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A decade of progress and challenges of the Japan Model Intercomparison Project (JMIP)

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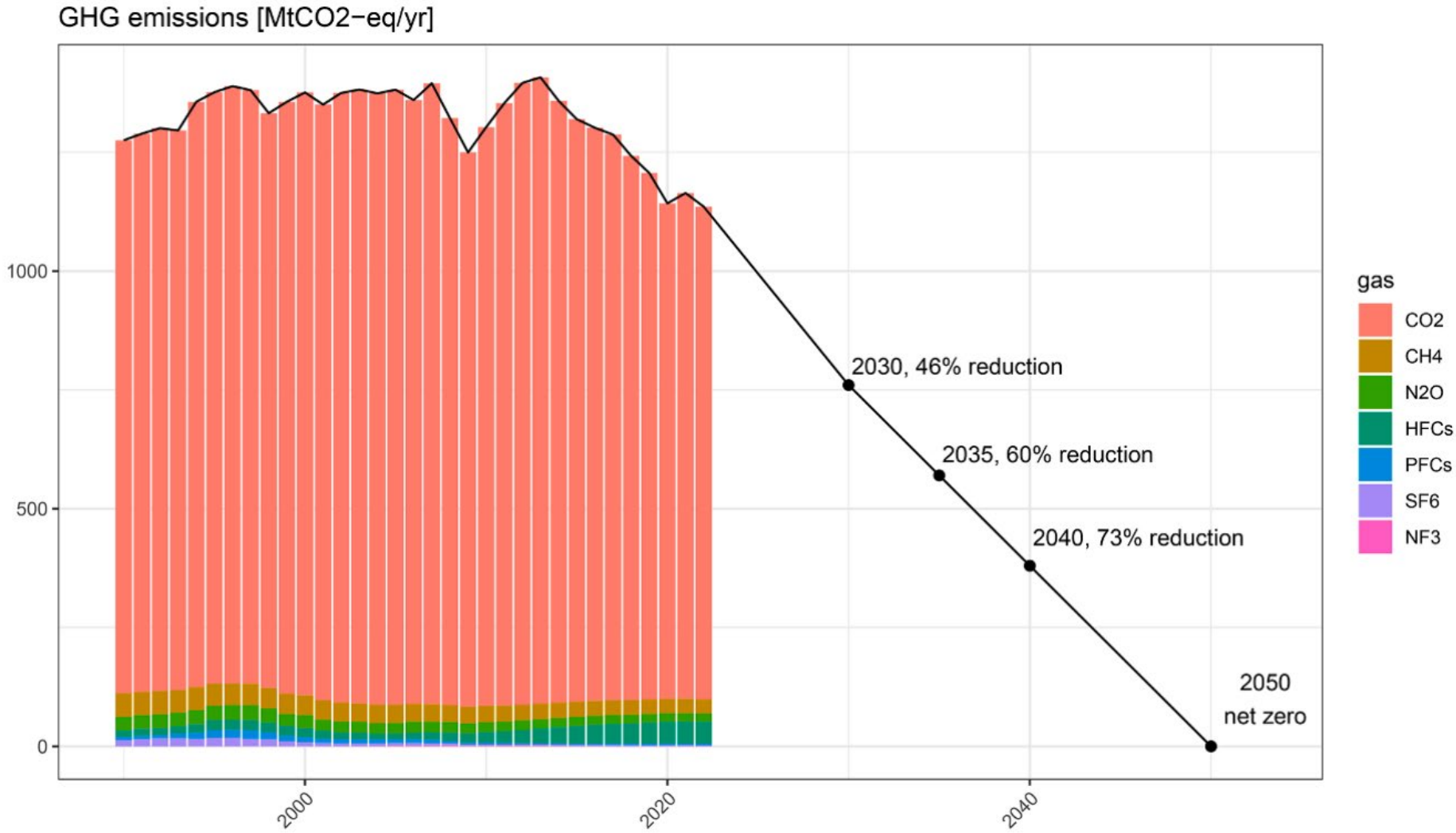
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A brief history of JMIP (Japan Model Intercomparison Project)

Phase	Description	Publications
JMIP 0	First project. Funded in 2016, first publication in 2019.	Sugiyama et al. (2019, Energy)
JMIP 1 (EMF 35)	80% reduction by 2050, technology uncertainty analysis	Sugiyama et al. (2021, *Sustainability Science*) and other publications in the special issue
JMIP 2	Net zero by 2050, technology uncertainty analysis	Sugiyama et al. (2025, *Energy and Climate Change*) and two more
JMIP 3	Emissions reduction and CDR in 2050 and beyond	Ongoing

Has contributed the IPCC (Intergovernmental Panel on Climate Change) AR6, IAMC (Integrated Assessment Modeling Consortium) SWG National Scenarios

Japan’s goal: net-zero emissions by 2050



Sugiyama et al. (2025, *Energy and Climate Change*)

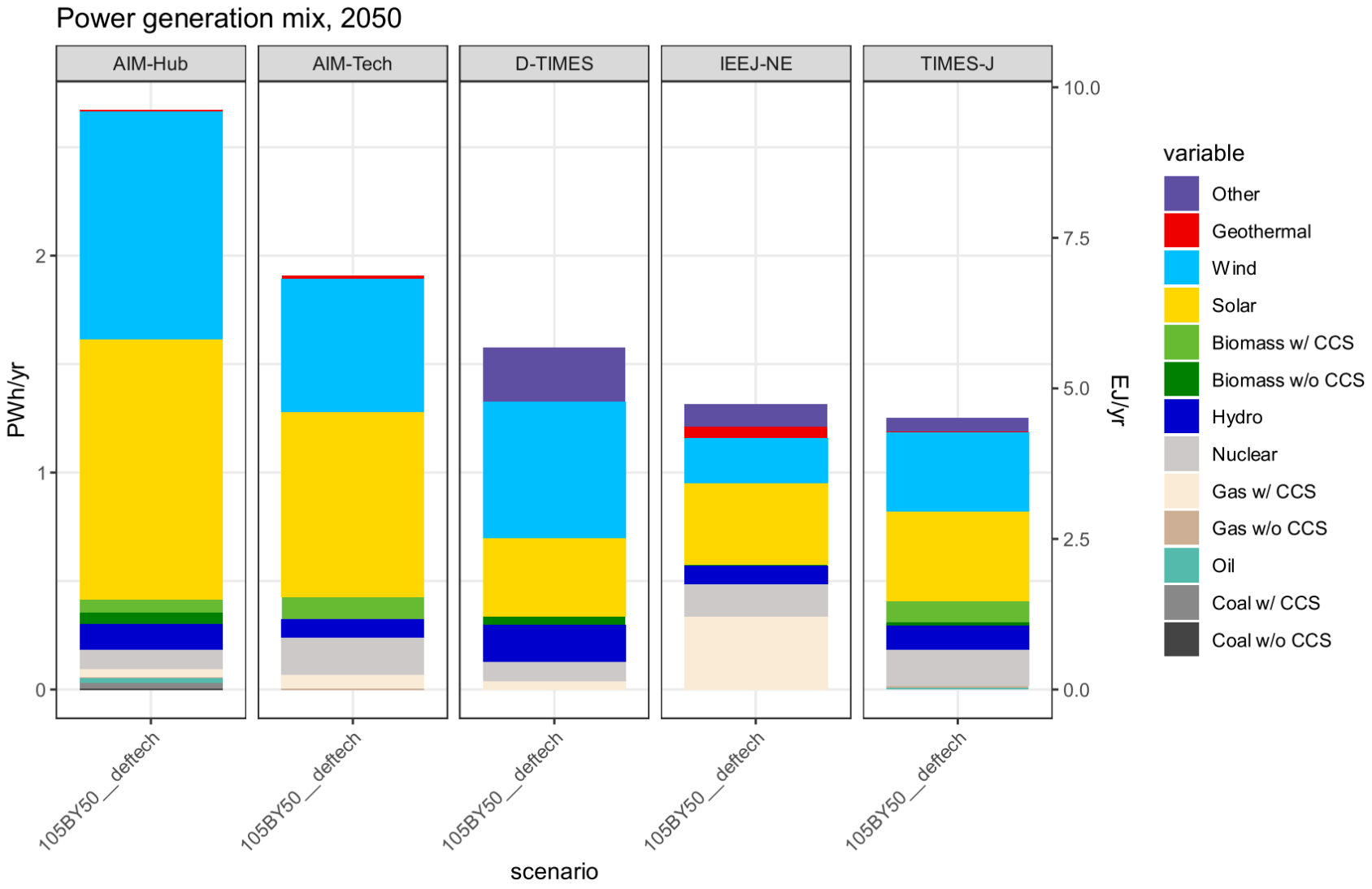
Models in JMIP 2

General equilibrium model is limited

Table 1
Models used in this study.

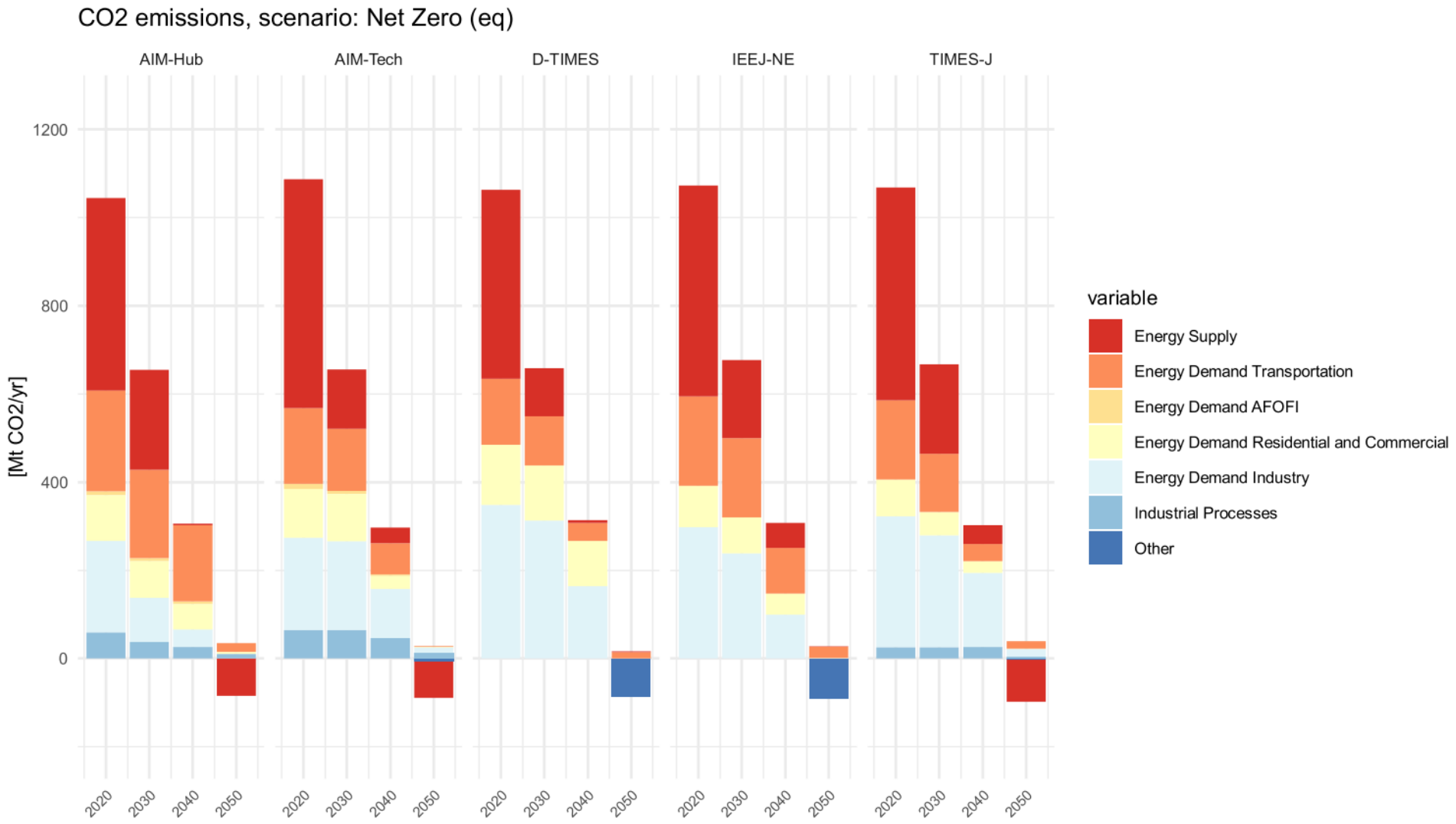
Model (short name for visualization purposes)	Solution concept	Region	Temporal treatment	Non-AFOLU CDR options
AIM-Hub-Japan (AIM-Hub)	General equilibrium	Japan as one region	Recursive dynamic	BECCS, DACCS
AIM-Technology-Japan (AIM-Tech)	Partial equilibrium	10 regions	Recursive dynamic	BECCS, DACCS
d-TIMES	Partial equilibrium	351 nodes and 47 preferectures	Intertemporal	DACCS
IEEJ-NE_Japan (IEEJ-NE)	Partial equilibrium	5 regions	Intertemporal	BECCS, DACCS
TIMES-Japan (TIMES-J)	Partial equilibrium	Japan as one region	Intertemporal	BECCS, DACCS

Hydrogen / ammonia power generation remains an uncertainty



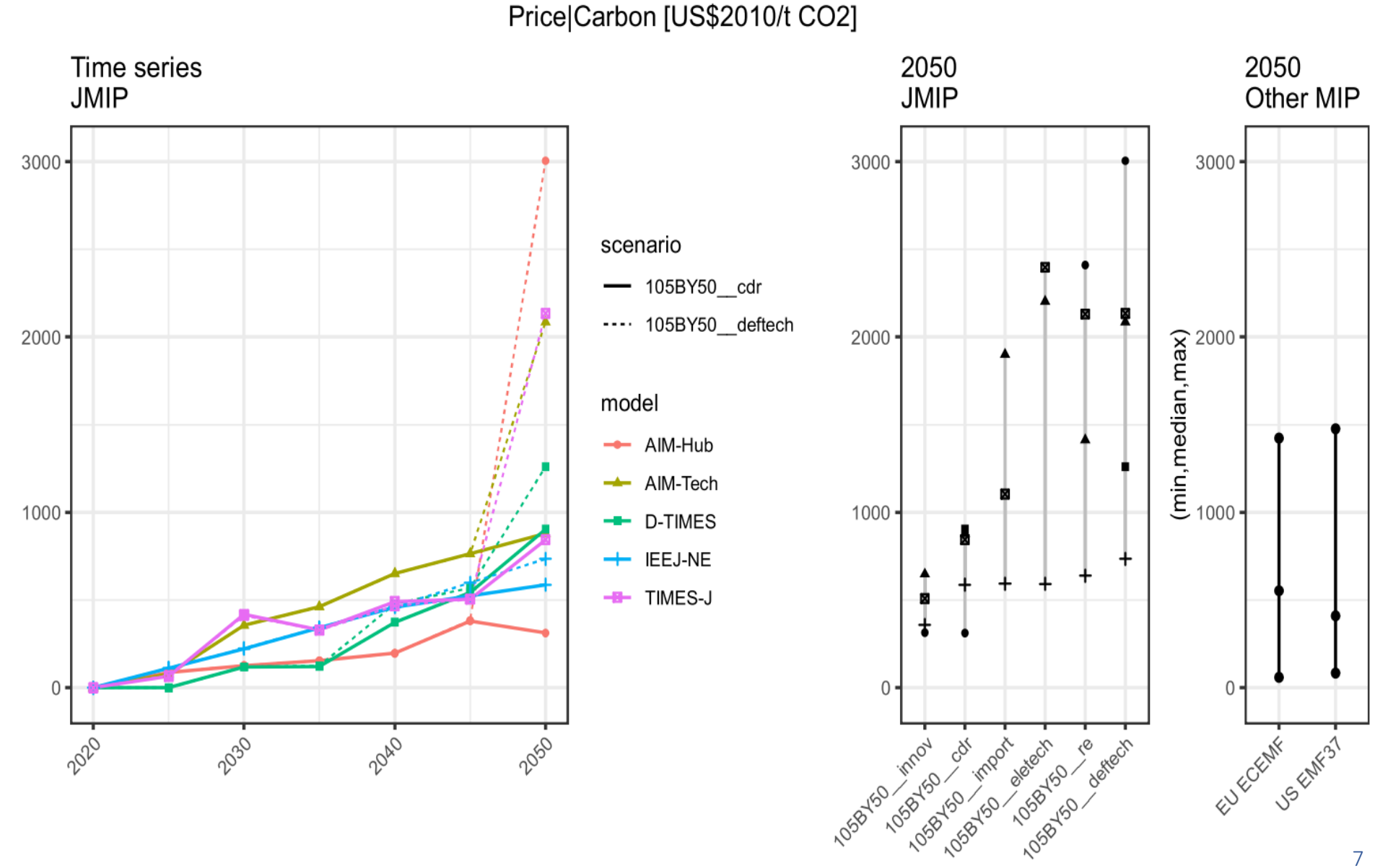
Sugiyama et al. (2025, *Energy and Climate Change*); many students contributed

Reducing emissions is not enough; Removing CO_2 (carbon dioxide removal, CDR) from the atmosphere is a must



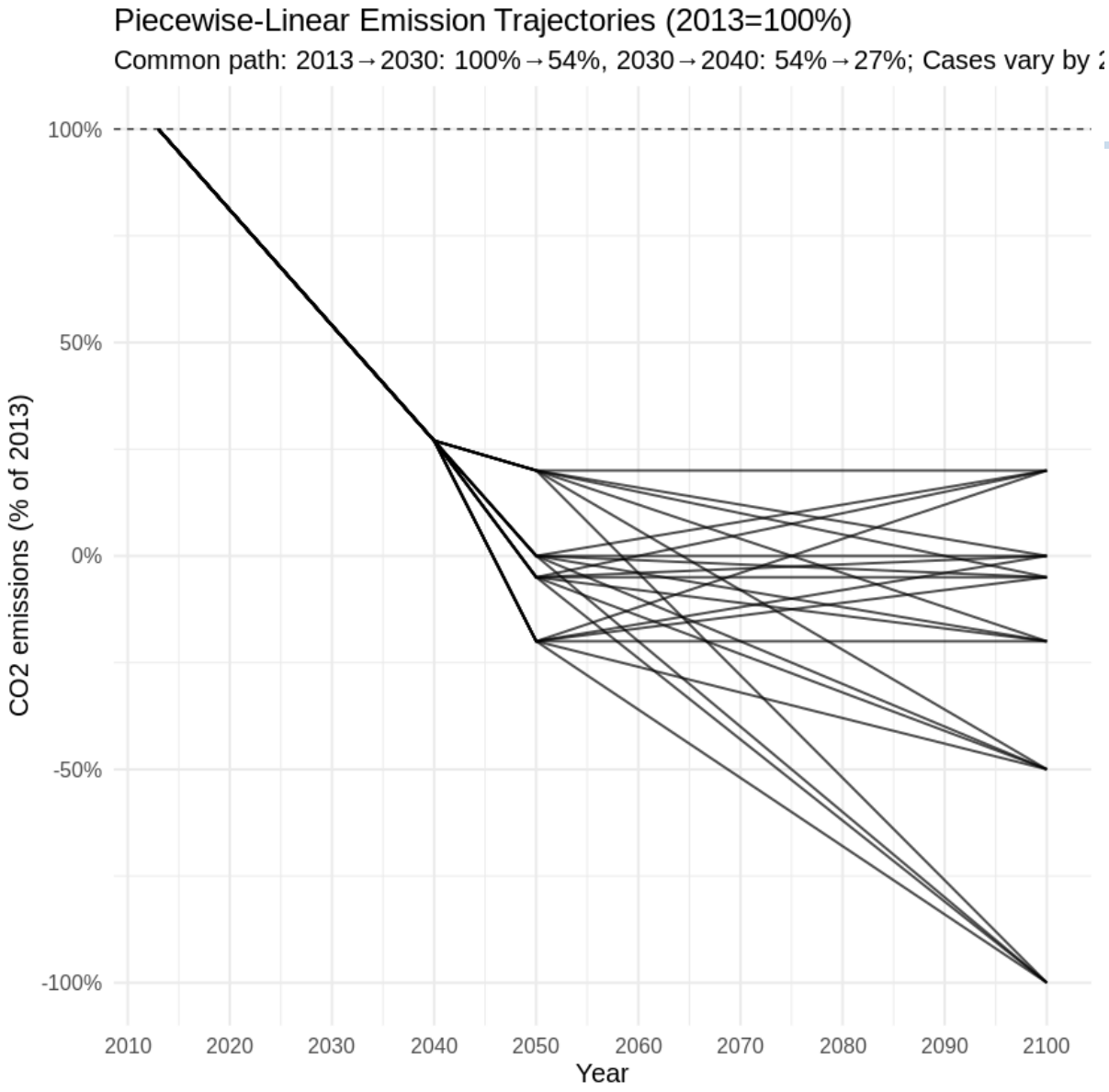
Sugiyama et al. (2025, *Energy and Climate Change*); many students contributed

Carbon price:
Japan = or > US or Europe



JMIP 3

- Ongoing work



Why is policy impact limited?

- JMIP is not doing enough, we admit

- But also, limited “futuring capacity” in Japan
  - Futuring capacity: application of policy capacity , with inputs of future literacy and anticipatory governance
  - Initial document research and stakeholder survey analyses show that they are low in terms of integrating scenario analysis with policy making (Hartwig et al., in preparation)

- JMIP’s future plan
  - Tackle trade issues (hydrogen, ammonia, CDR credits, green steel) => importance of economic analysis
  - Collaborate more (e.g., with South Korea, China, etc.)
  - Analyze the interface between research and policy (maybe in parallel with JMIP)