Net Zero International Emissions Trading Opportunities for Sectors

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Energy Systems and Climate Analysis Research

21st Annual IEA-IETA-EPRI GHG Trading Workshop
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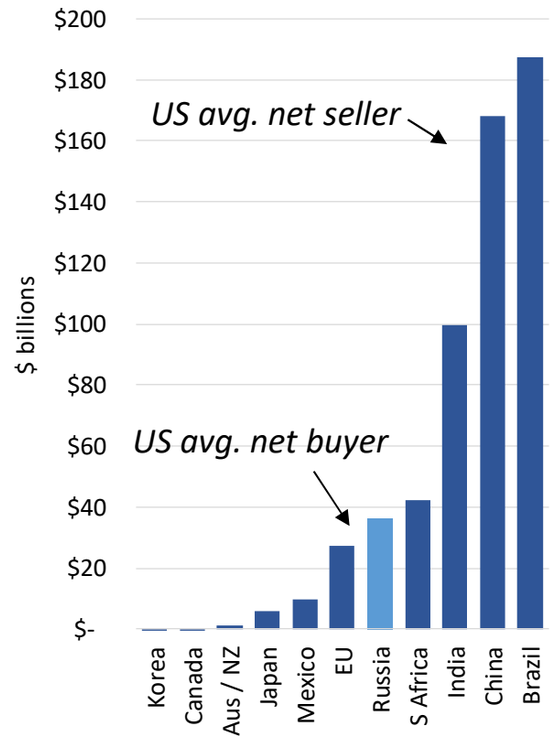


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EPRI's research evaluating international cooperation

- Exploring tractable international cooperation opportunities
  - Work to date has explored potential global trading value, partnership (club) opportunities and benefits (bi-lateral, tri-lateral, etc.), and terrestrial mitigation opportunities
- Today, analyzing international emissions trading opportunities for sectors, especially in the pursuit of net zero goals
  - Begin by evaluating opportunities for international electric sector trading
  - Using EPRI's MERGE model (a global integrated energy-economy-climate model)

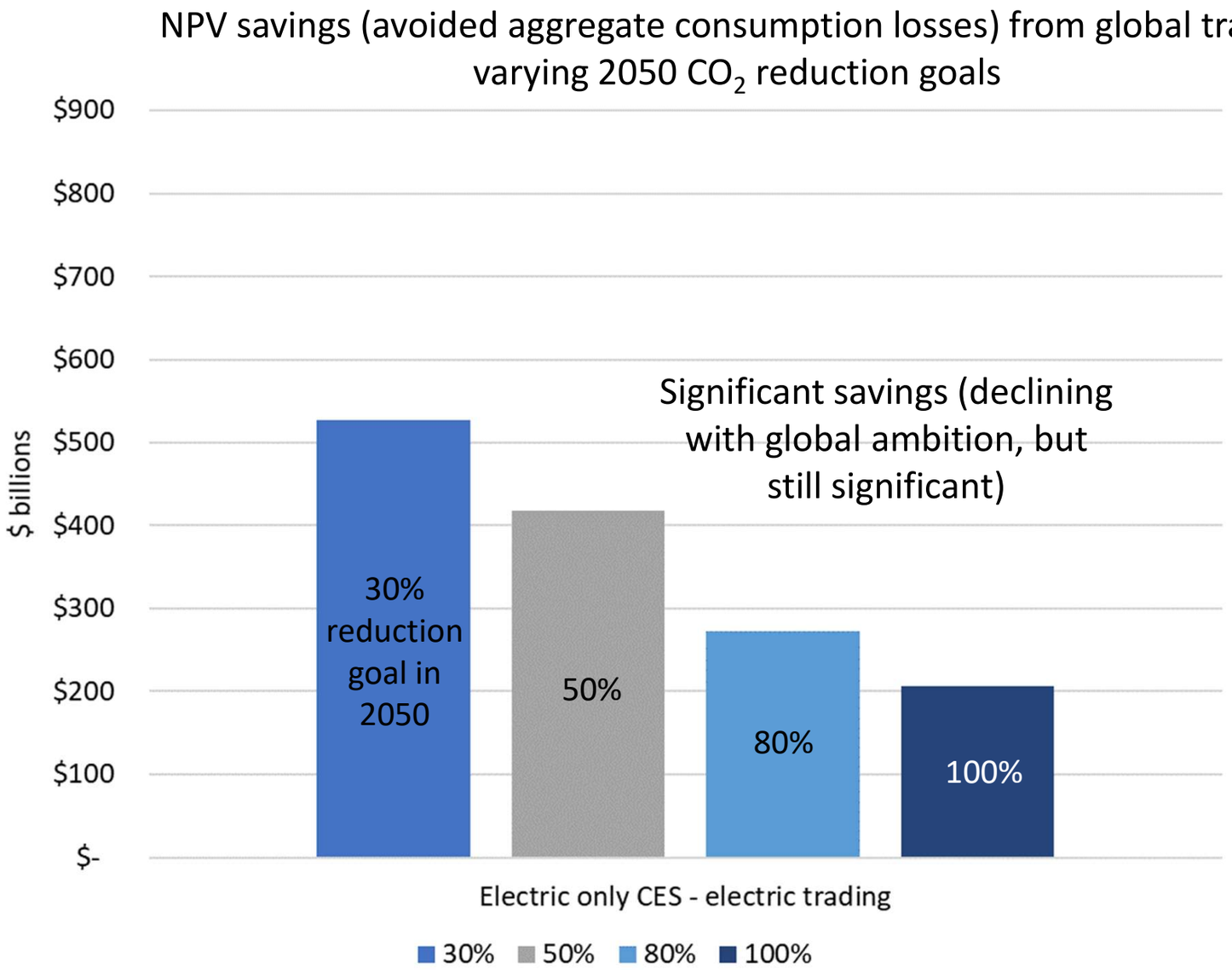
Value of potential international partnerships for the US (NPV benefits to US households by partner)



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Potential savings from international electric sector trading

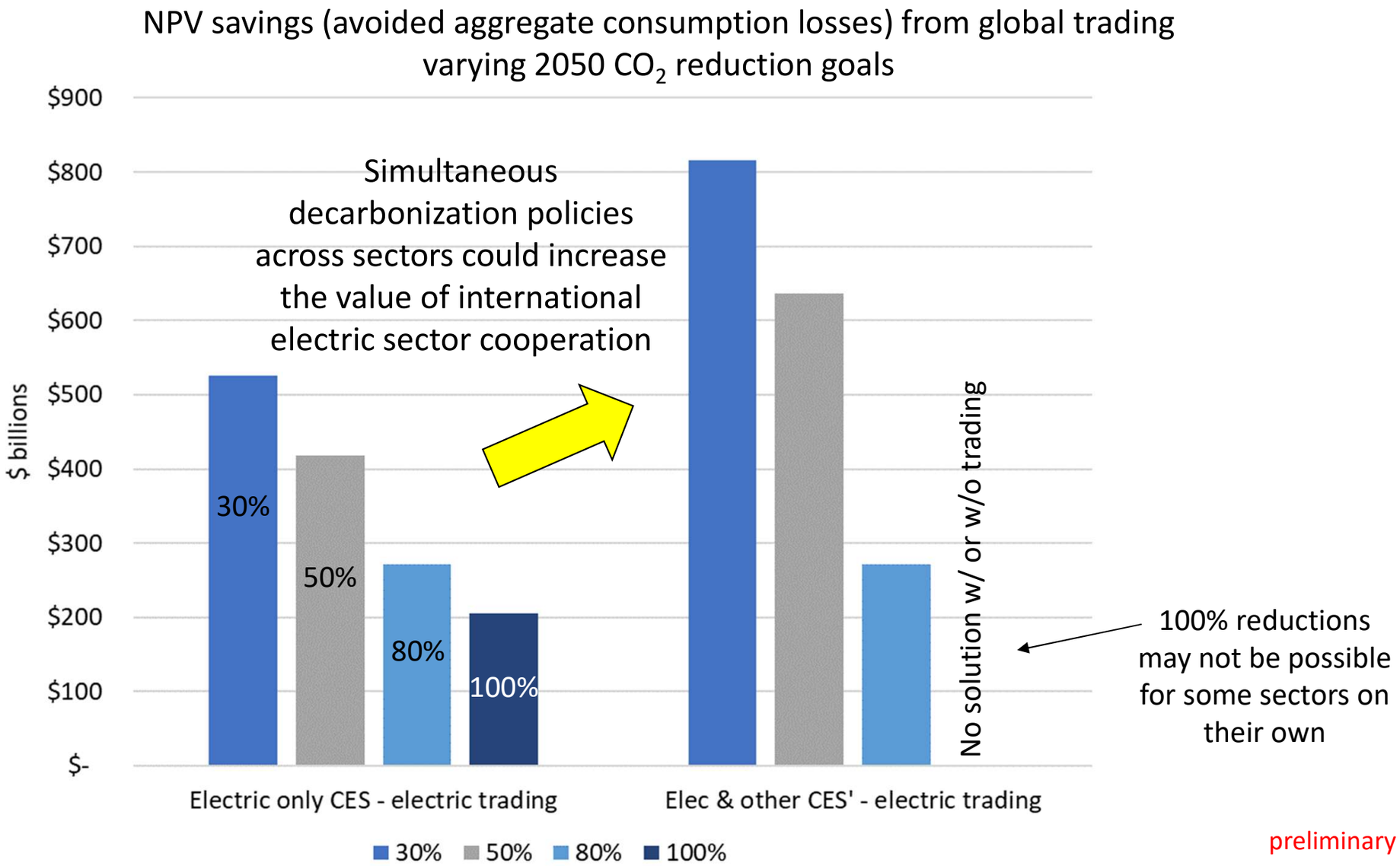
Global electric sector cooperation illustrates potential



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Potential savings from international electric sector trading

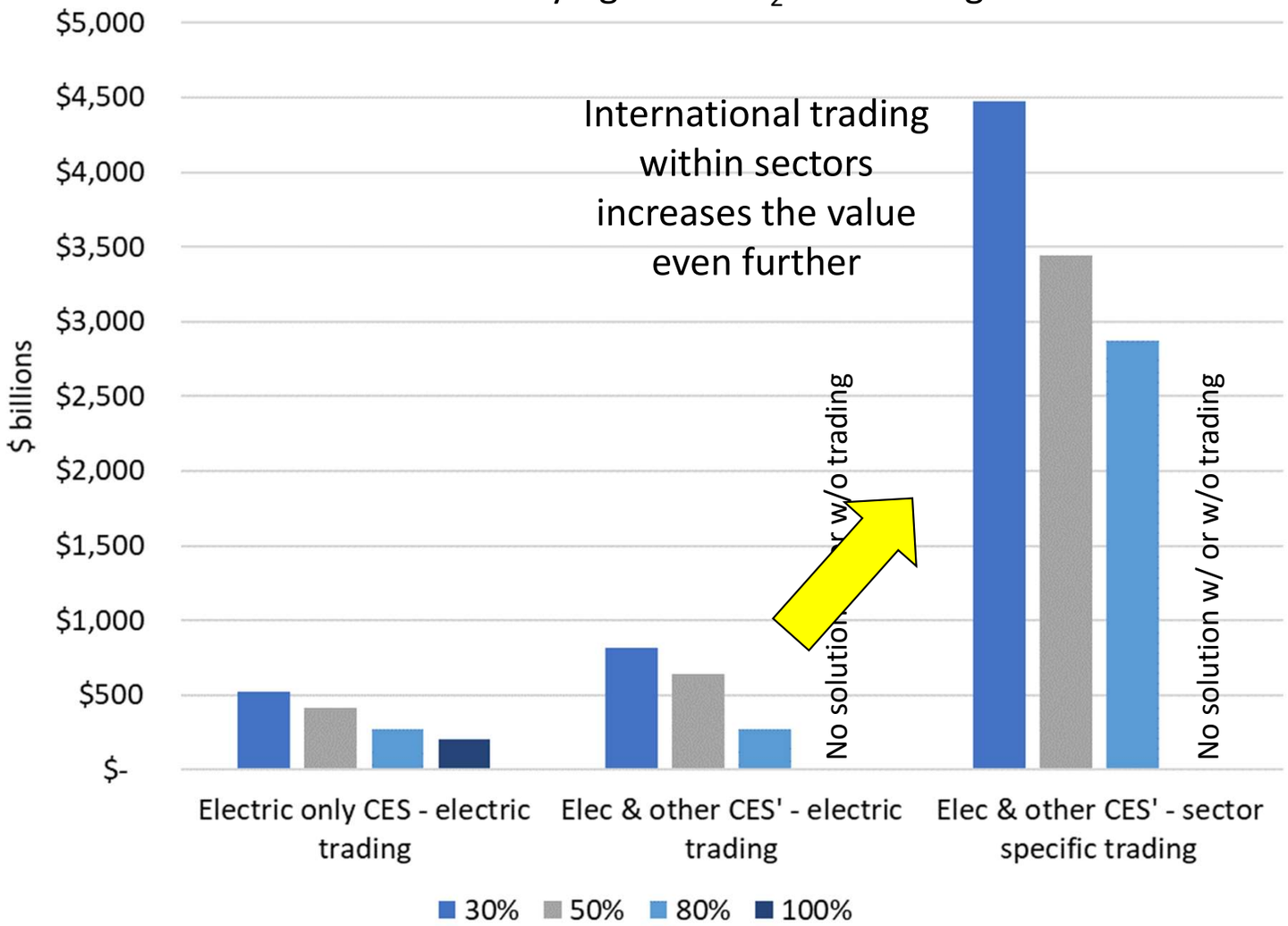


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Potential savings from international sector specific trading

NPV savings (avoided aggregate consumption losses) from global trading varying 2050 CO_2 reduction goals

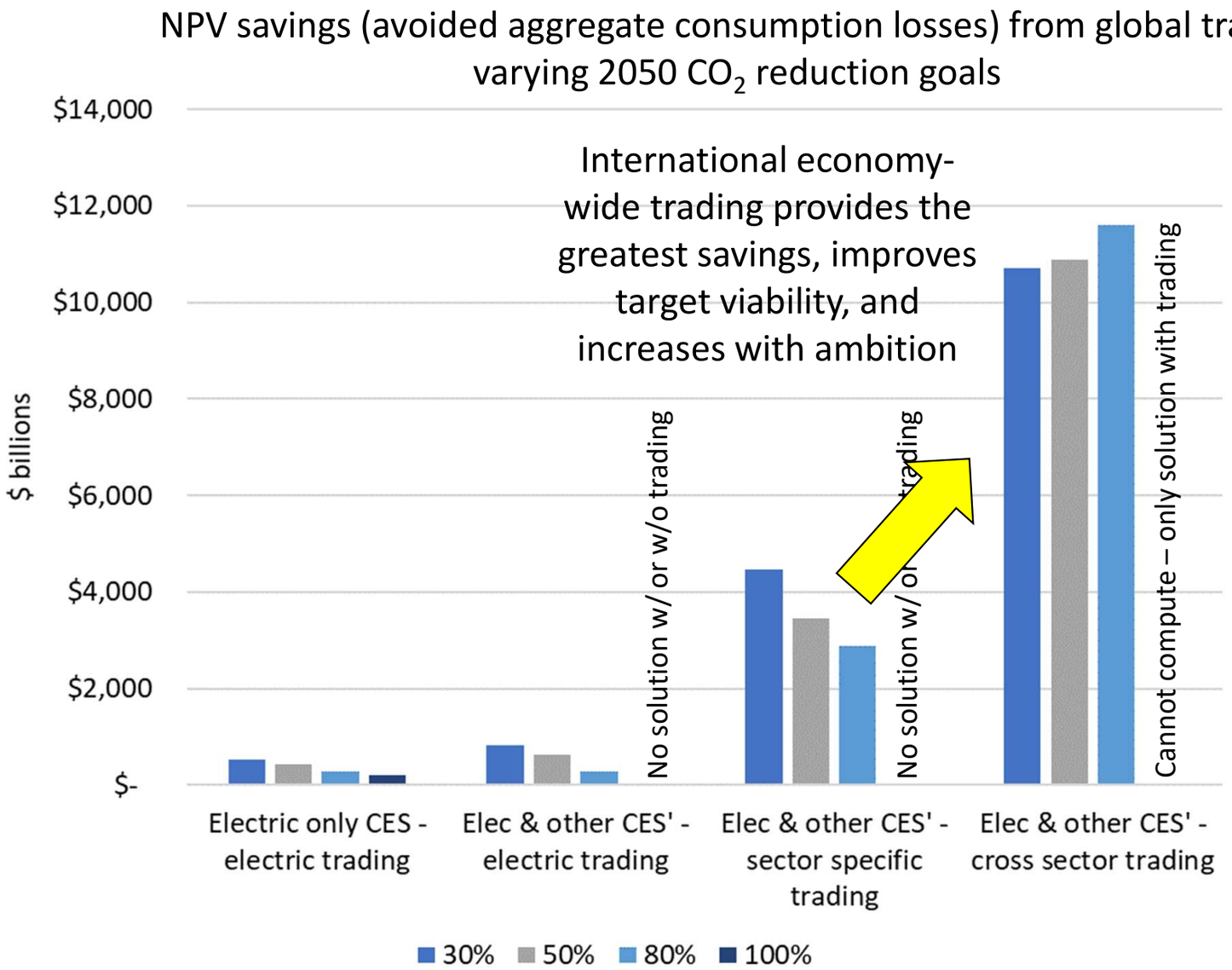


100% reductions may not be possible for some sectors on their own

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Potential savings from international cross-sector trading



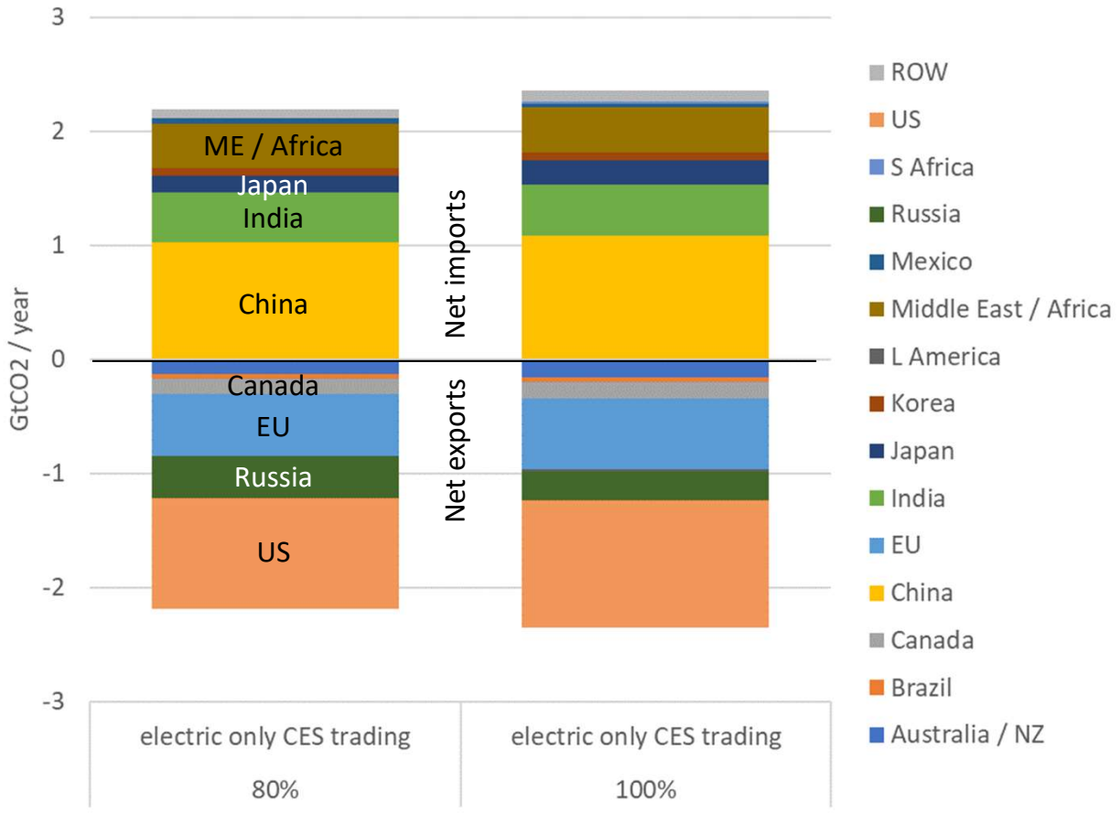
Net zero economy-wide may not be possible without cross-sector trading

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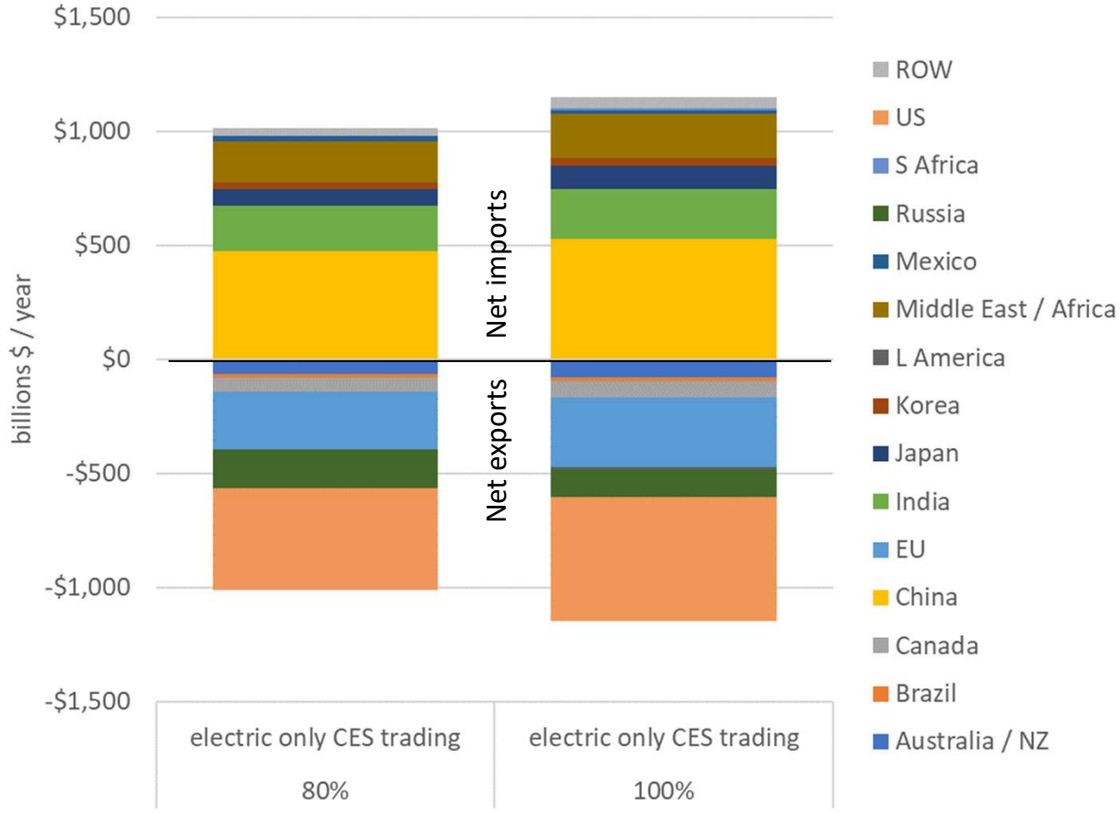
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International trading volumes and value – electric CES only (80% & 100% goals)

2050 permit trading volume ($GtCO_2$/yr)



2050 permit trading value ($B/yr)

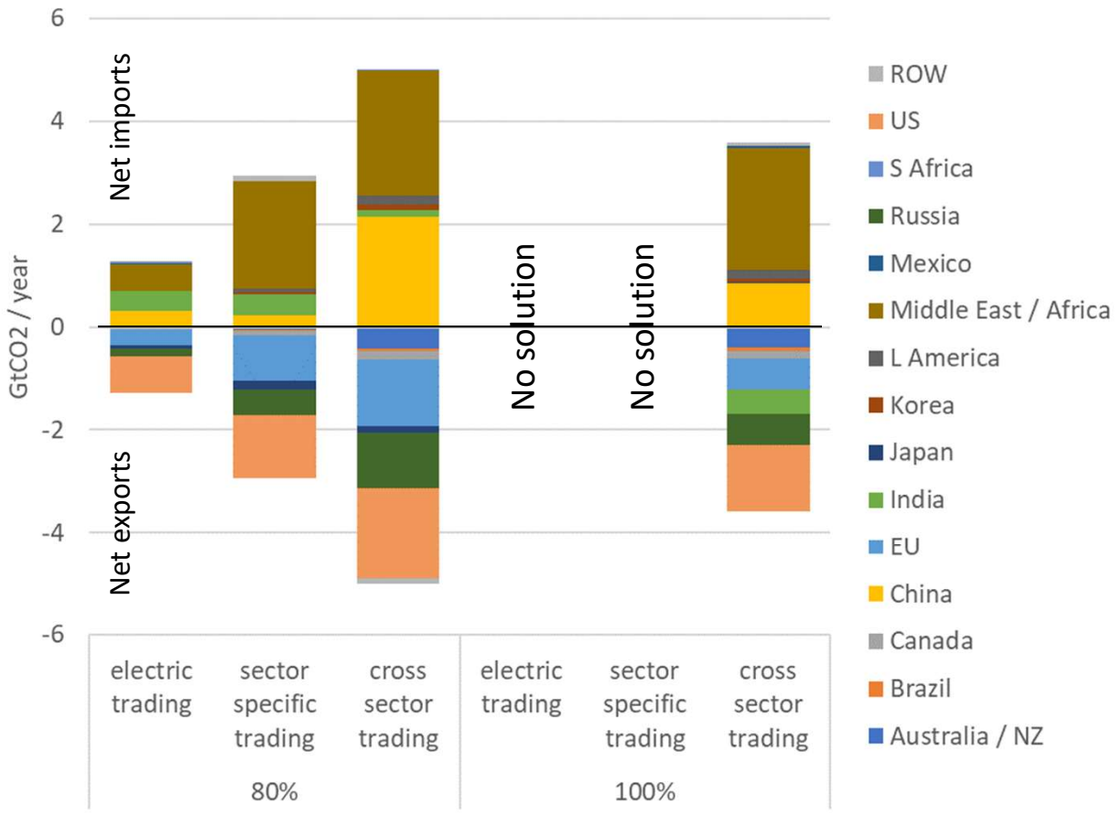


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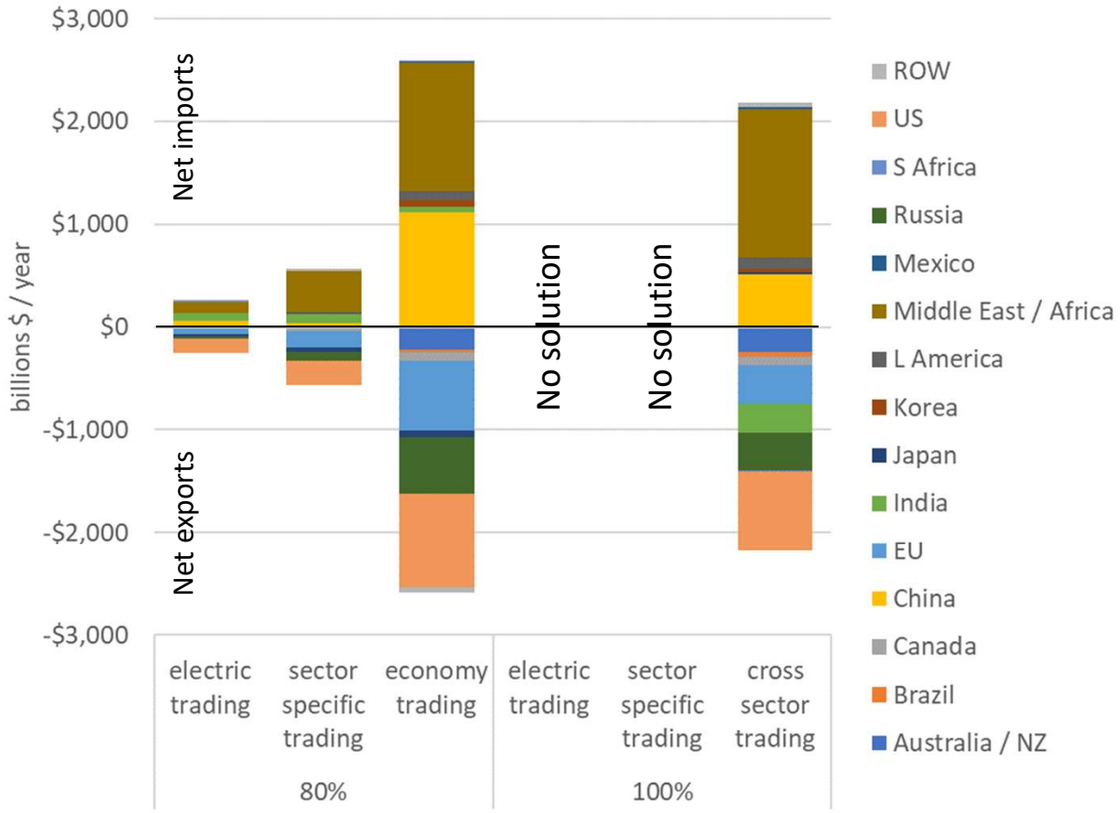
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International trading volumes and value – electric & other CES (80% & 100% goals)

2050 permit trading volume ($GtCO_2$/yr)



2050 permit trading value ($B/yr)

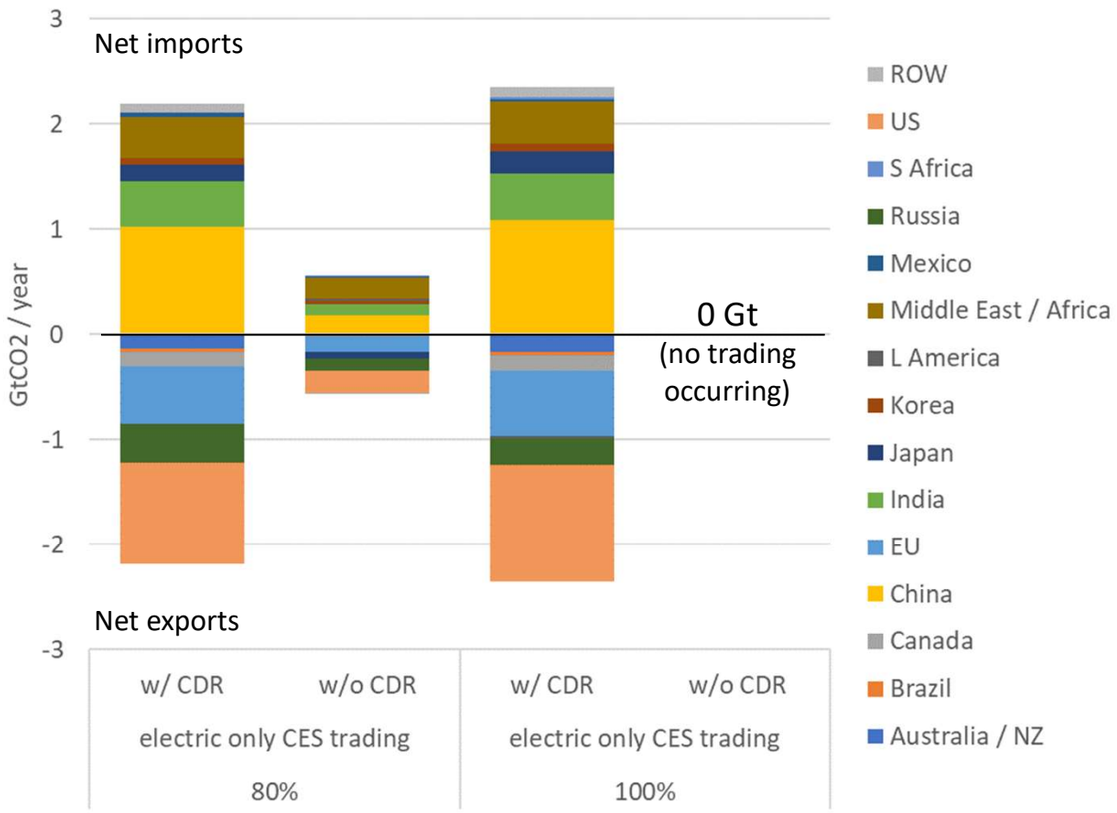


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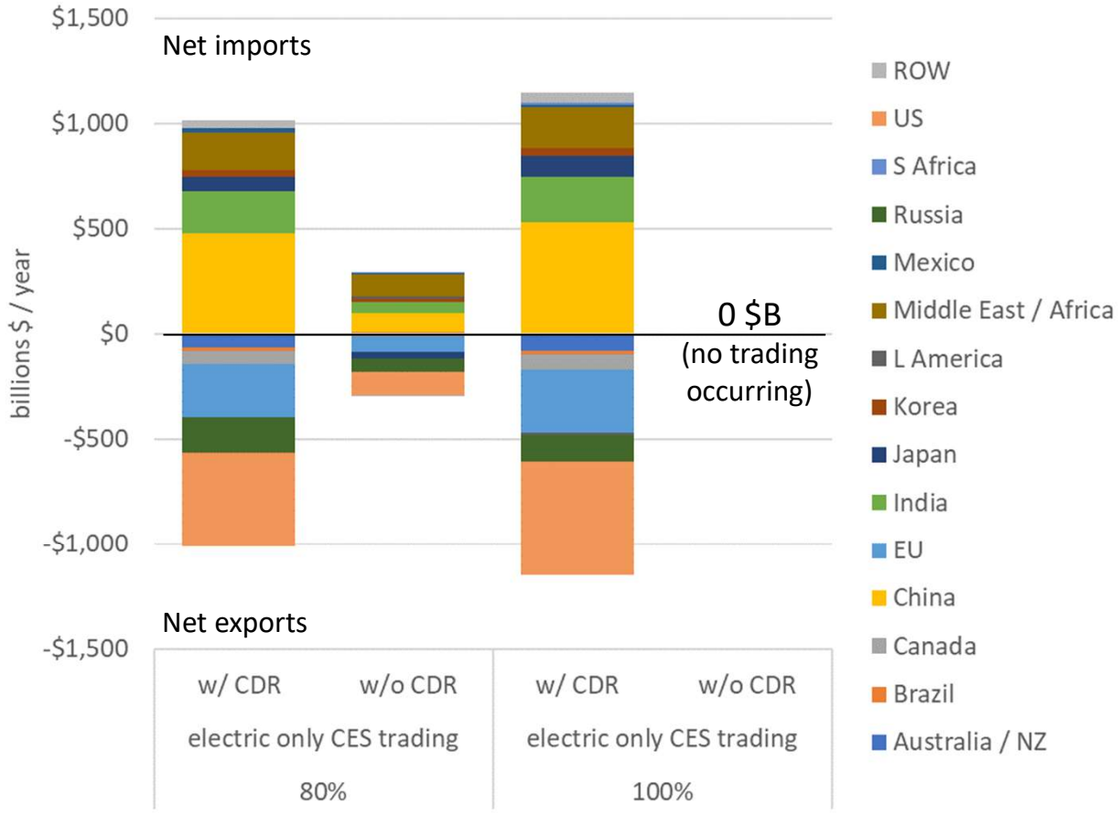
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Net zero vs. absolute zero and international trading – electric CES only (80% & 100% goals)

2050 permit trading volume ($GtCO_2$/yr)



2050 permit trading value ($B/yr)

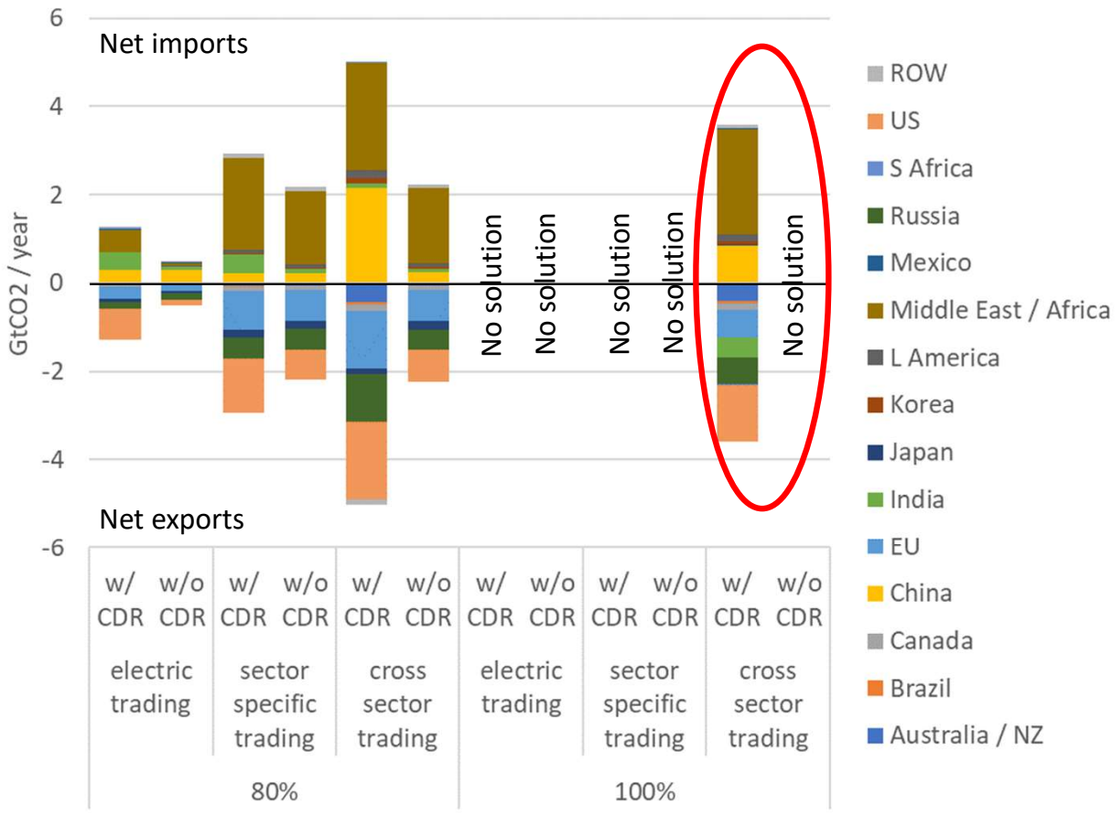


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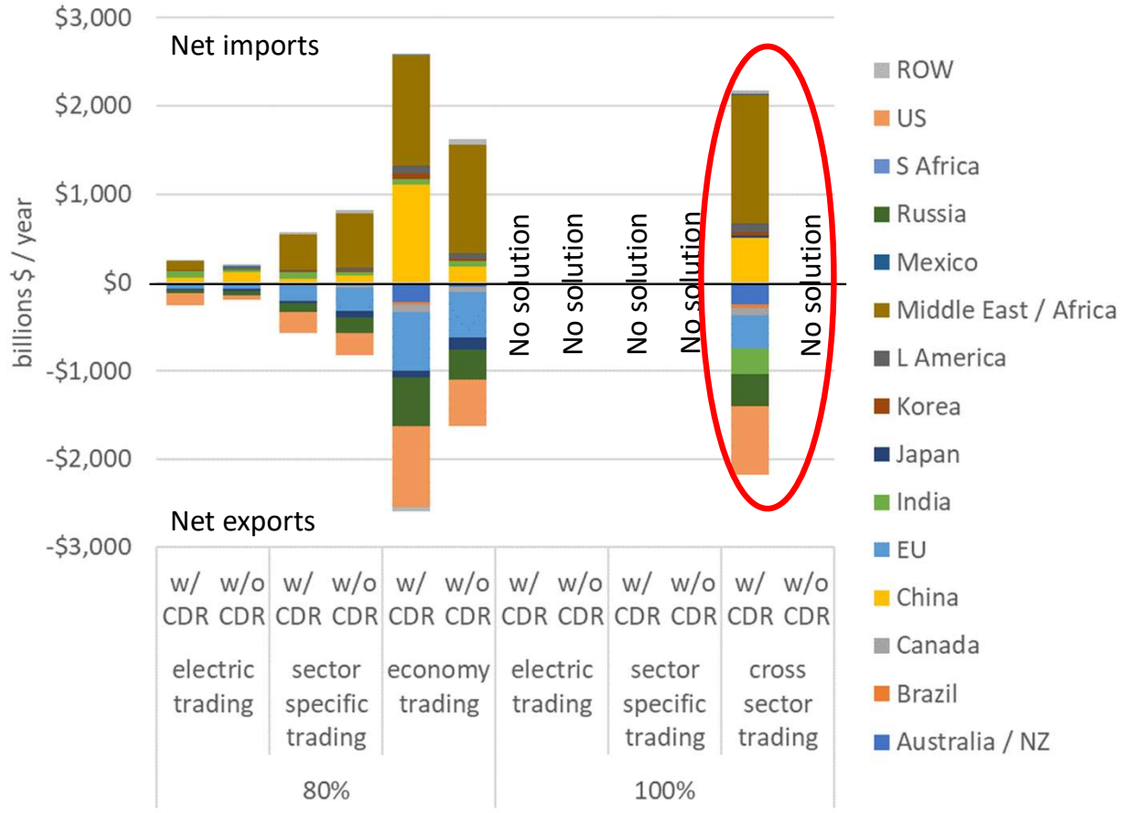
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Net zero vs. absolute zero and international trading – electric & other CES (80% & 100% goals)

2050 permit trading volume ($GtCO_2$/yr)



2050 permit trading value ($B/yr)



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Preliminary insights and discussion

- International electric sector trading found to be beneficial; however, cross-sector international trading is where the greatest value lies
  - International trading's benefit can increase or decrease with GHG reduction ambition depending on the sectoral trading scope
- The electric power sector might be able to achieve net zero without international trading, and without CDR; however, it's likely more expensive
- The rest of the economy may not be able to achieve net zero without cross-sector trading
- Trading can facilitate net zero economy-wide; however, trading alone may be insufficient – a CDR technology may be necessary to offset some types of emissions
- Net zero likely requires a CDR option to be available to every sector – within OR across sectors
- Trading changes with increasing ambition (e.g., 80% to 100%) – both the permit volume and price affected
- Certainly, more to evaluate – e.g., bi-lateral international sectoral partnerships

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Together...Shaping the Future of Energy™

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