International Institute for Applied Systems Analysis
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Transportation energy in a sub-2°C world

Modeling demand and transitions

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CenSES Conference on Climate and Energy 2018: Clean Energy for All

Transport energy & emissions

Today:

- 23% of 2014 CO_2 emissions, growing 2.5%/year.
- Mobile sources $\rightarrow$ difficult to decarbonize.
- Economic development & reduced inequality $\rightarrow$ greater mobility.

Going forward: disruptive, complex, systemic change in the areas of…

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Behaviour of individuals facing unprecedented $\uparrow\uparrow\uparrow$ choices.

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- Transport results from peer-reviewed literature, e.g. Yeh et al. (2016), comparing sectoral, global transport energy models (TEMs) (via the iTEM consortium: transportenergy.org).

Sonia Yeh, Gouri Shankar Mishra, Lew Fulton, Page Kyle, David L. McCollum, Joshua Miller, Pierpaolo Cazzola, and Jacob Teter (2016). "Detailed assessment of global transport-energy models' structures and projections". In: *Transportation Research Part D. Transport and Environment*. ISSN: 1361-9209. DOI: 10.1016/j.trd.2016.11.001

What is 1.5 °C-compatible transport?

A question answered for diverse stakeholders, using models that are:

1. International: covering the world, at country/region level.
2. Transport-sector focused: detail in pass./freight modes; tech; fuels.
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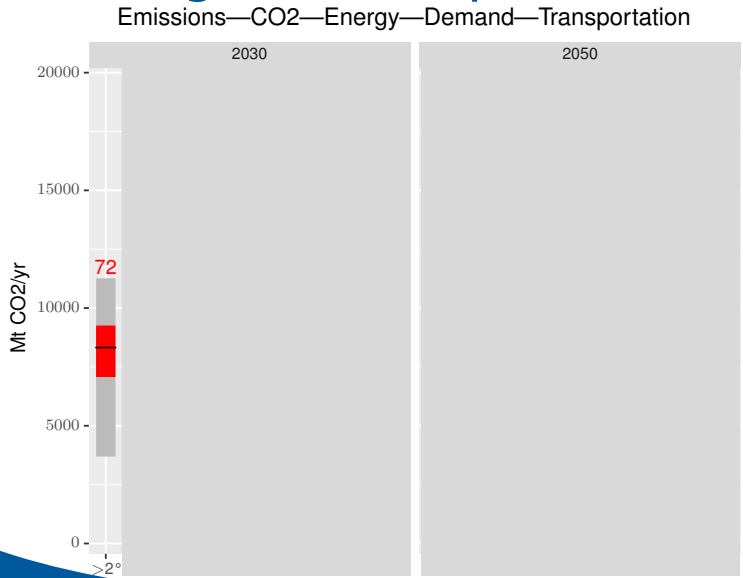
How well are we doing?

SR1.5 vs. global transport models



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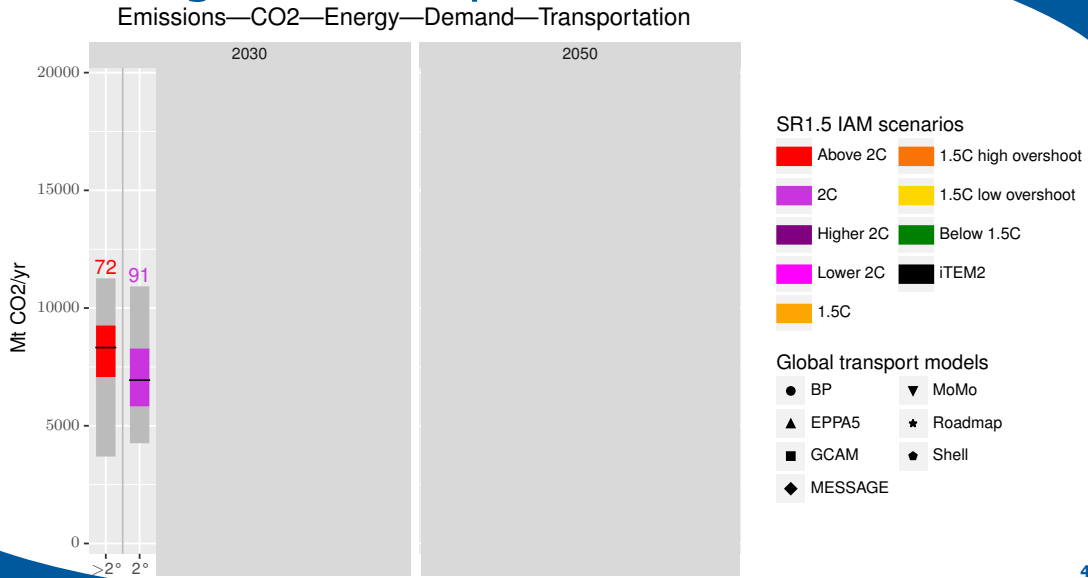

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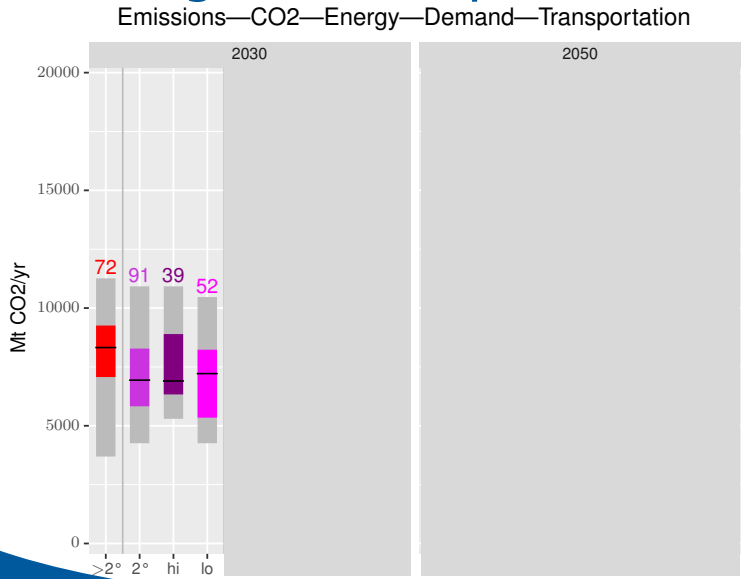

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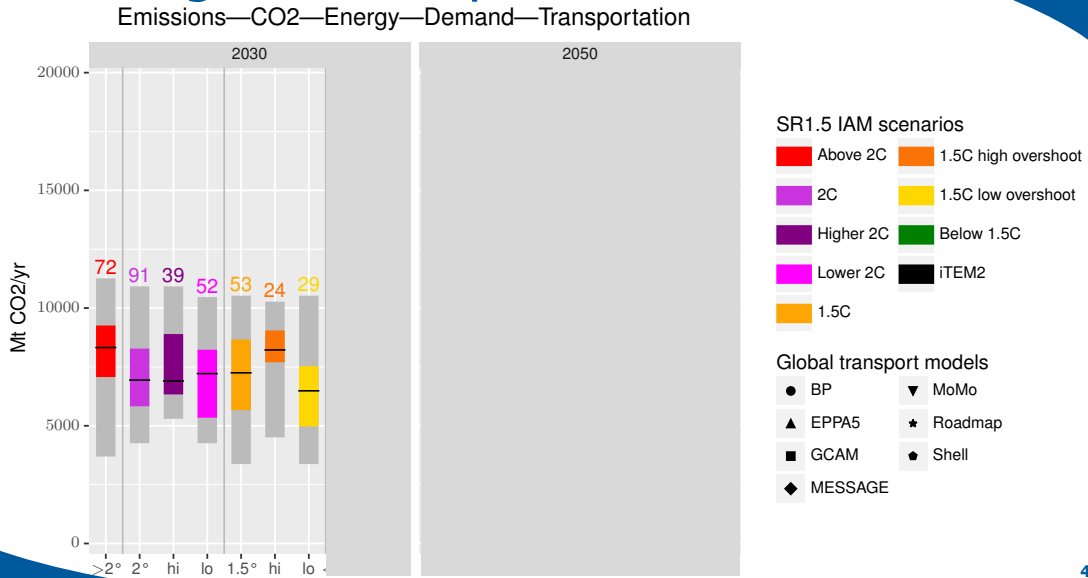

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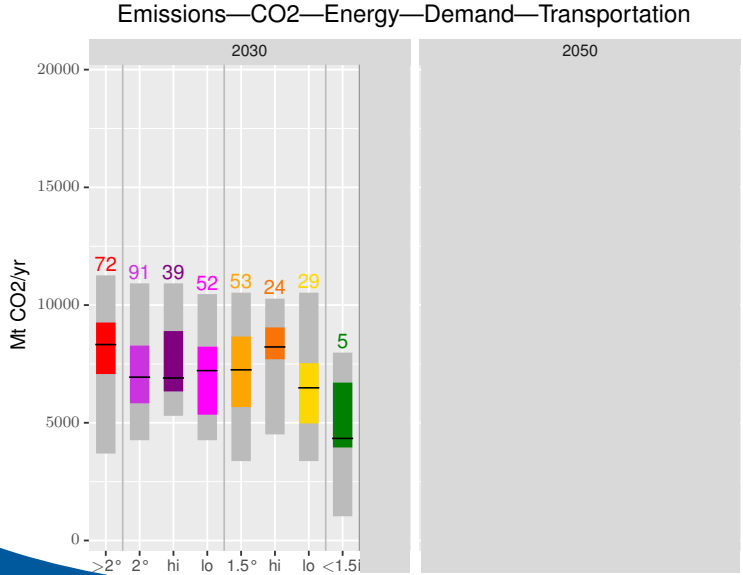

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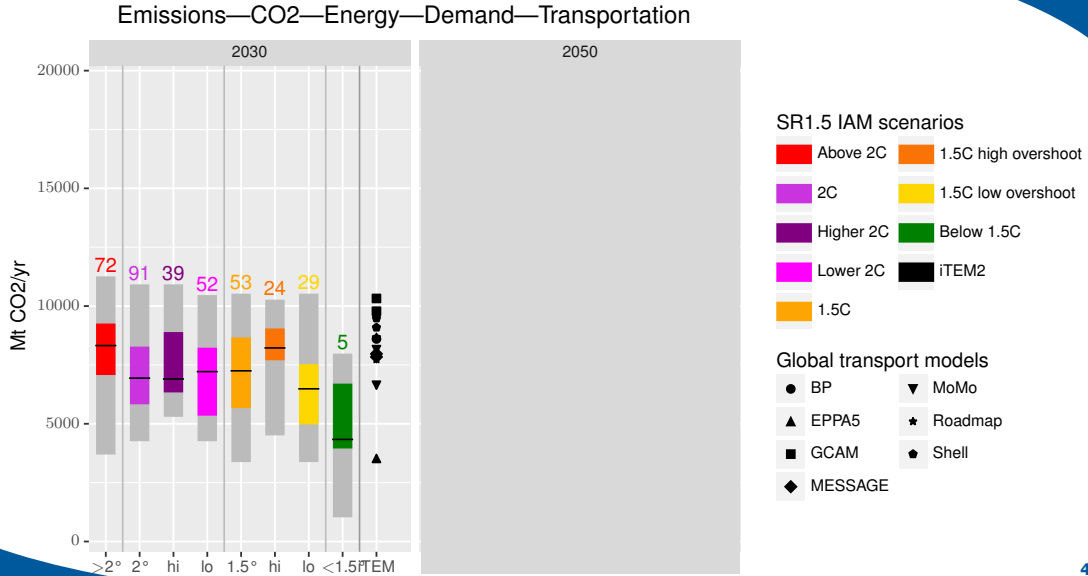

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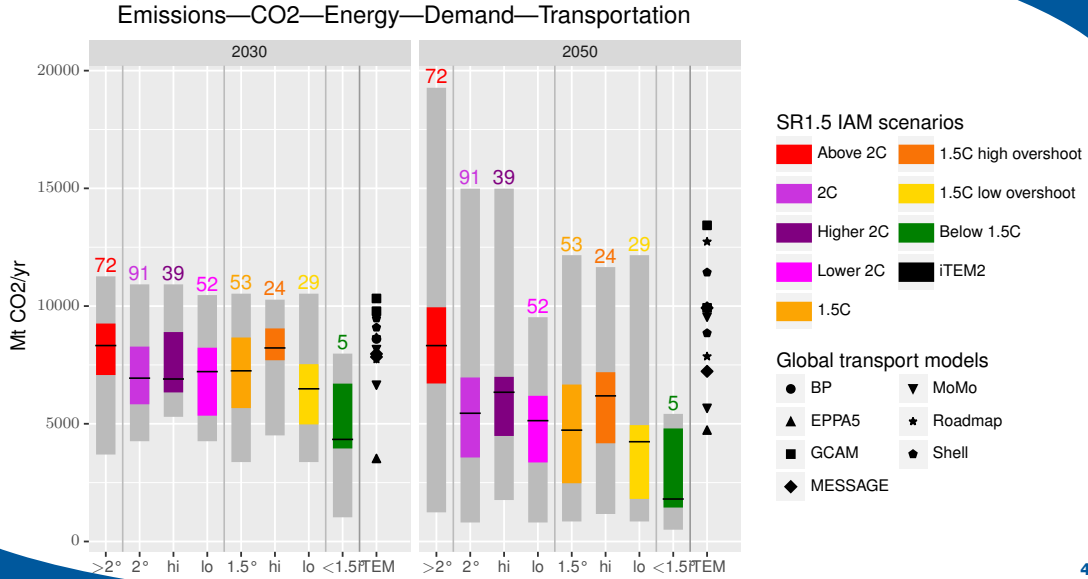

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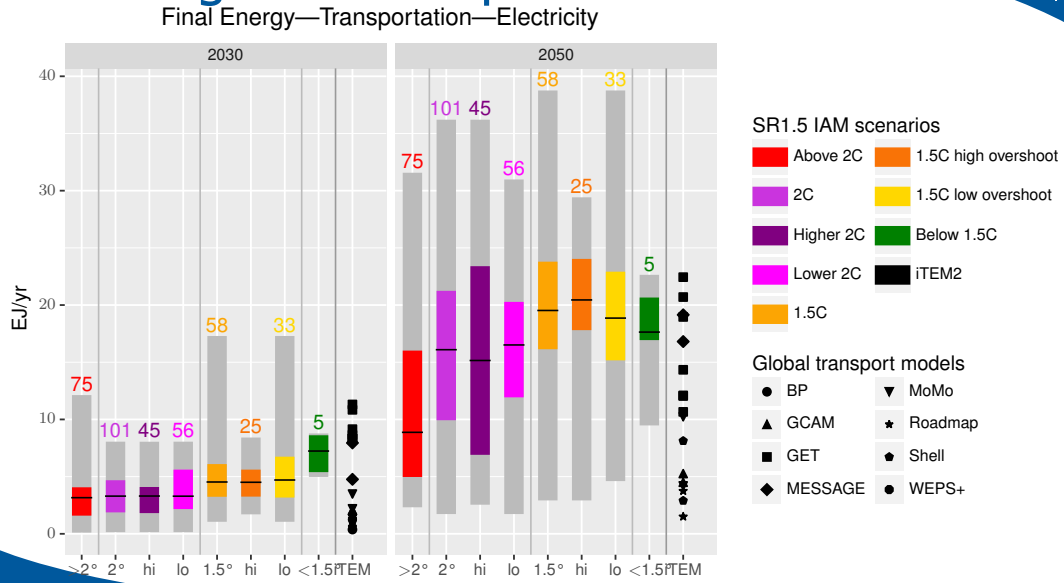

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Conclusions from the iTEM4 workshop @ IIASA, October 2018.

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2. Resolution
3. Validation & transparency

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   - Increase freight data quality & detail to match passenger.
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$\rightarrow$ linkages to/from partial-sector, partial-coverage models.

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- Set common policy scenarios to sharpen inter-model comparison.

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Goals

$\rightarrow$ identify transport-sector changes compatible with low-carbon futures.
$\rightarrow$ inform stakeholders & policymakers, e.g. via IPCC AR6 (2022).

Thank you!