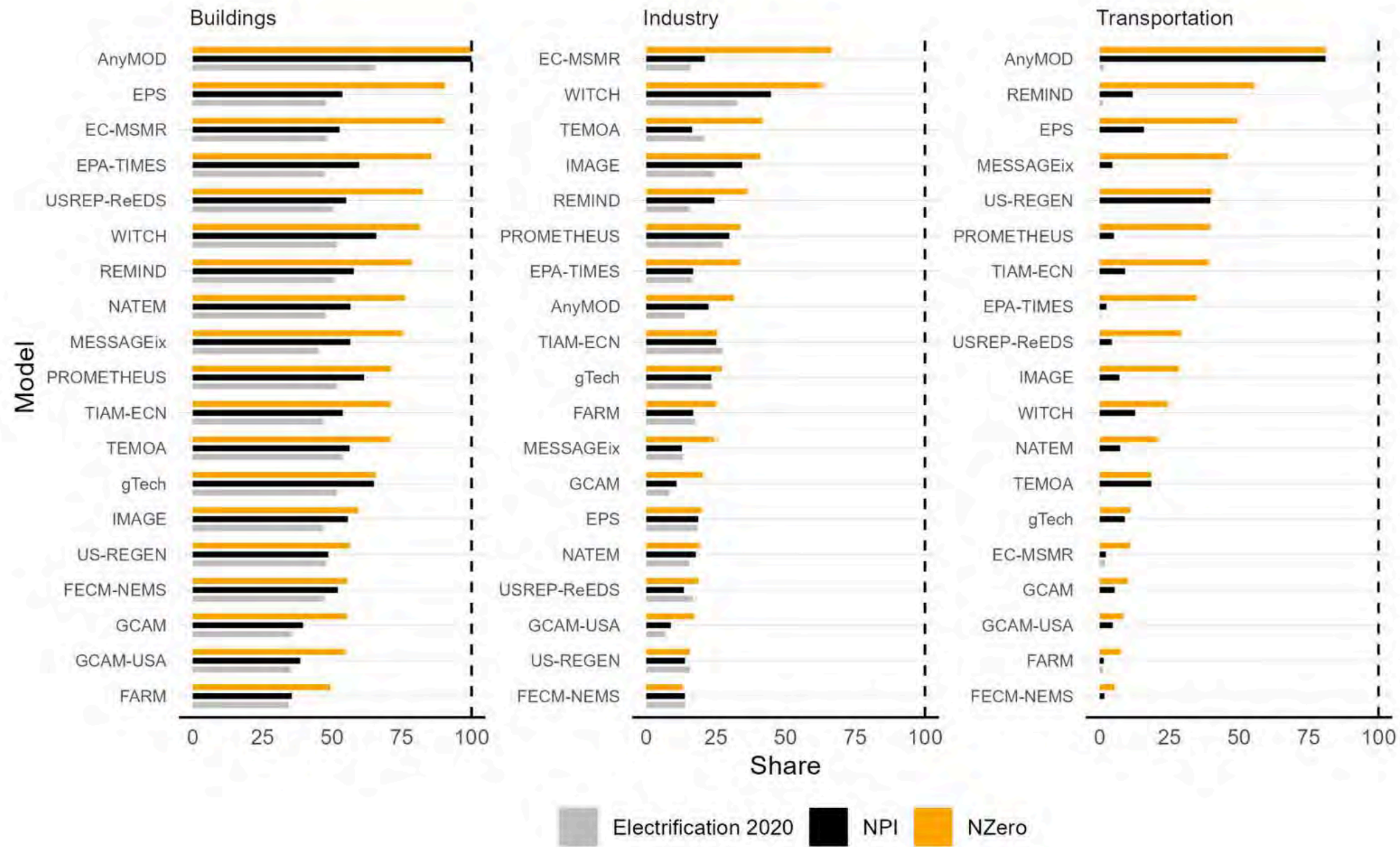


## Main Takes:

- EU 2050 share of electricity
  - Buildings - 72%
  - Industry - 51.7%
  - Transport - 34.8%



# ELECTRIFICATION IN THE USA



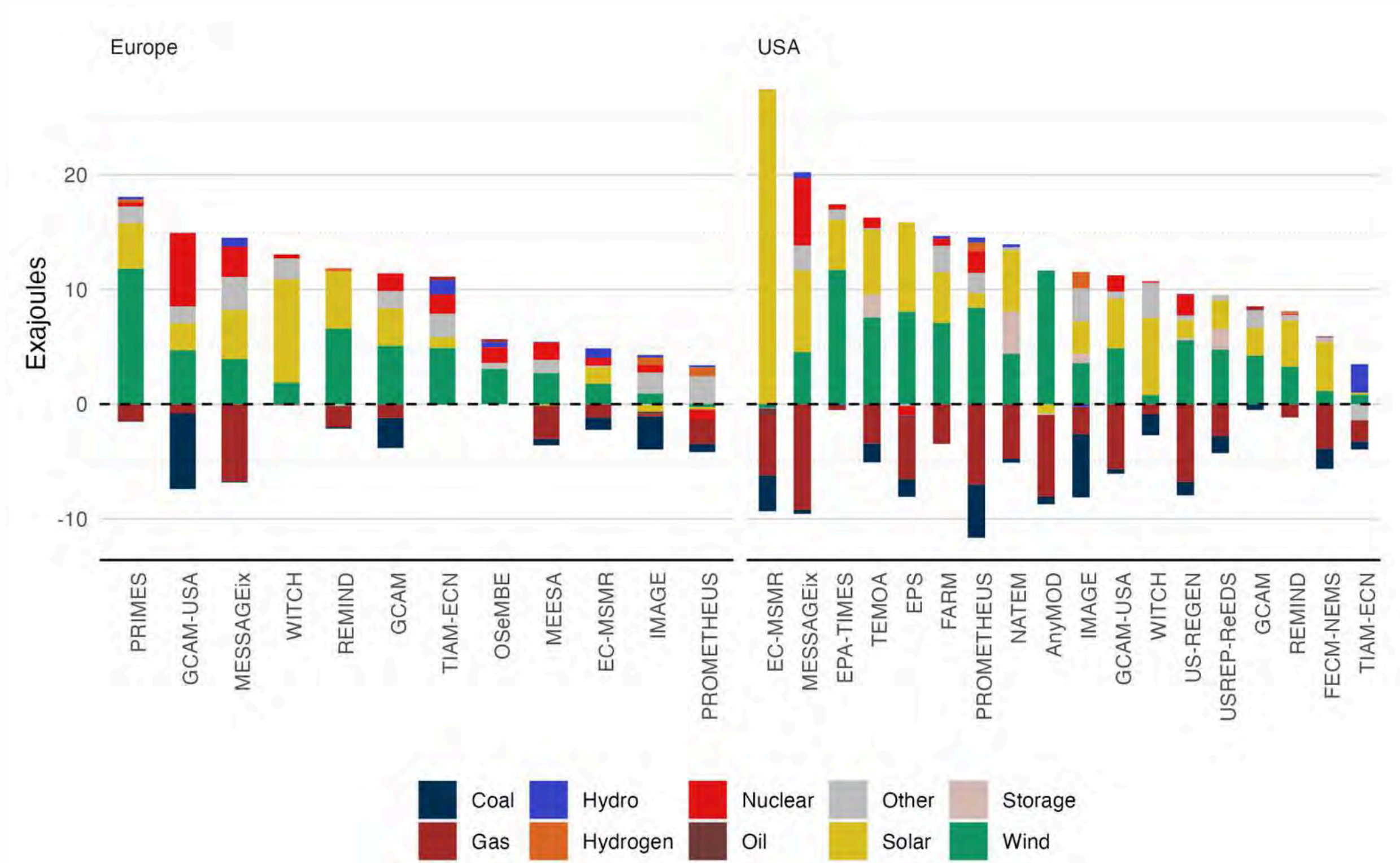
## Main Takes:

- EU 2050 share of electricity
  - Buildings - 72%
  - Industry - 30.2%
  - Transport - 29.5%





# CHANGE IN THE POWER MIX

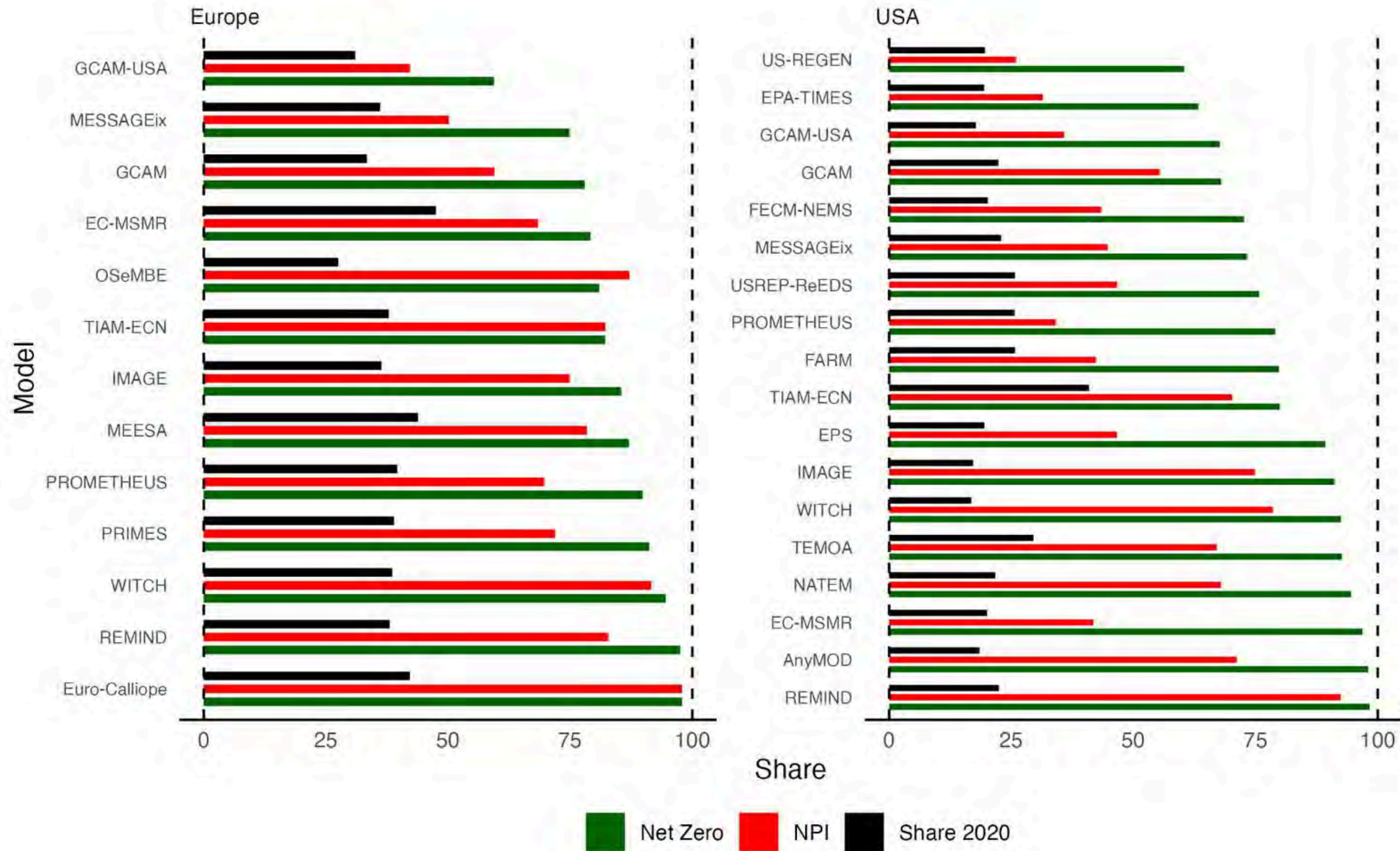


## Main Takes:

- A general decrease in traditional technologies
  - Coal
  - Gas
  - Hydro
  - Nuclear
  - Oil
- General increase in new technologies
  - Wind
  - Solar



# CHANGE IN THE POWER MIX



## Main Takes:

- EU Median renewable share increasing from 38% to 75% between 2020 and 2050
  - For Net Zero, the 2050 share grows to 85%



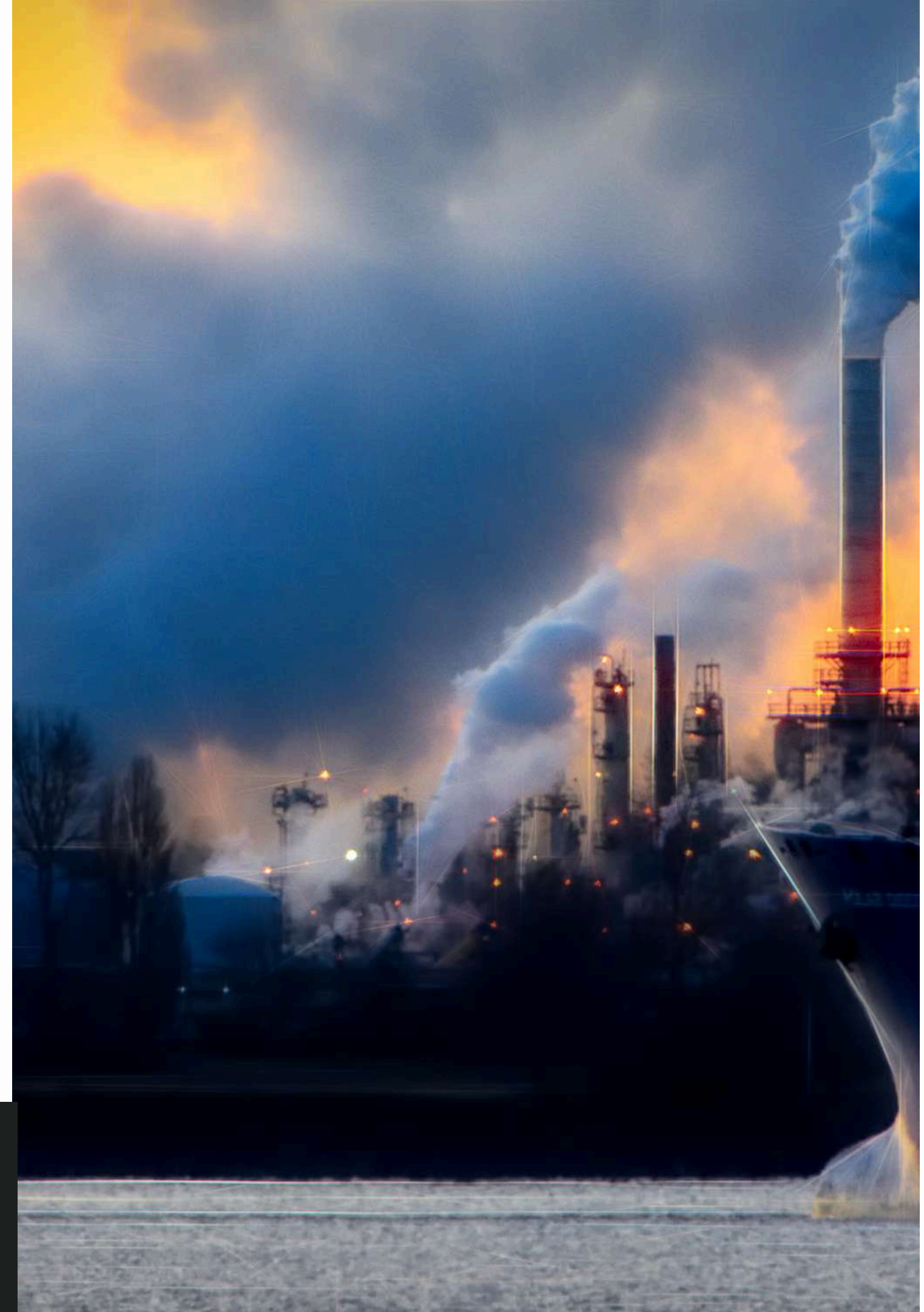
# THANK YOU

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<https://www.luissarmiento.com/>



# APPENDIX

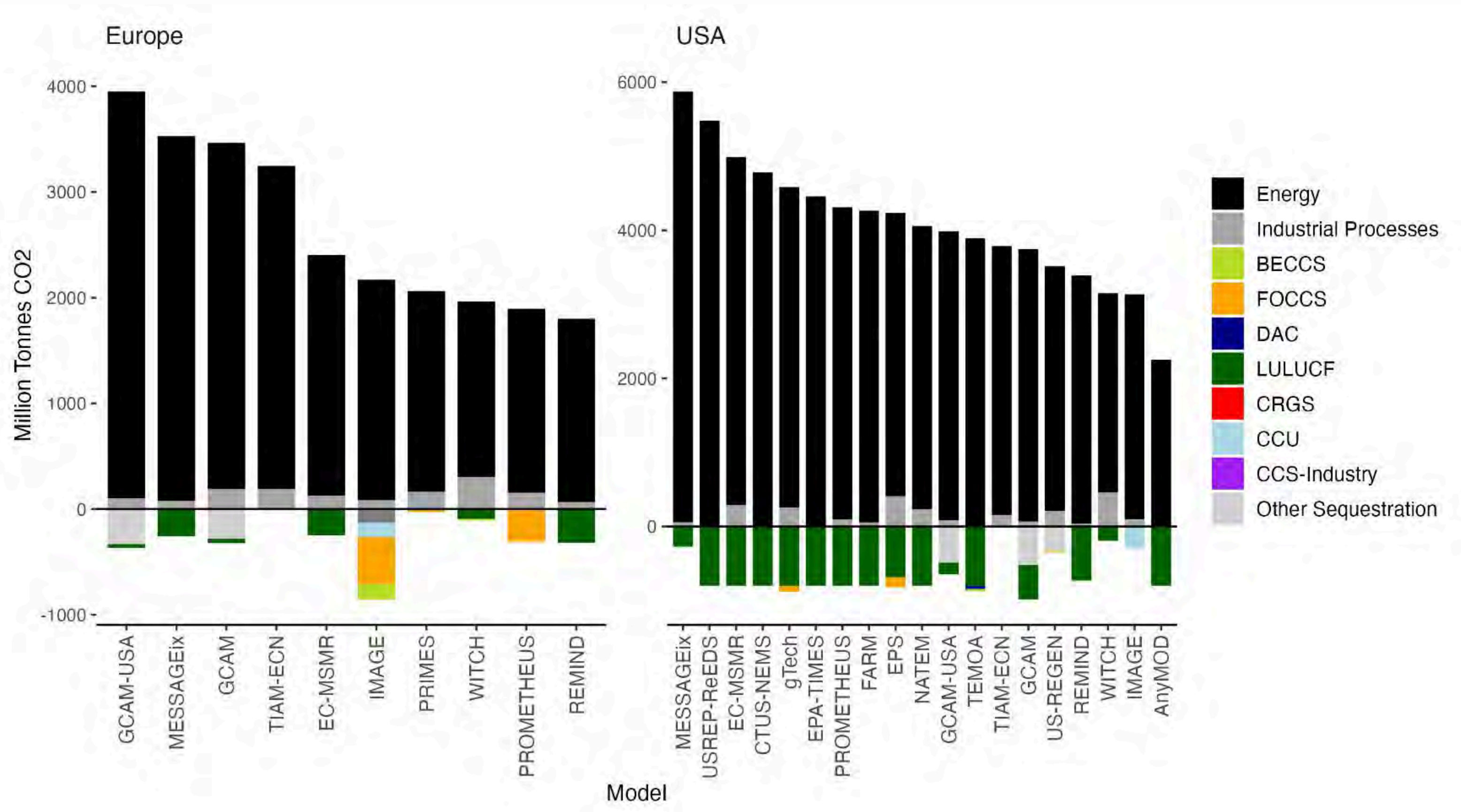
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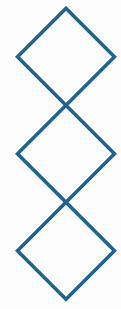




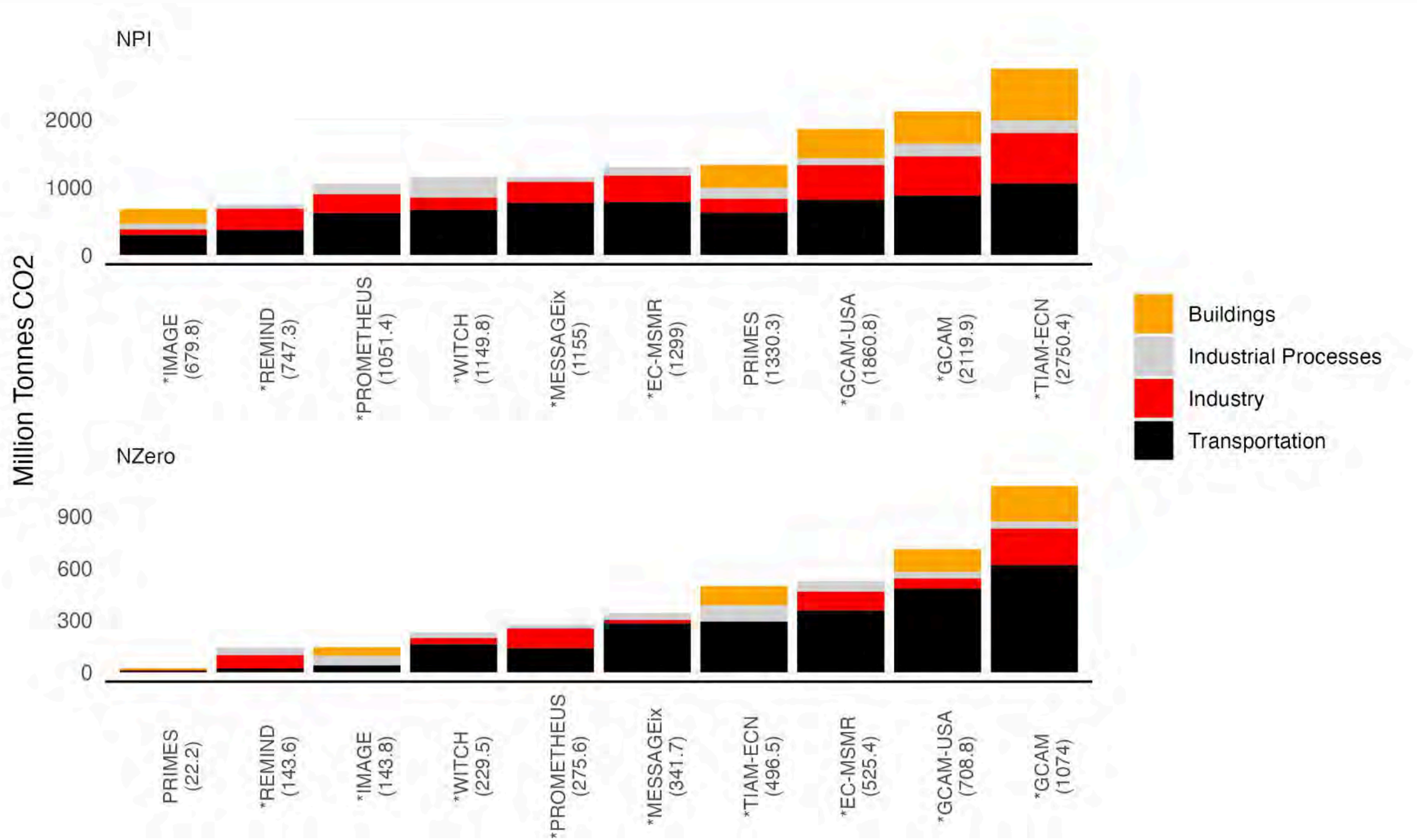


# EMISSION DIFFERENCE BETWEEN MODELS





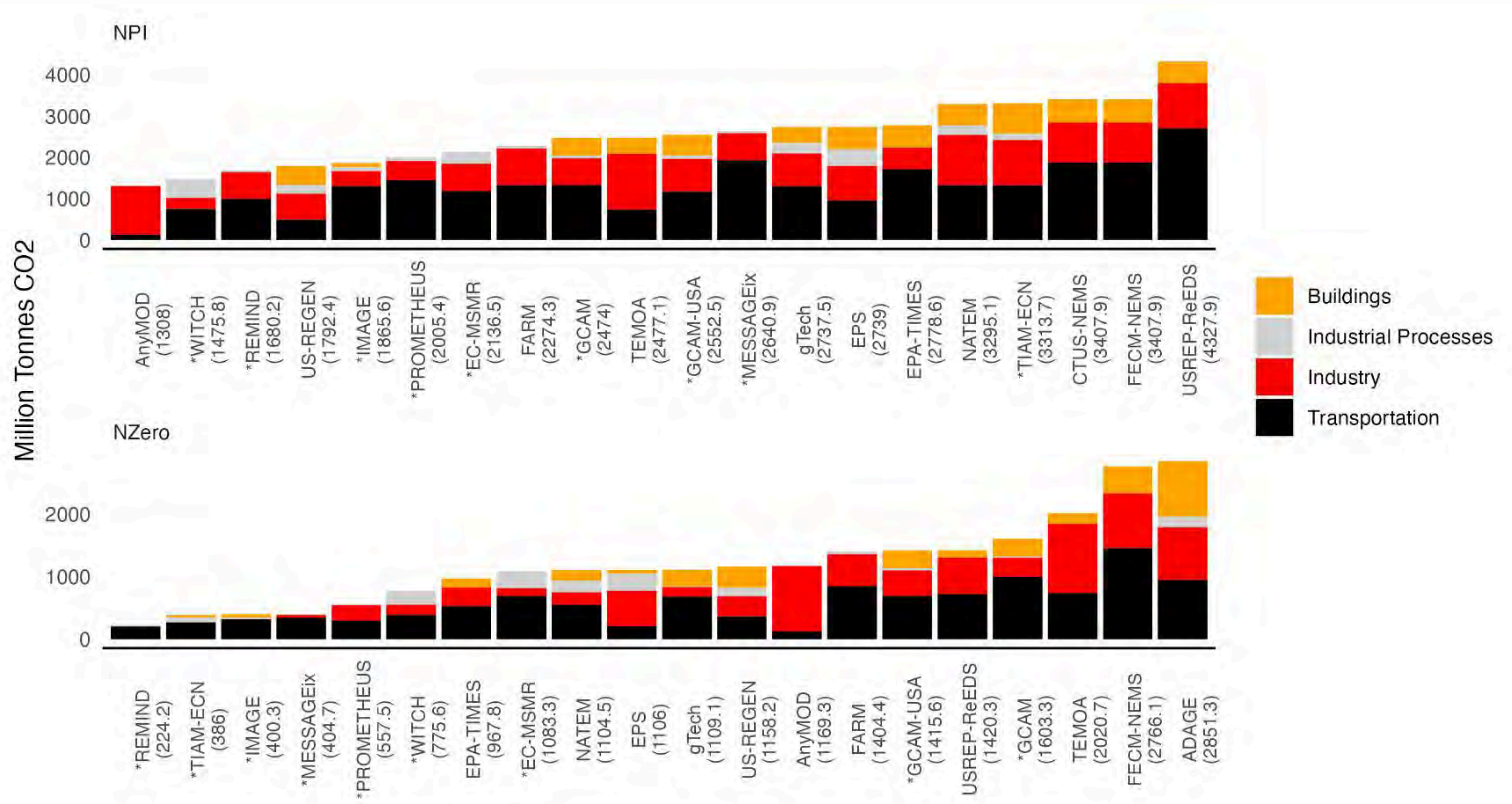
# SECTORAL EMISSIONS BY MODEL AND SCENARIO IN EUROPE





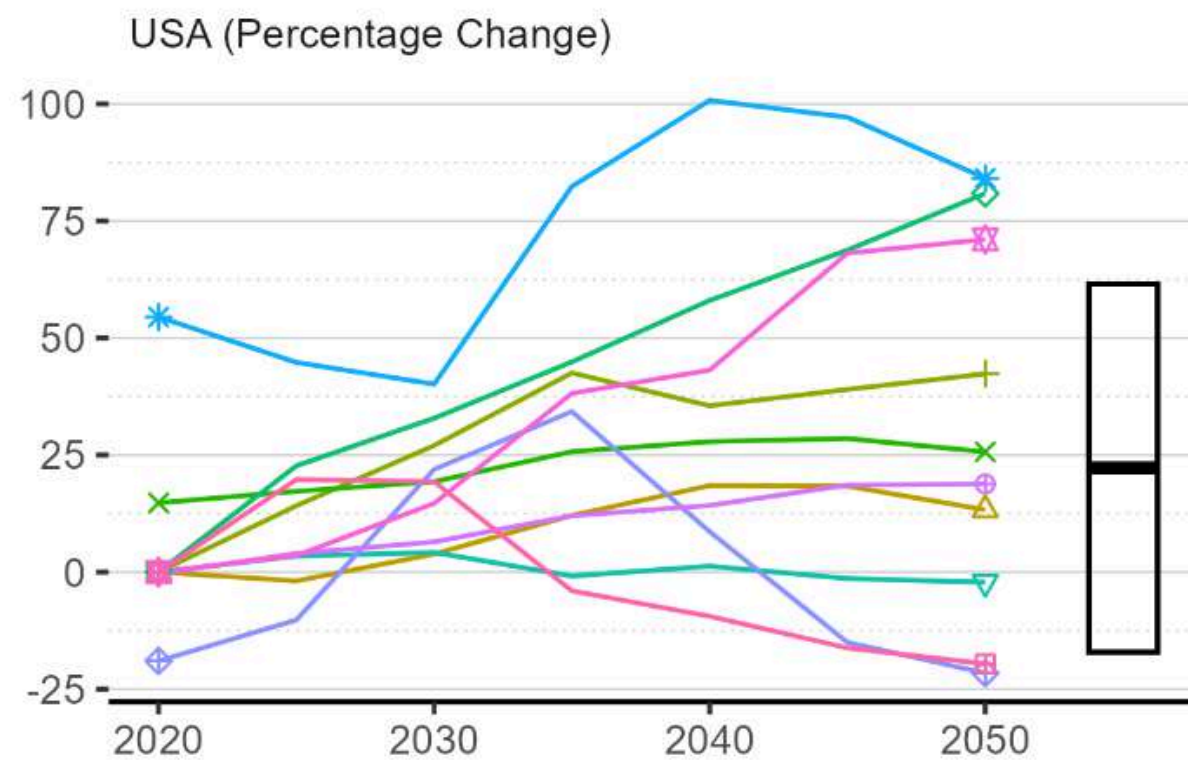
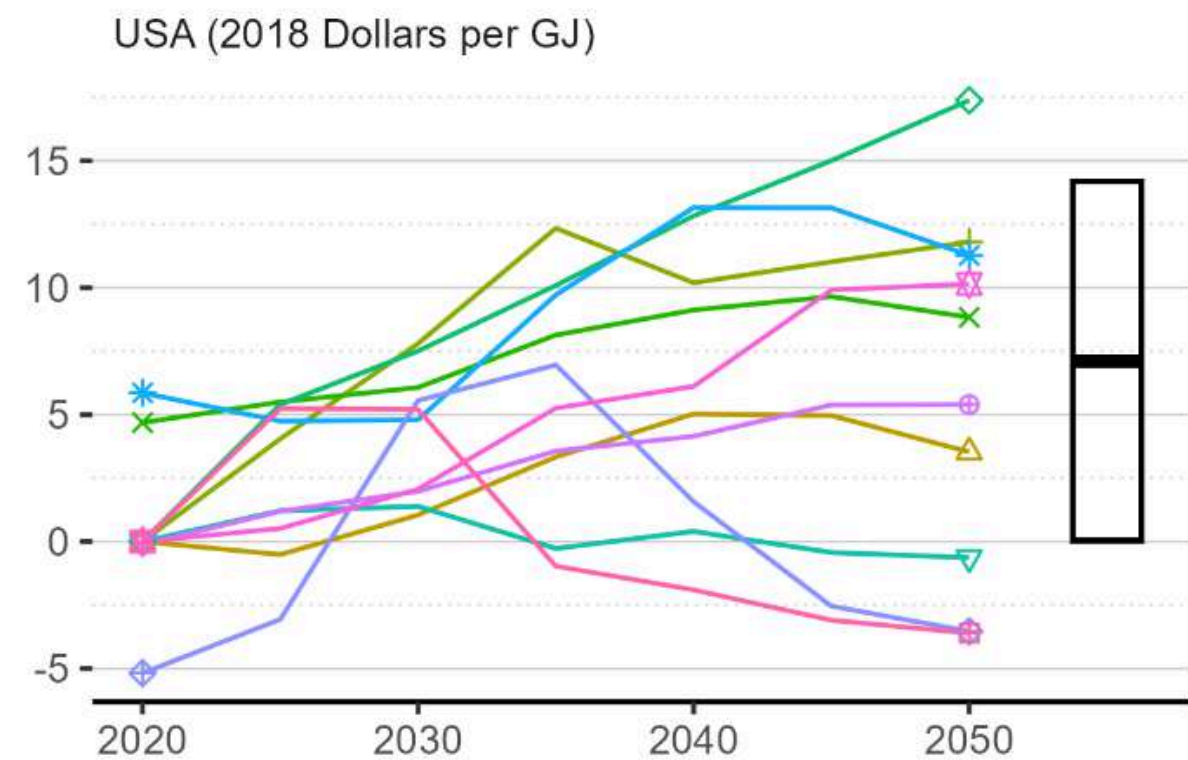
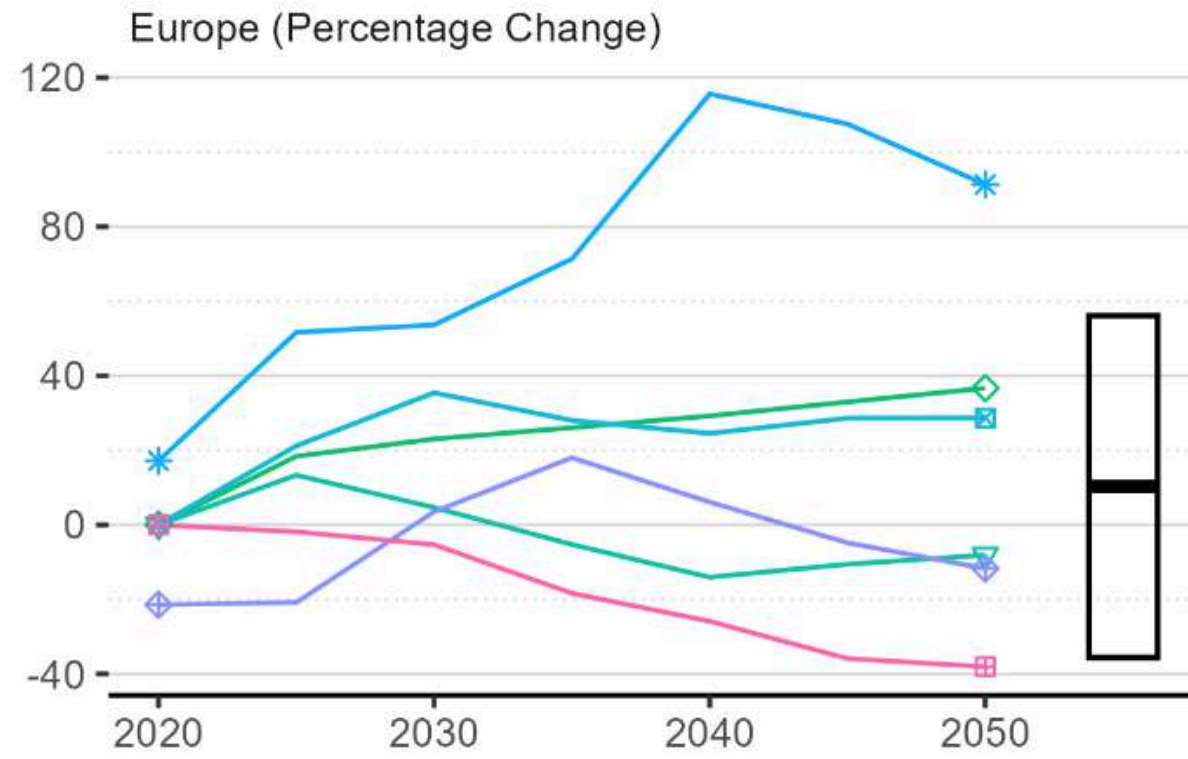
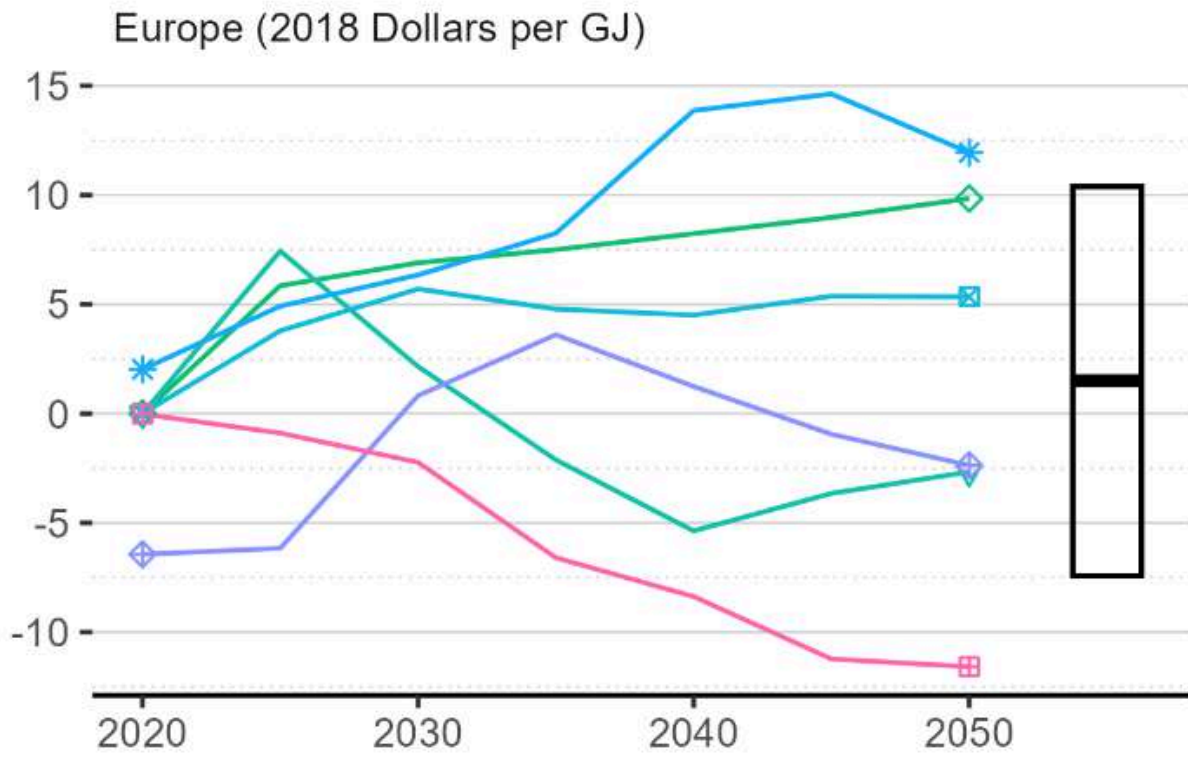


# SECTORAL EMISSIONS BY MODEL AND SCENARIO IN THE USA





# TIME SERIES OF THE CHANGE IN THE LCOE BETWEEN THE NPI AND NET ZERO SCENARIOS

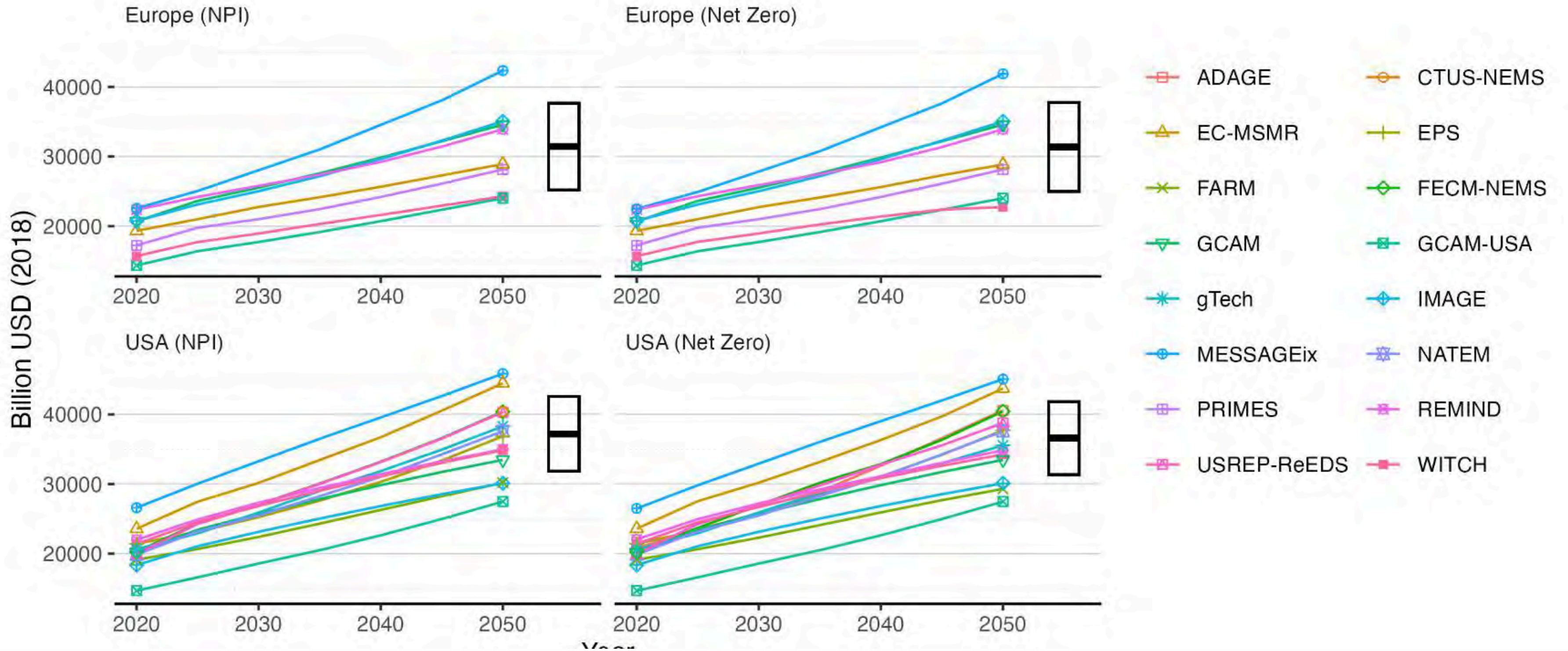


- ADAGE
- CTUS-NEMS
- EPS
- FECM-NEMS
- GCAM
- GCAM-USA
- IMAGE
- MEESA
- MESSAGEix
- REMIND
- US-REGEN
- USREP-ReEDS
- WITCH





# GDP ACROSS MODELS, REGIONS, AND SCENARIOS







# CONSUMPTION ACROSS MODELS, REGIONS, AND SCENARIOS

