Global Transportation Roadmap Model
Comparative Analysis of Activity and Emissions

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ICCT Roadmap Model
Version 2-0 November 2013

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Scope and Objective

This slide deck summarizes a comparison of activity inputs and emissions results between the Roadmap model and other national and international models. This deck is the result of an annual data update and validation process, which is conducted to:

- Ensure use of best data and methods
- Evaluate input parameters and model algorithms
- Update input data
  - Ensure most accurate and consistent data sources for all regions
  - Update historic data by using reliable data
- Validate output data
  - Calibrate historical numbers with statistics
  - Compare projected trends with major global/national models

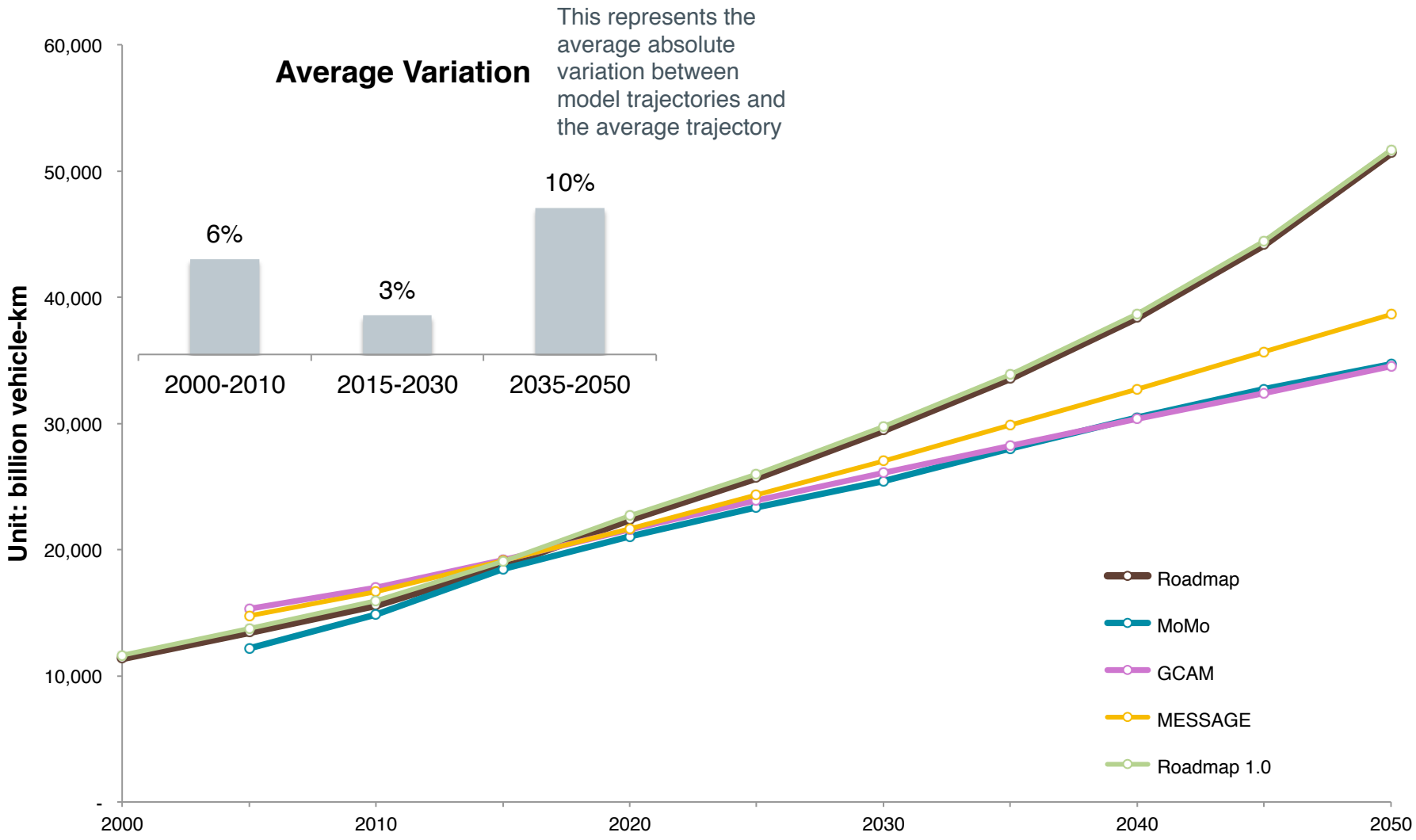
New to 2013 Validation

- Projections extended to 2050 from 2030
- HDT sub-categories: LHDT, MHDT, HHDT
- Conventional pollutants: BC, NO_x, $PM_{2.5}$
- Annual data calibration: 2010, 2011, 2012
- Comparison with Roadmap Version 1.0
- Development of Roadmap Version 2.0 (internal)
  - Updated passenger/freight activity, sales and stock data
  - Fuel efficiency
  - Emission factors
    - Because of the update in emission factors, there is significant discrepancy between versions 1.0 and 2.0 in terms of conventional pollutants
  - Sulfur effects
  - Scrappage program
  - Annual estimation of local air pollutants
  - All Roadmap in the following slides refers as Roadmap Version 2.0

Models/Data Sources for Comparison

Region	Model	Agency	Years
Global Aggregate Regions	MoMo GCAM MESSAGE GAINS	IEA's Mobility Model Global Change Assessment Model IIASA's MESSAGE Model IIASA's Greenhouse Gas and Air Pollution Interactions and Synergies	2005-2050 2005-2050 2005-2050 2000-2030
U.S.	AEO BTS Data Book	Annual Energy Outlook Bureau of Transportation Statistics Transportation Energy Data Book	2010-2040 2000-2010 2000-2010
Canada	NATS NRCanada Environment Canada	North American Transportation Statistics Database Natural Resources Canada Environment Canada	2000-2010 2000-2010 2000-2010
Mexico	SENER	Mexico Federal Government Ministry Of Energy	2005-2010
Brazil	IEMA	Brazil's National On-Road Emission Inventory	2000-2020
EU-28	Pocketbook EC 2010 TREMOVE	EU Transport Statistical Pocketbook European Commission 2010 - EU Transport GHG 2050 EU-wide Transport Model	2000-2010 2010-2050 2000-2030
Russia	NIIAT	Scientific and Research Institute of Motor Transport	2010
China	FEEI	Fuel Economy and Environmental Impacts Model	2005-2050
Japan	MLIT GHG Inventory Office Statistics Bureau	Ministry of Land, Infrastructure, Transport and Tourism Greenhouse Gas Inventory Office of Japan Statistical Handbook of Japan	2000-2010 2000-2010 2000-2010
India	TERI	The Energy and Resources Institute	2000-2050
South Korea	Kostat MOTIE	Statistics Korea Ministry of Trade, Industry and Energy	2000-2010 2000-2010
Australia	ABS BITRE ABARE	Australian Bureau of Statistics Bureau of Infrastructure, Transport and Regional Economics Australian Bureau of Agricultural and Resources Economics and Sciences	2000-2010 2000-2020 2000-2020

Global Passenger Vehicle Activity



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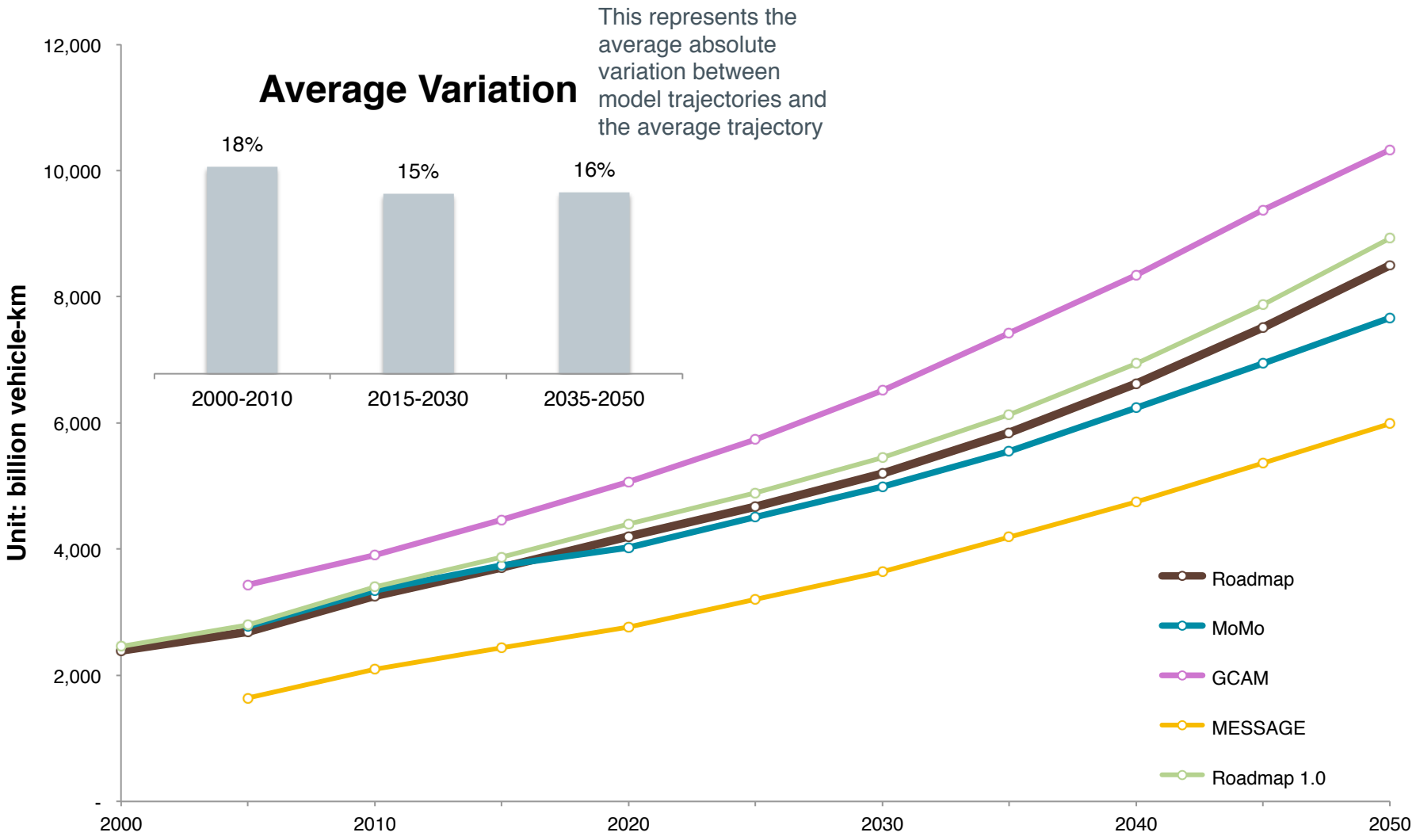
Global Freight Vehicle Activity



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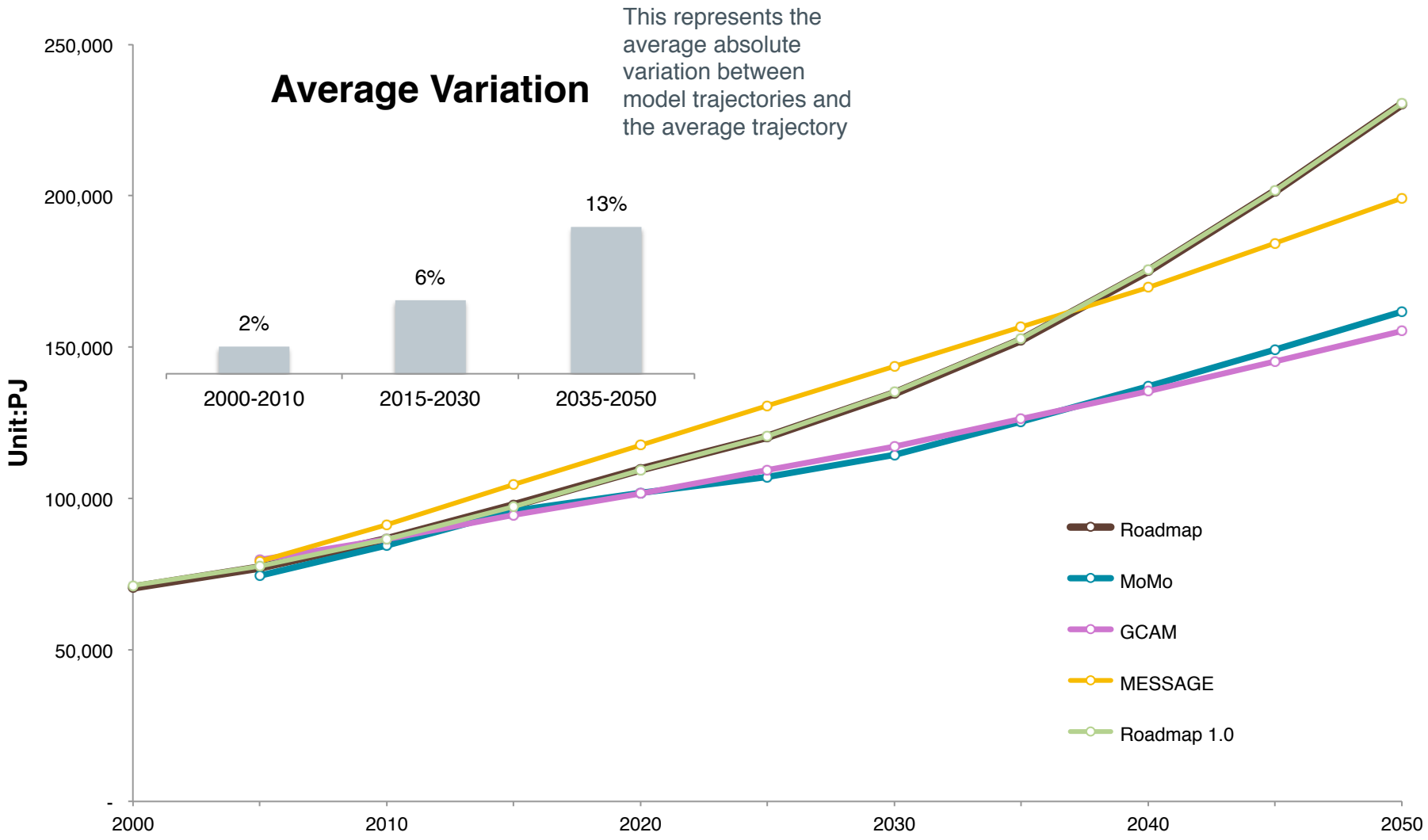
Global Total Energy Consumption (excl. Waterborne)



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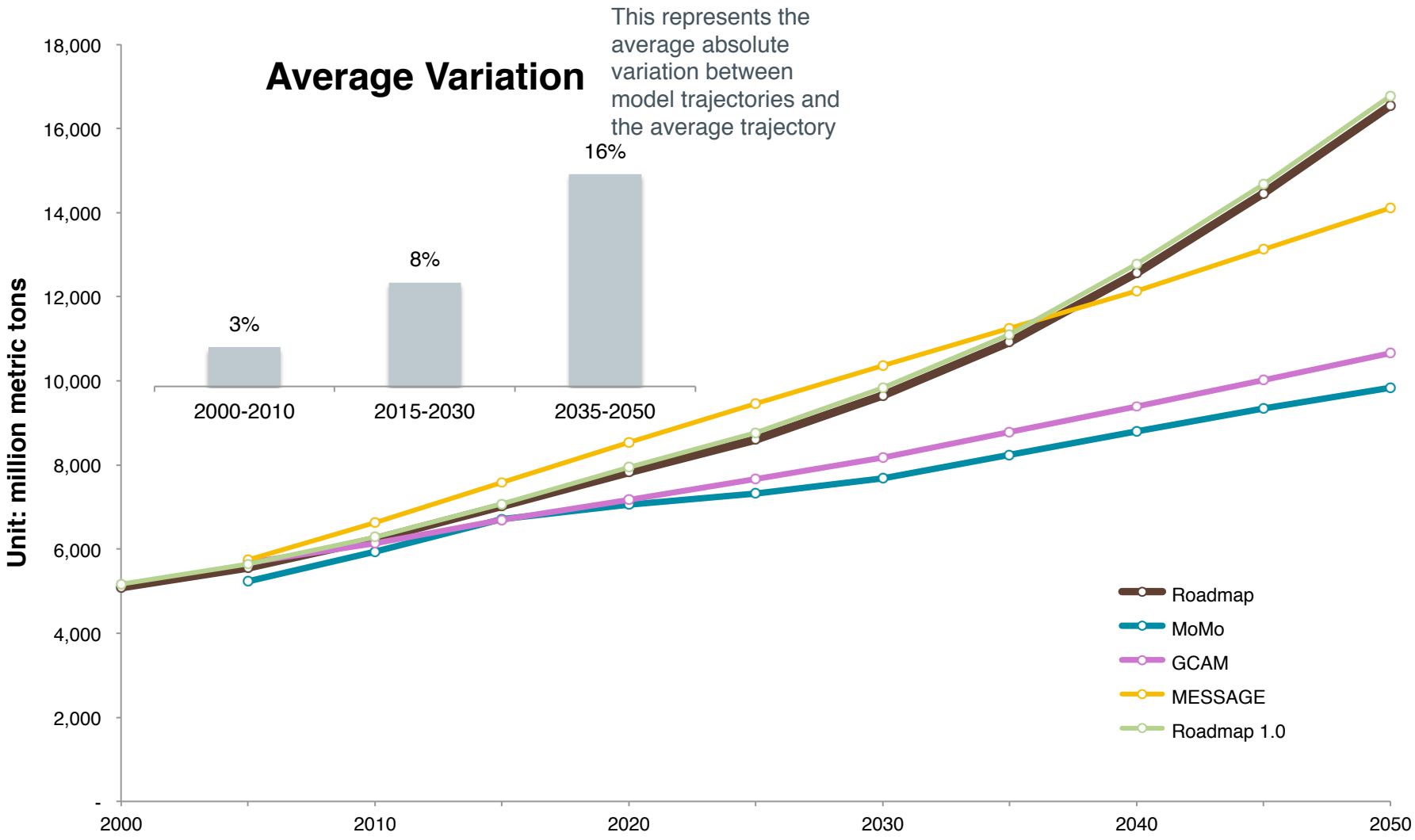
Global TTW CO2 Emission (excl. Waterborne)



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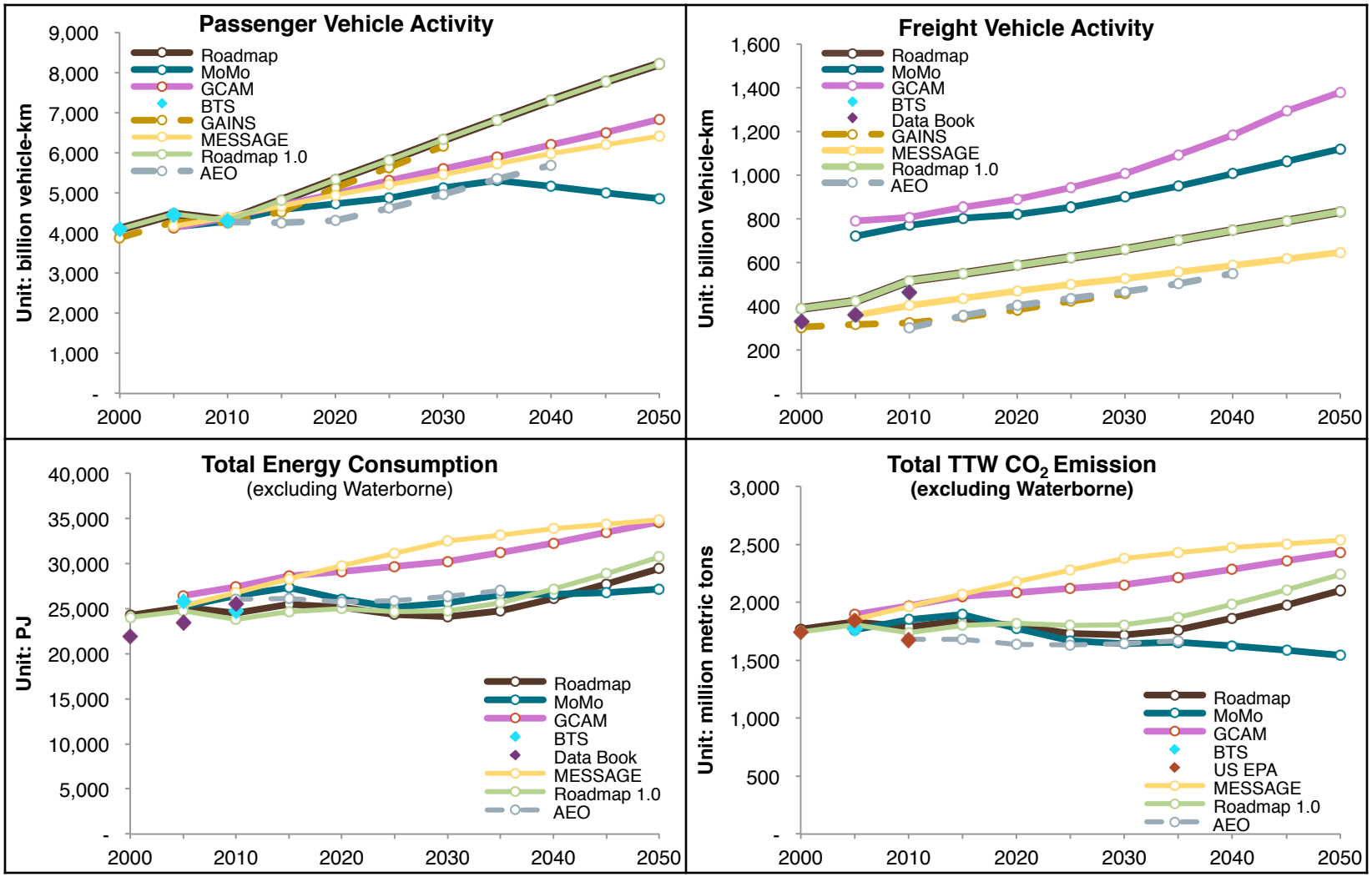
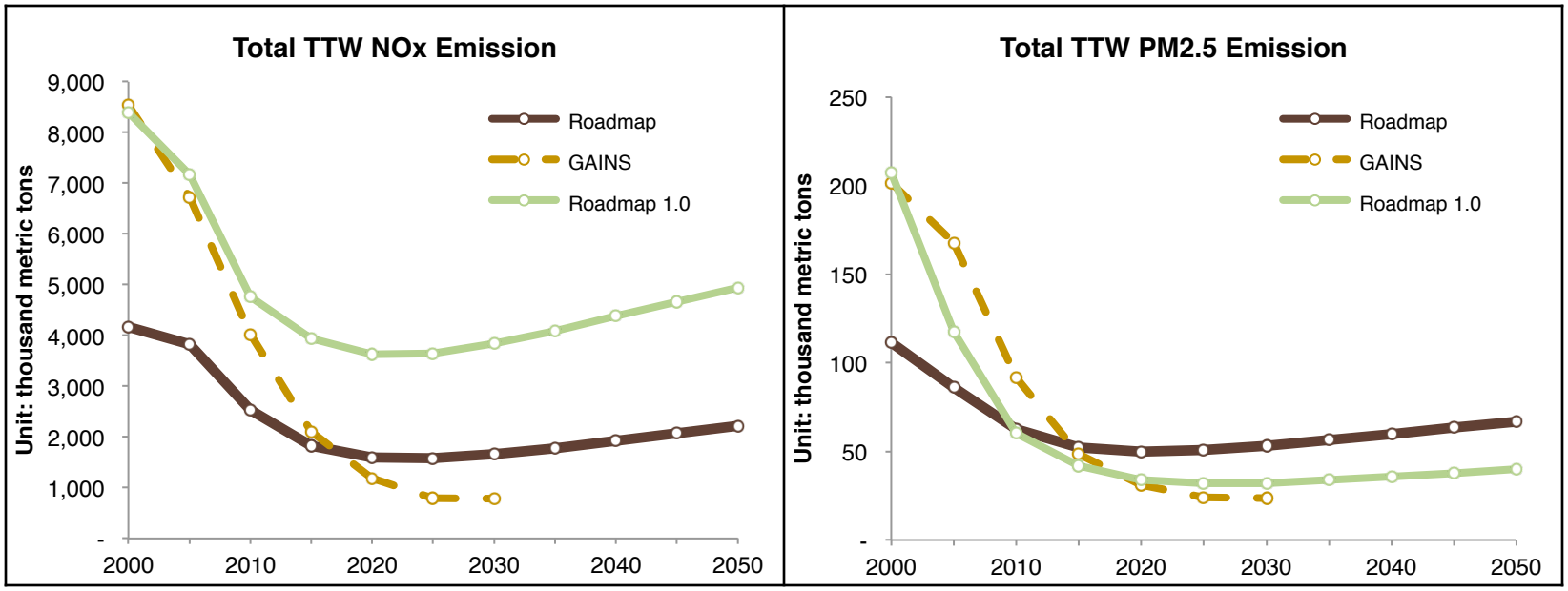
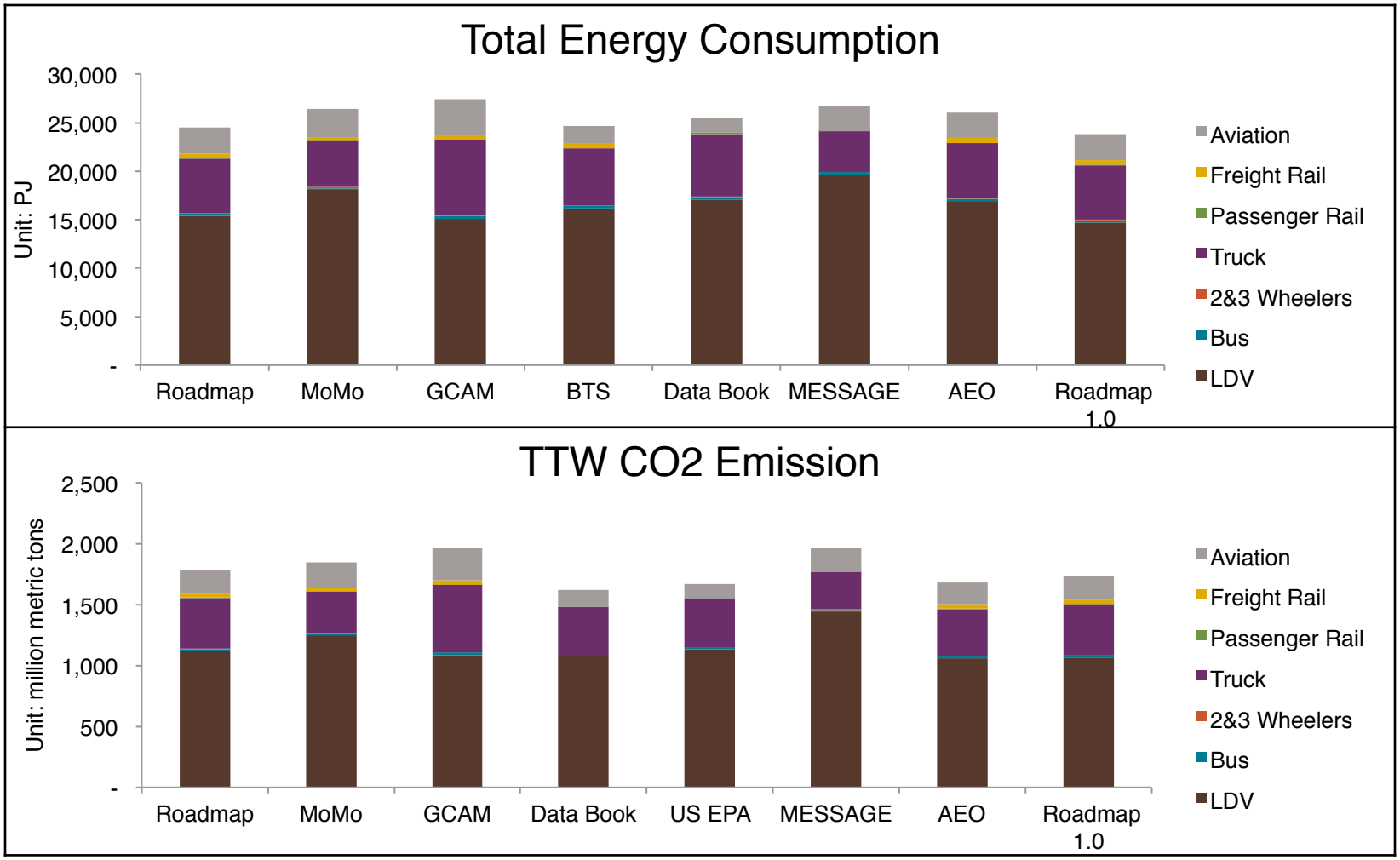
U.S. Comparison



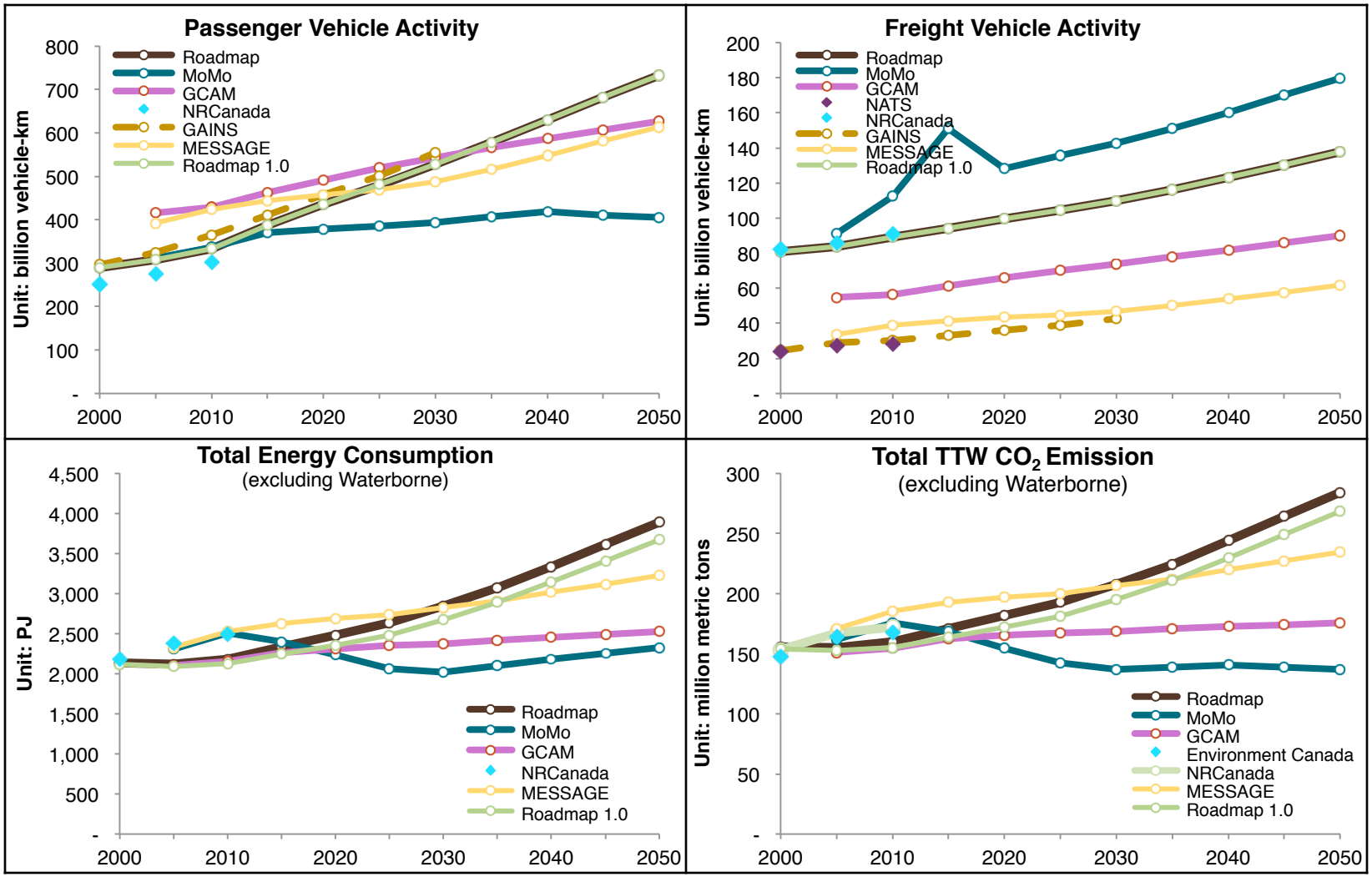
U.S. Comparison



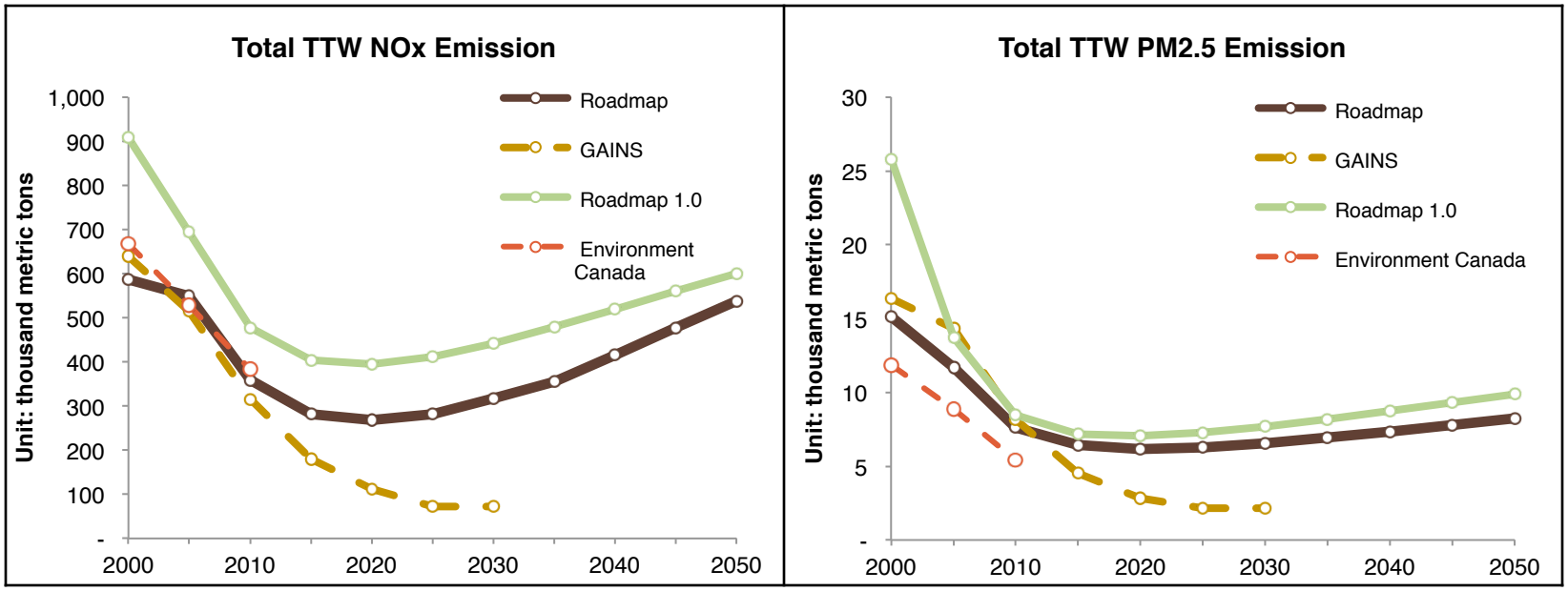
U.S. 2010 Model Outputs Comparisons
(excluding Waterborne)



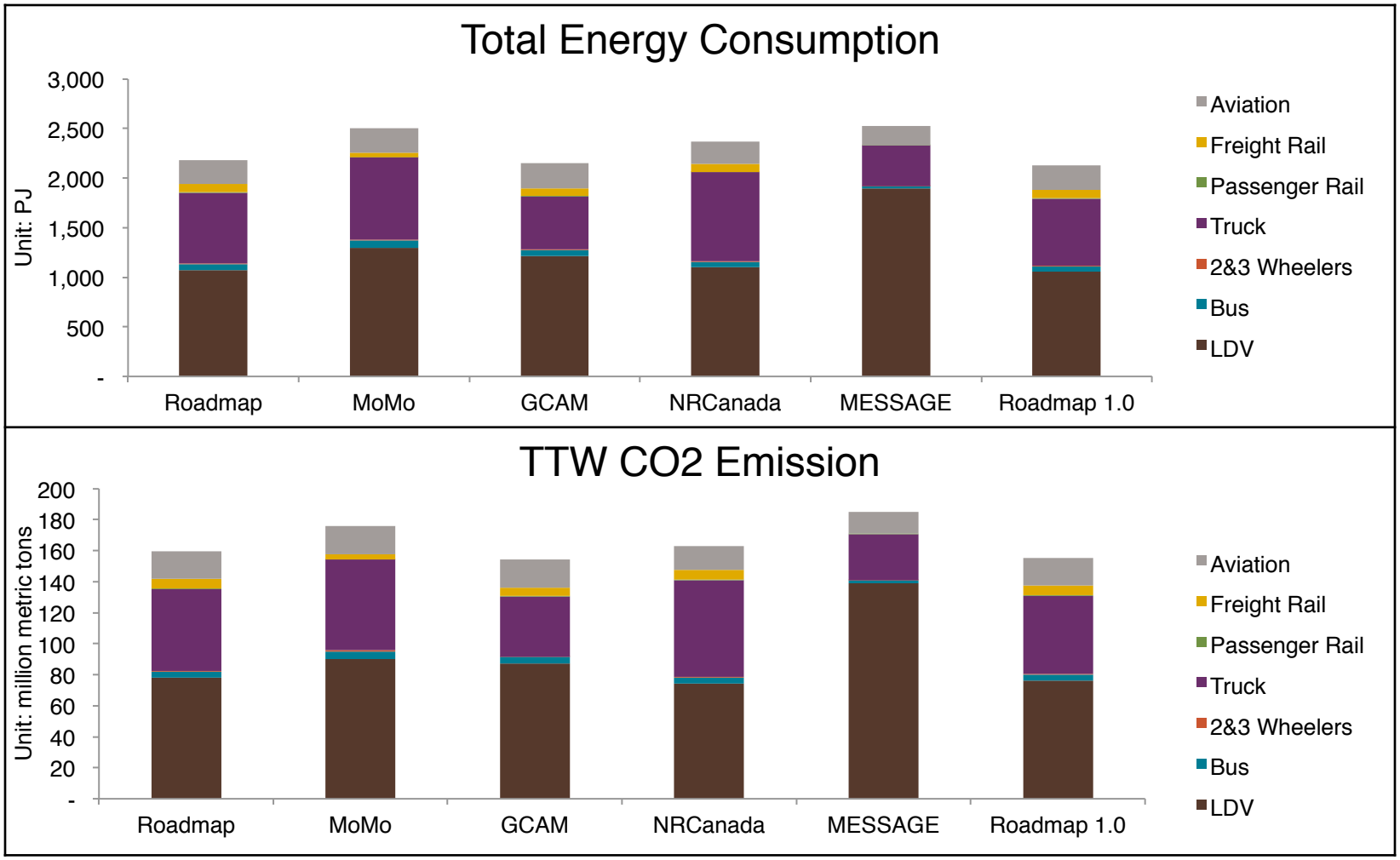
Canada Comparison



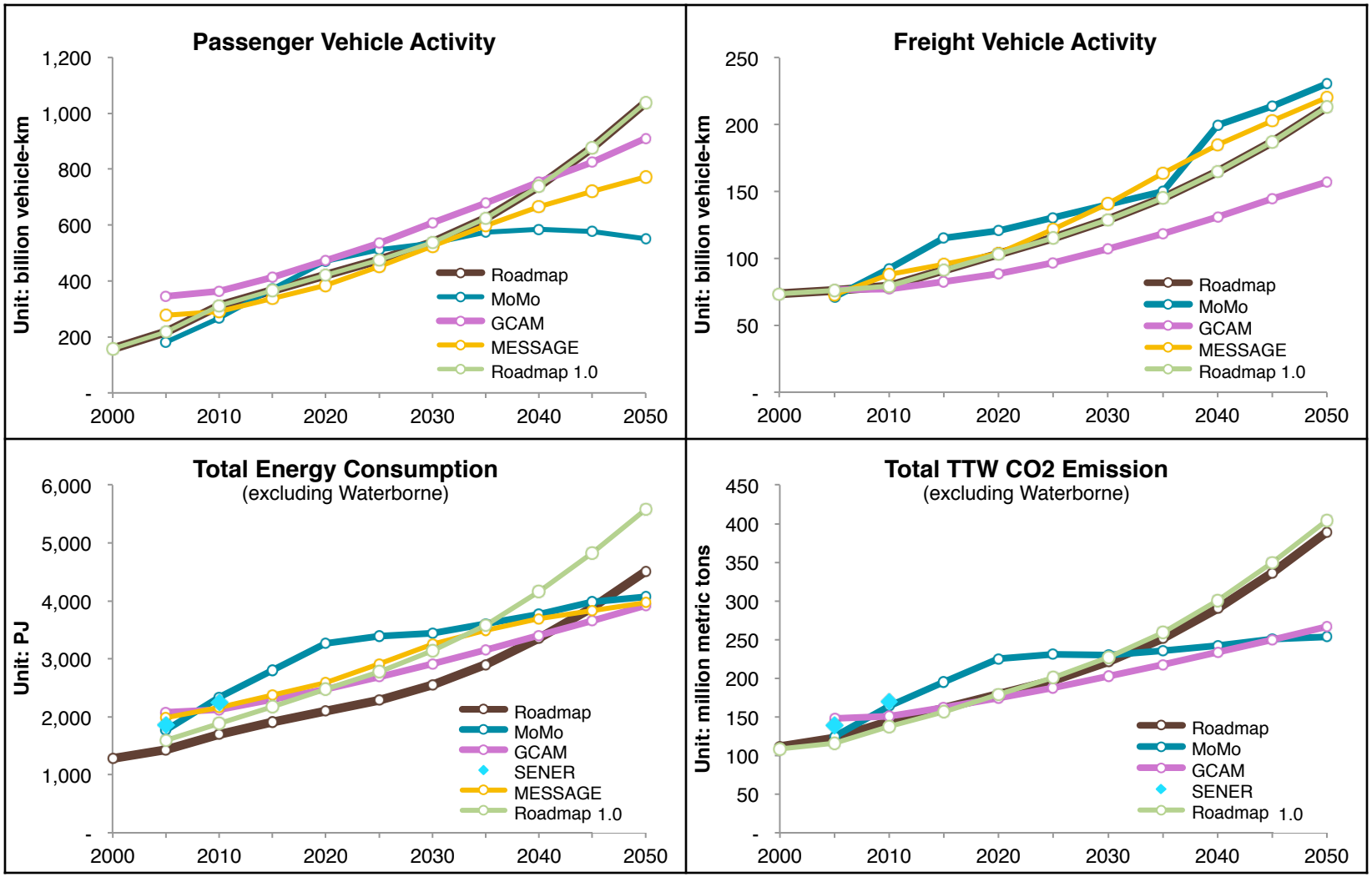
Canada Comparison



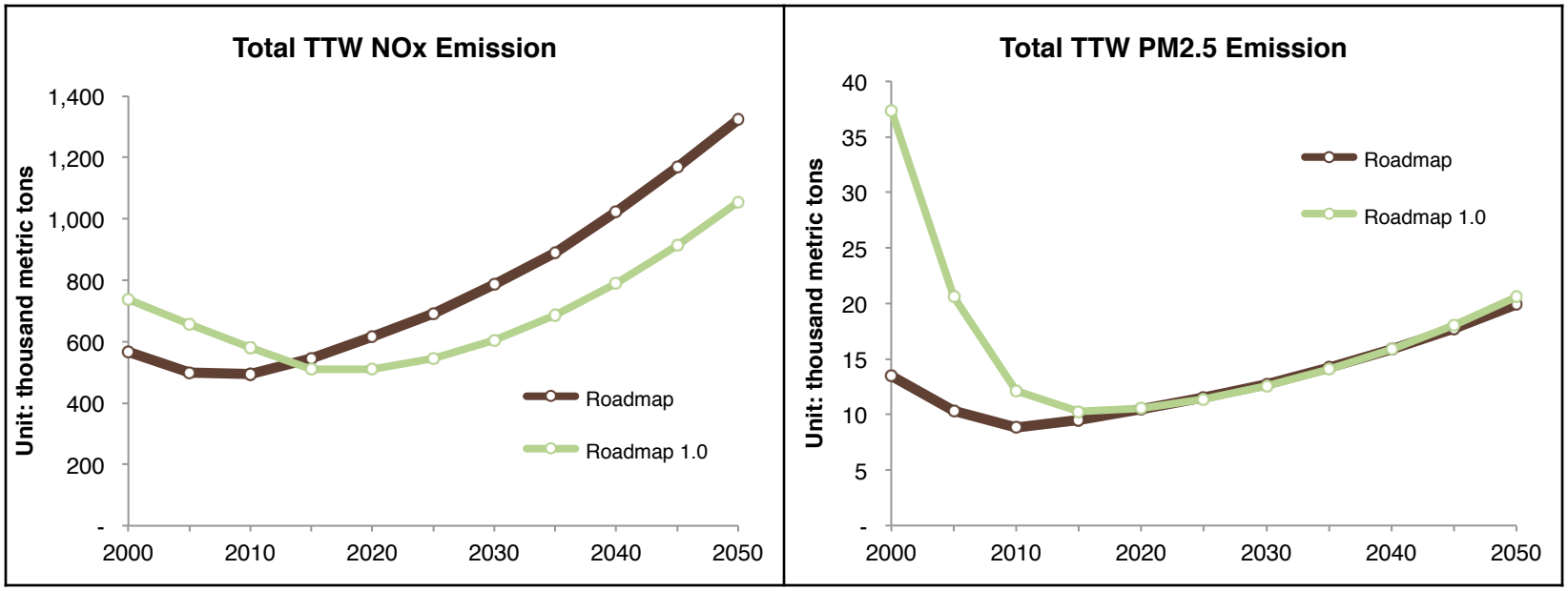
Canada 2010 Model Output Comparisons
(excluding Waterborne)



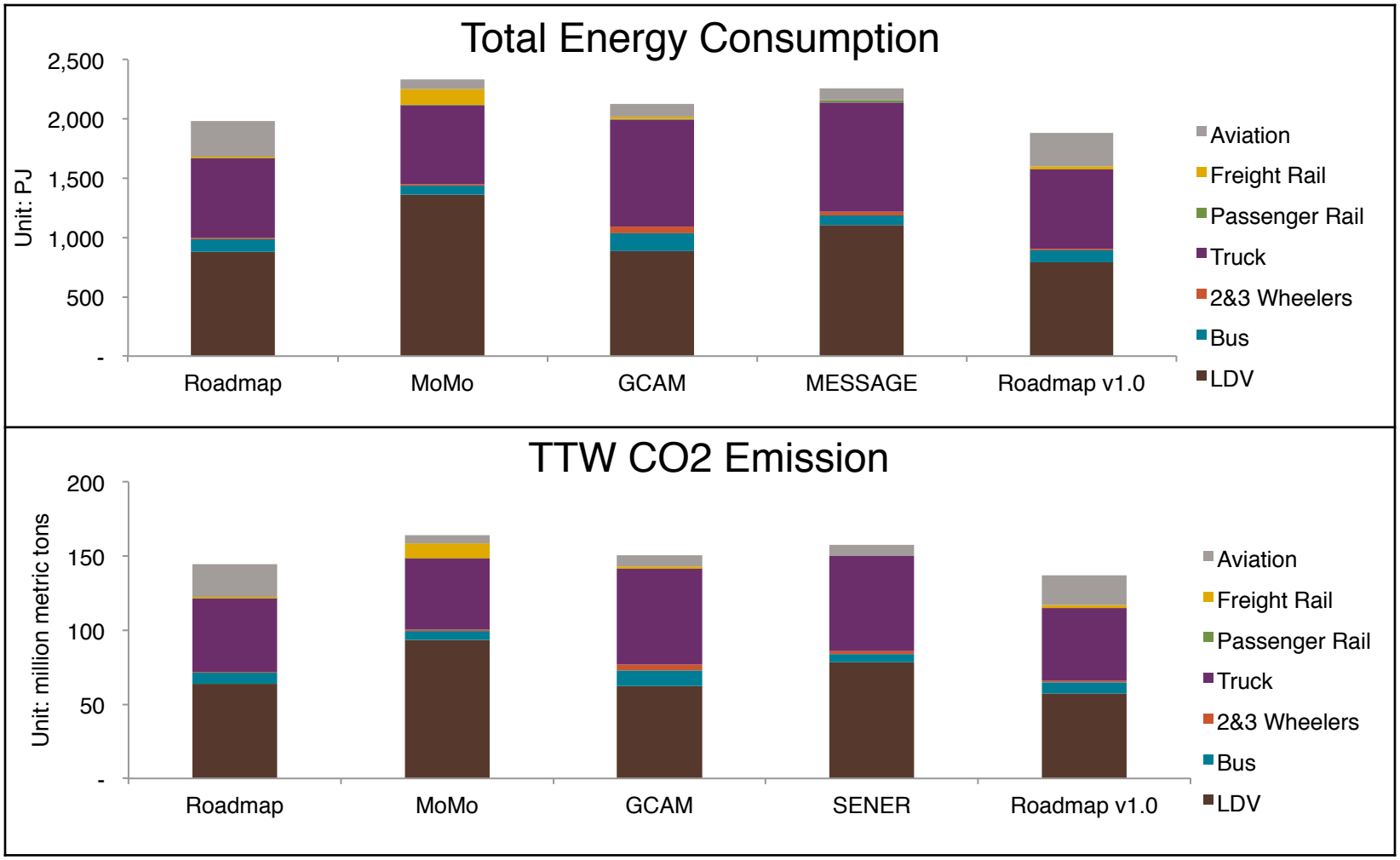
Mexico Comparison



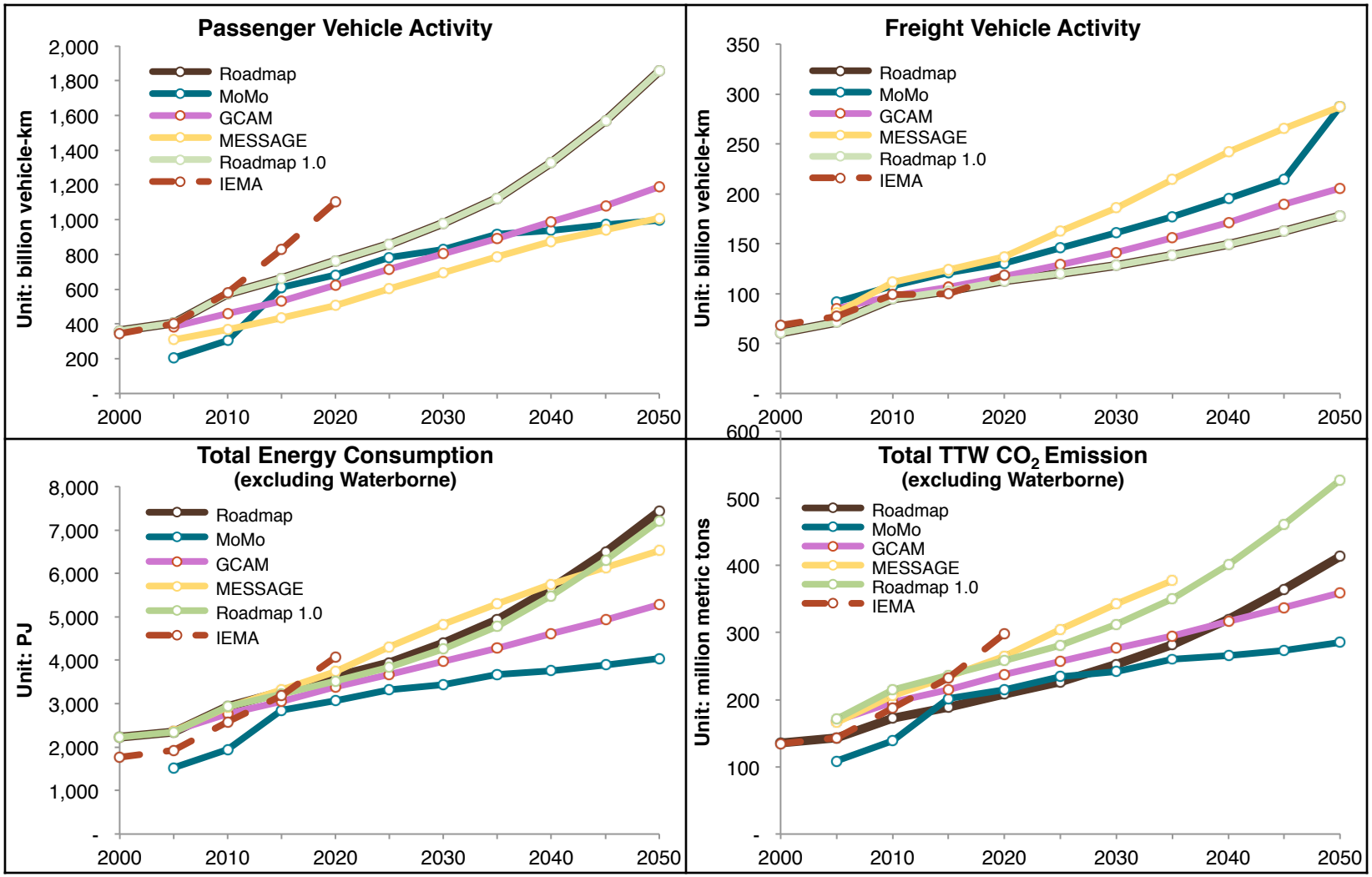
Mexico Comparison



Mexico 2010 Model Output Comparisons
(excluding Waterborne)



Brazil Comparison



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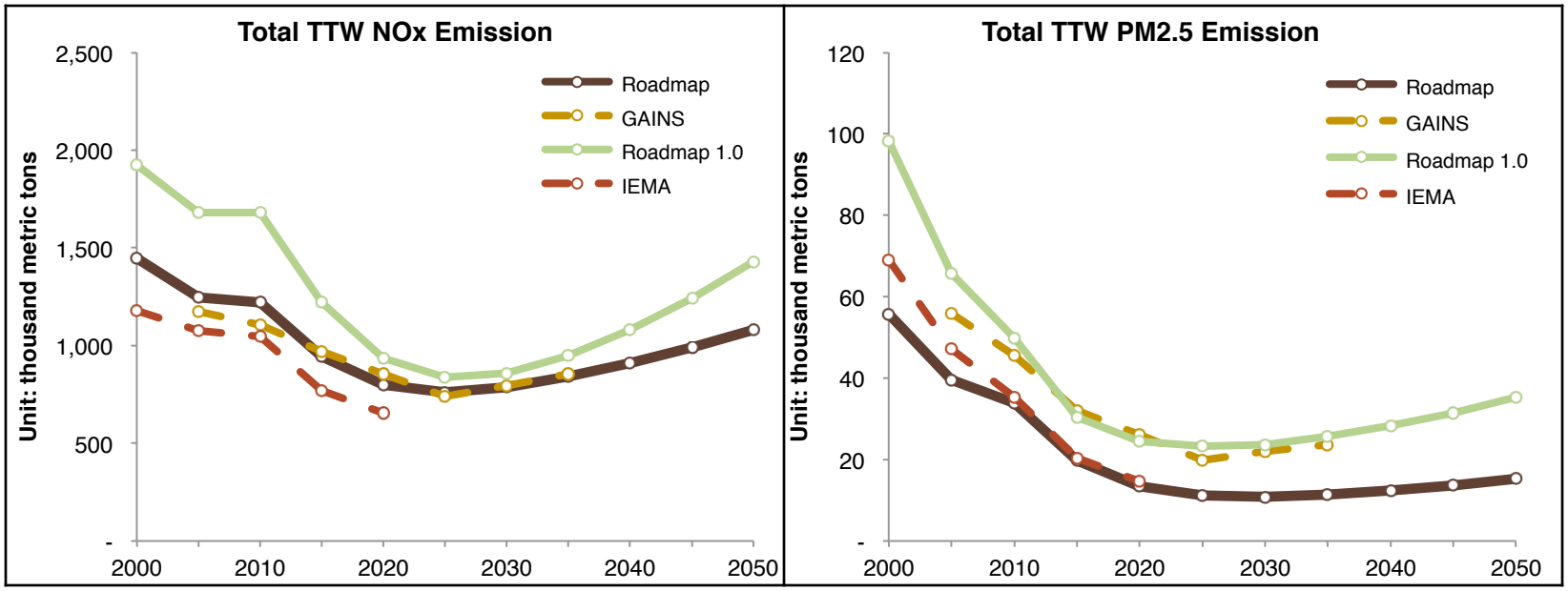
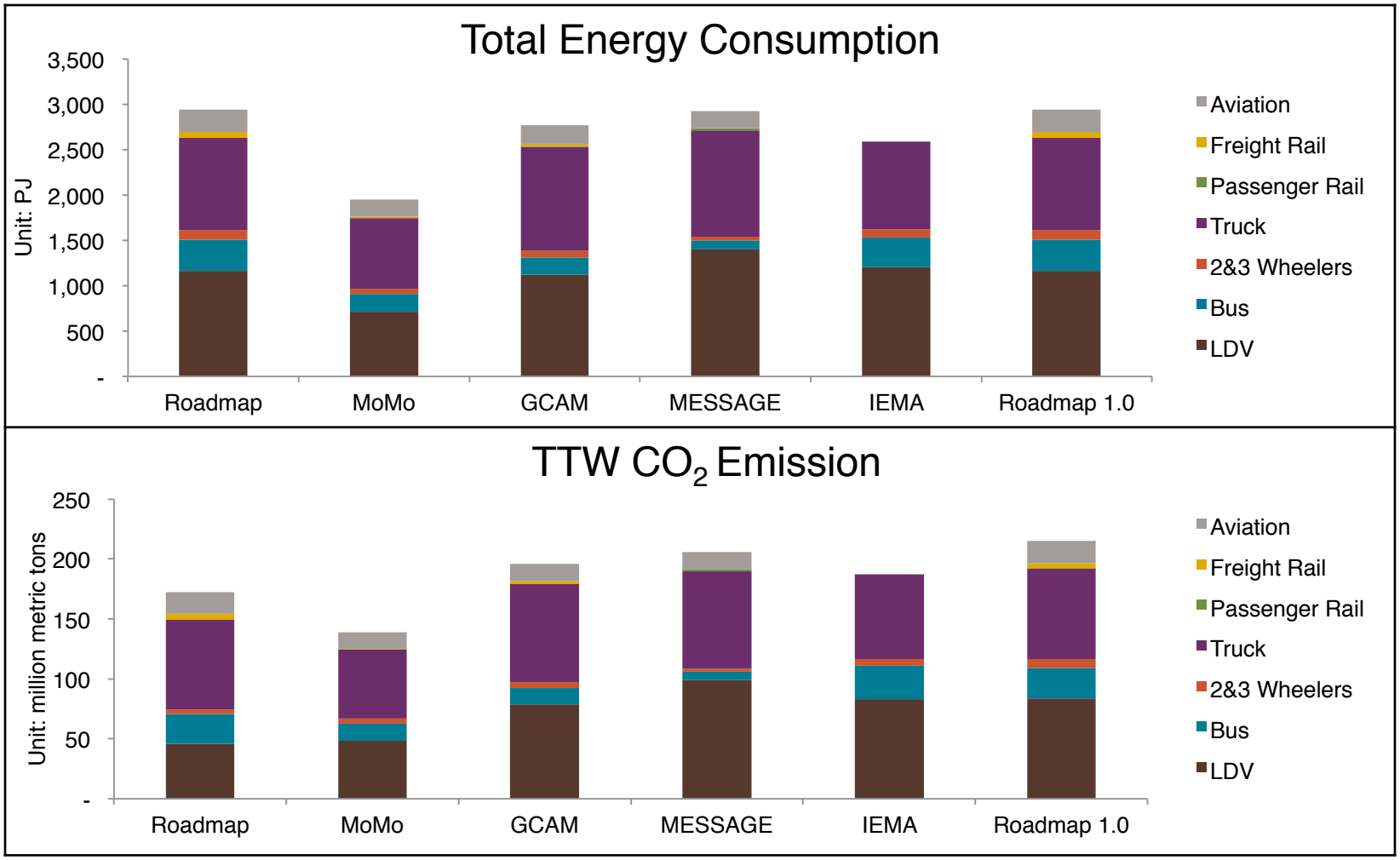
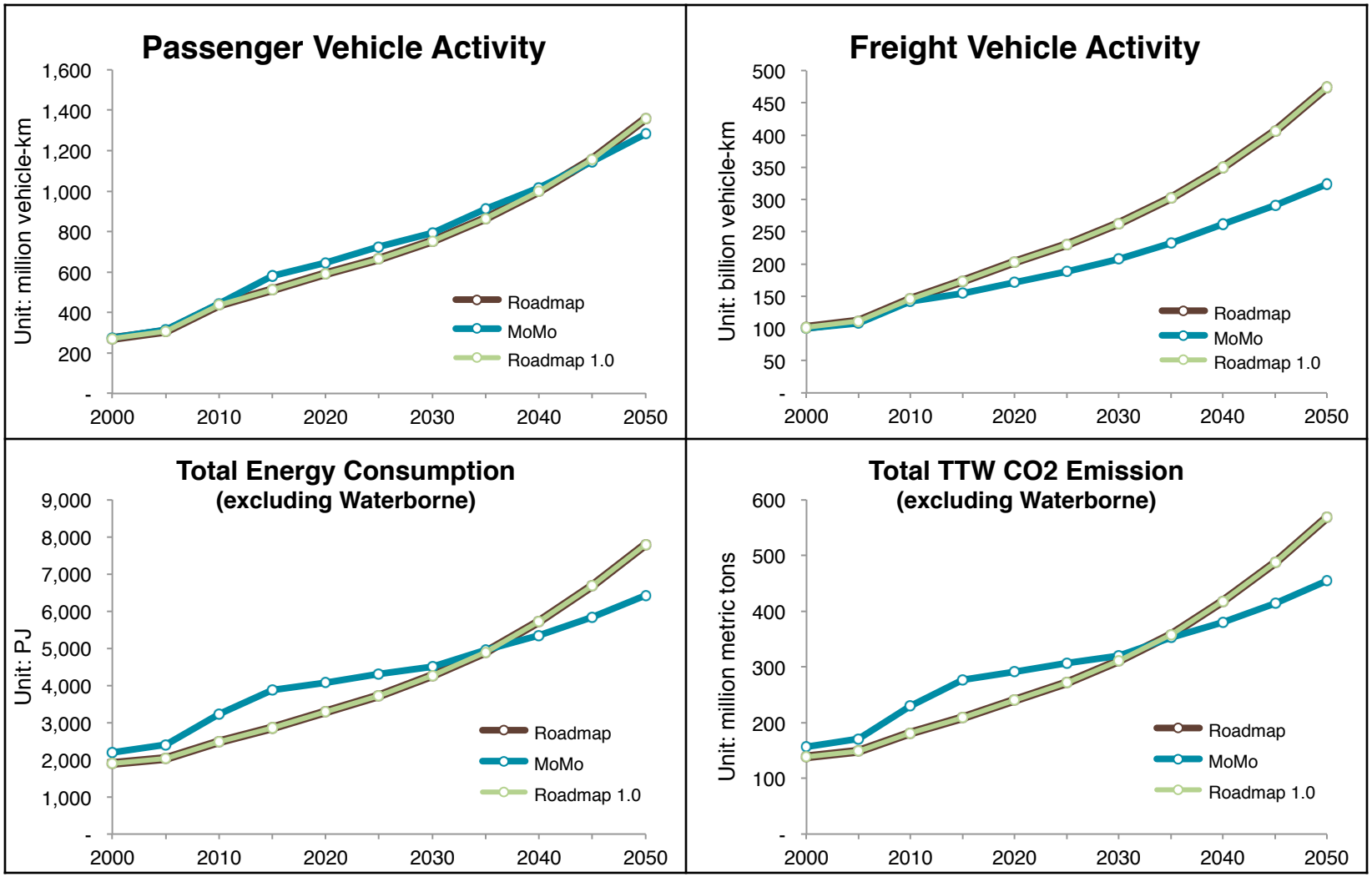
Brazil Comparison



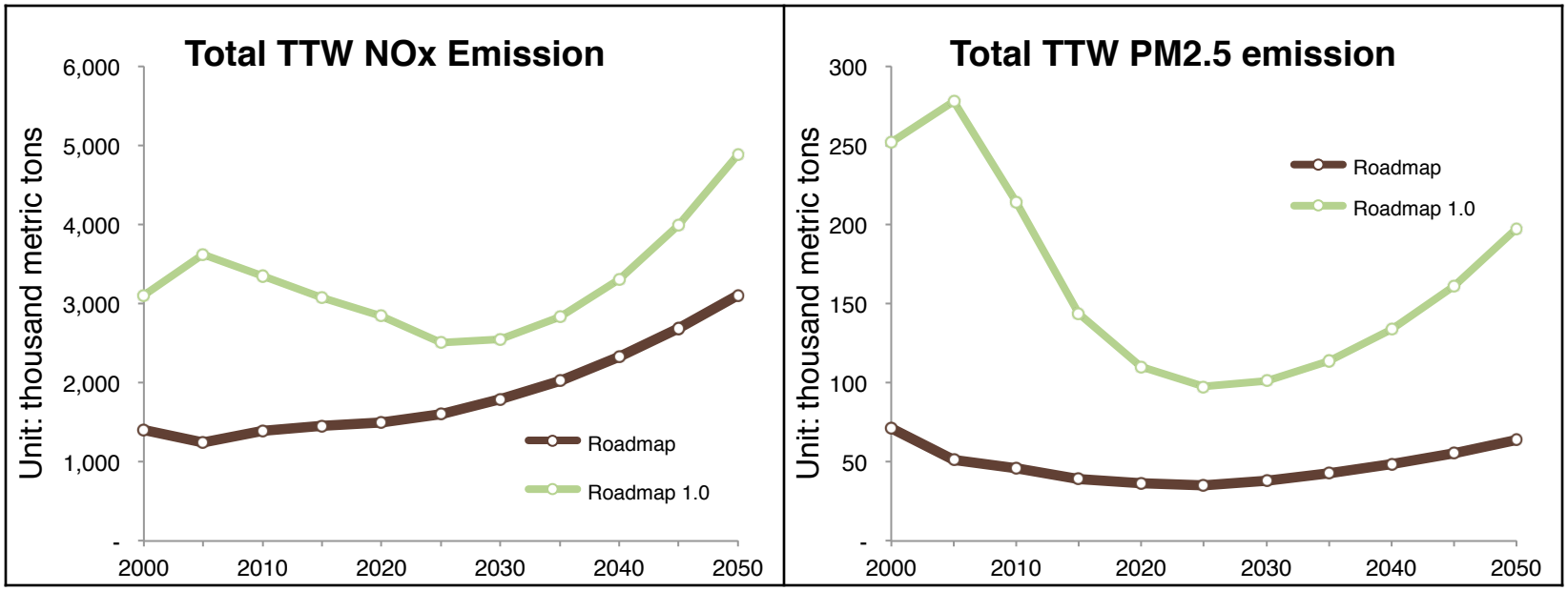
Brazil 2010 Model Output Comparisons
(excluding Waterborne)



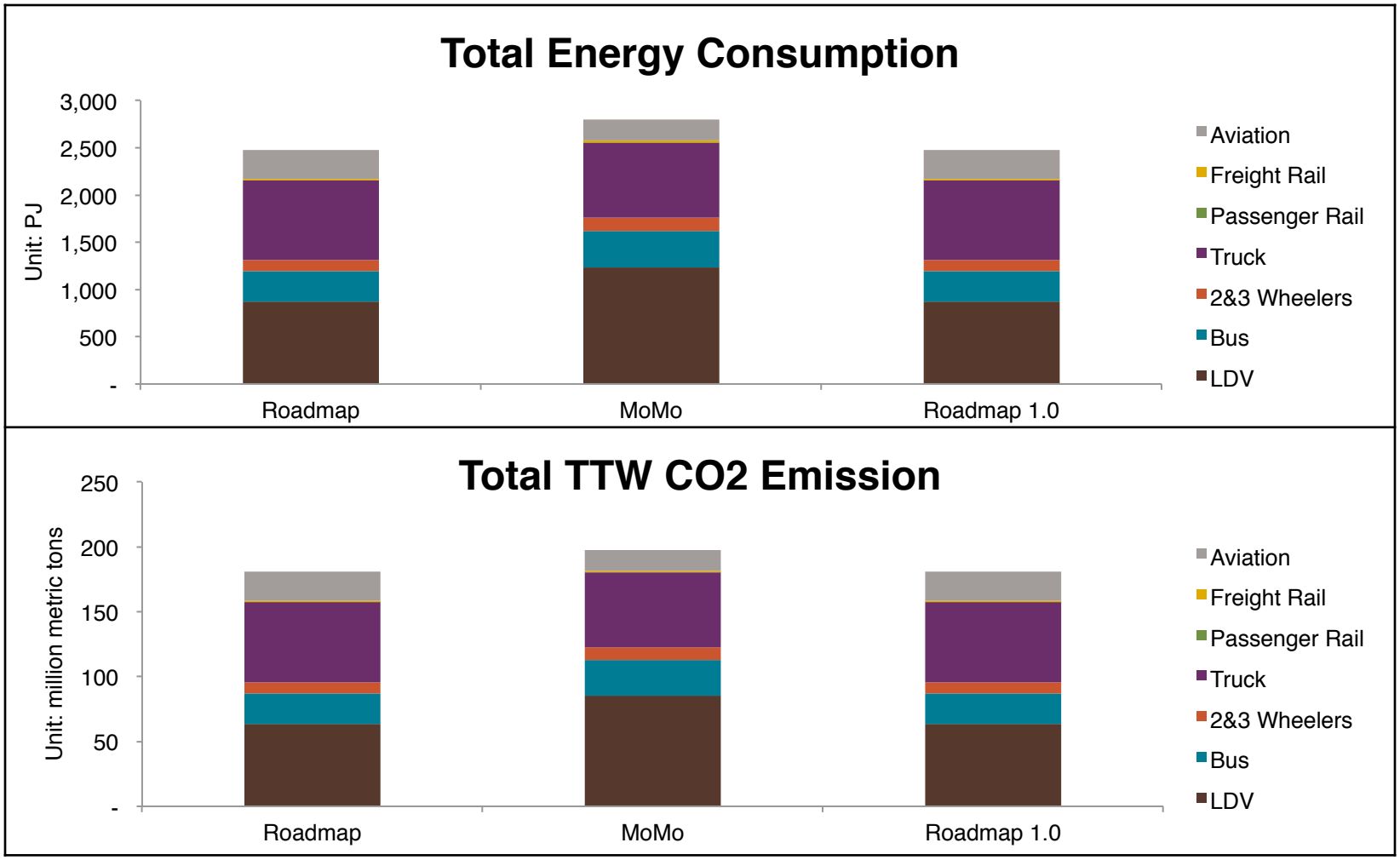
Latin America-31



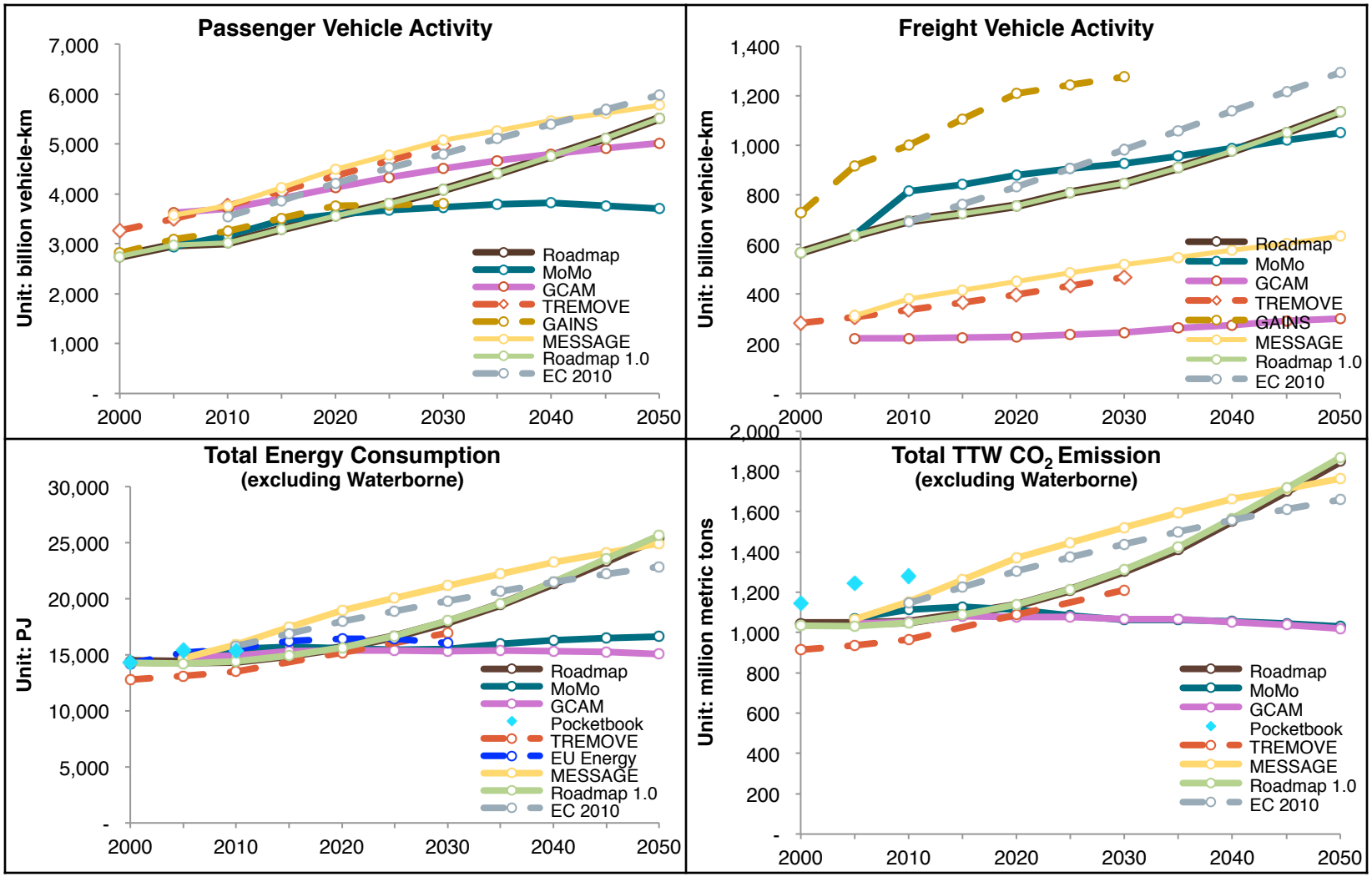
Latin America-41 Comparison



Latin America-31 2010 Model Output Comparisons
(excluding Waterborne)



EU-28 Comparison



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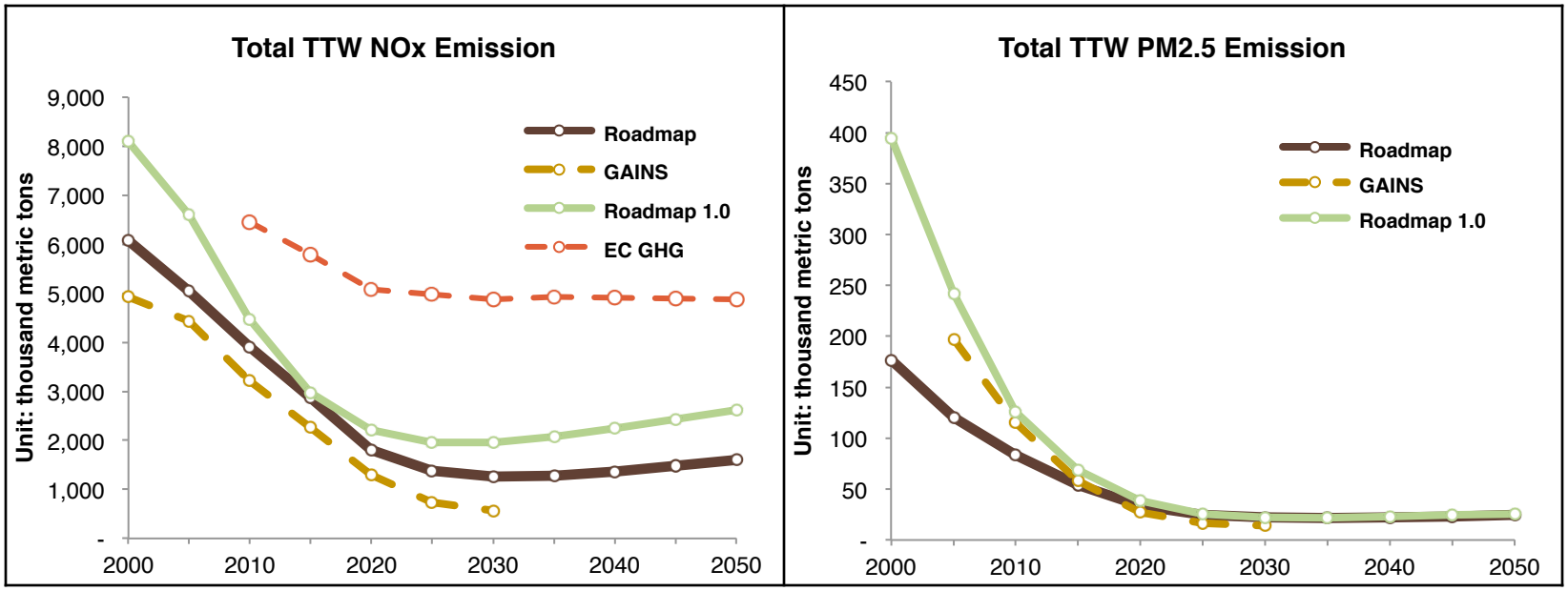
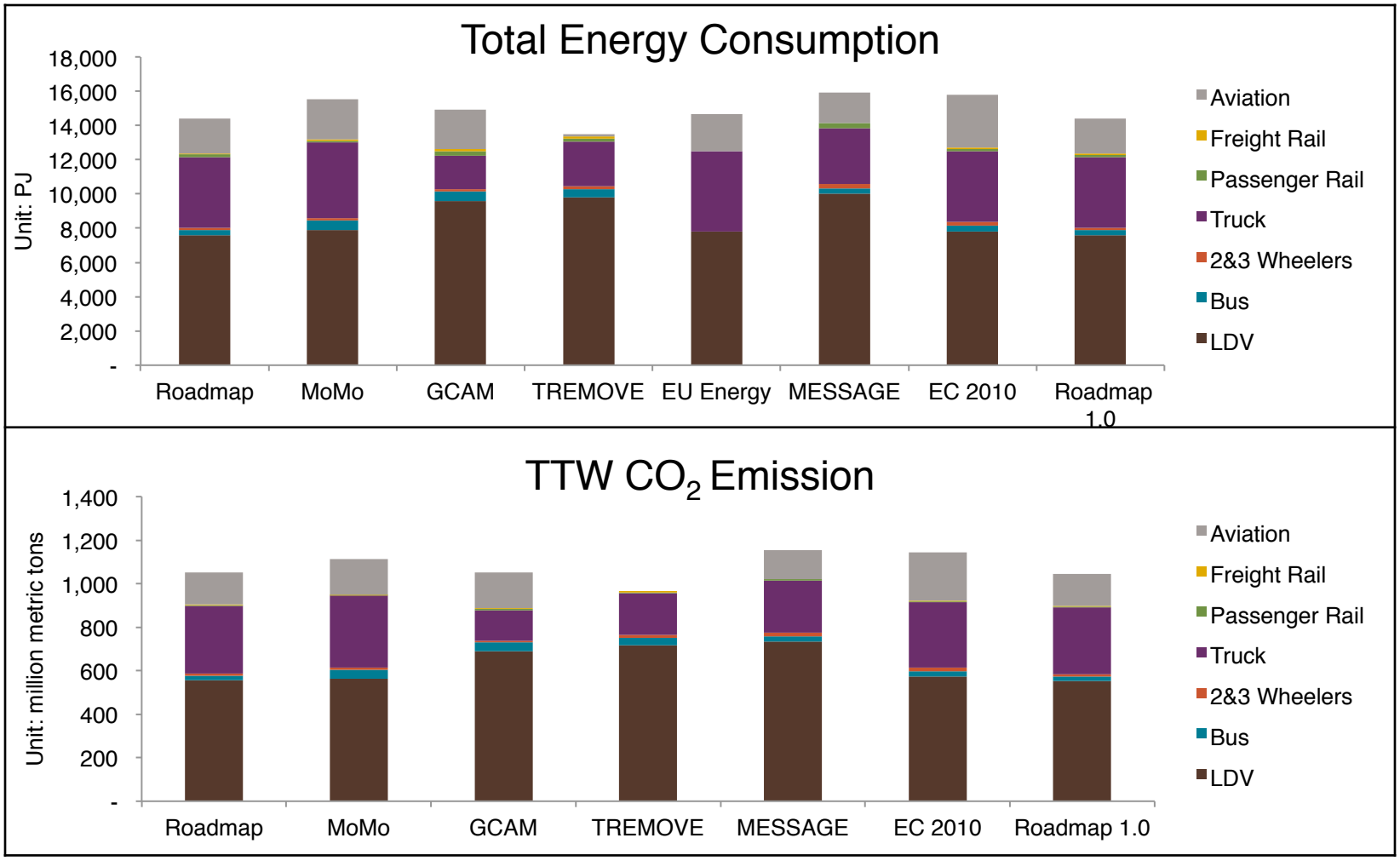
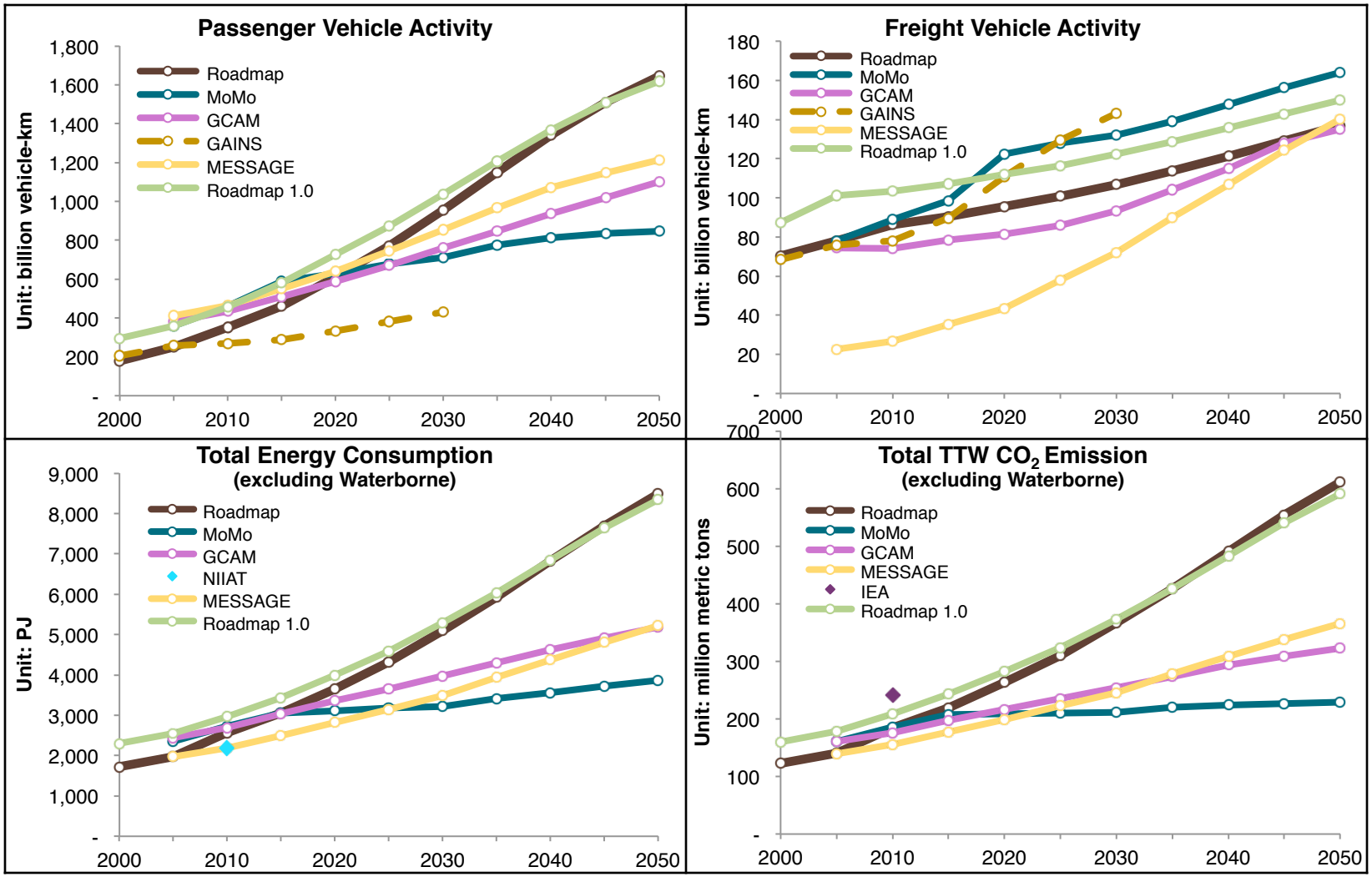


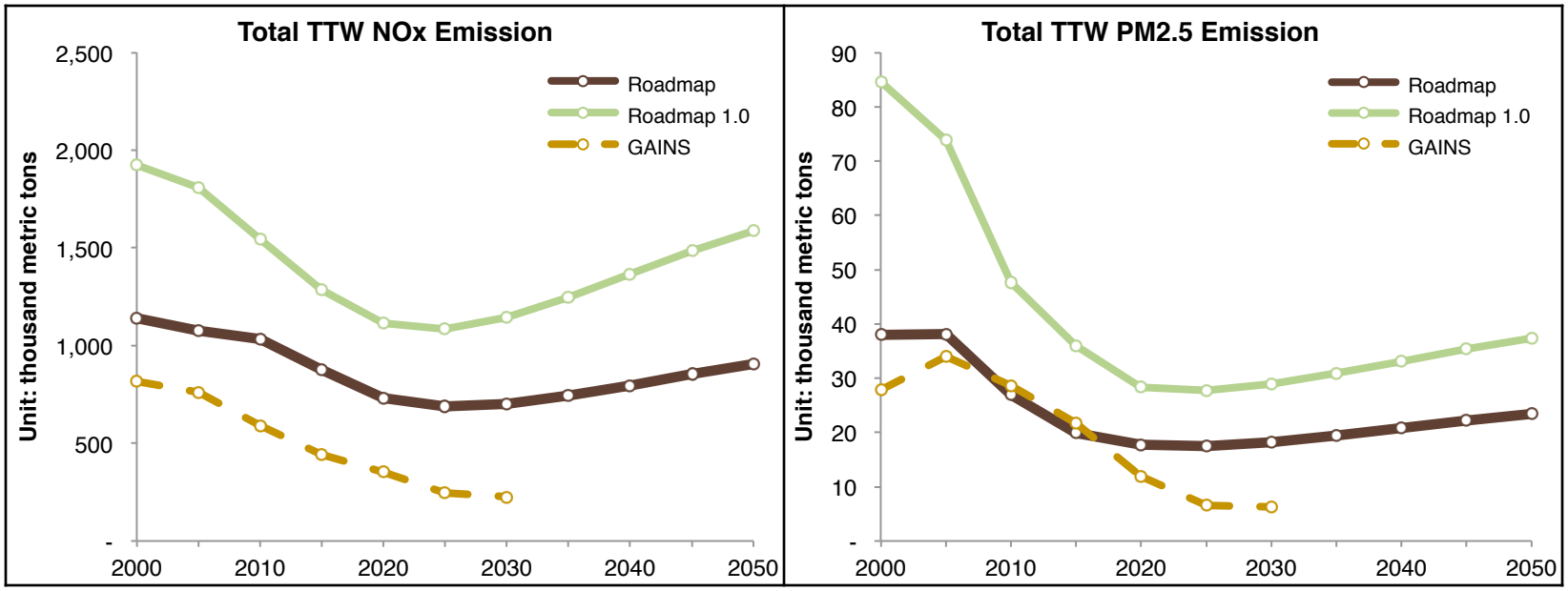
EU-28 2010 Model Output Comparisons
(excluding Waterborne)



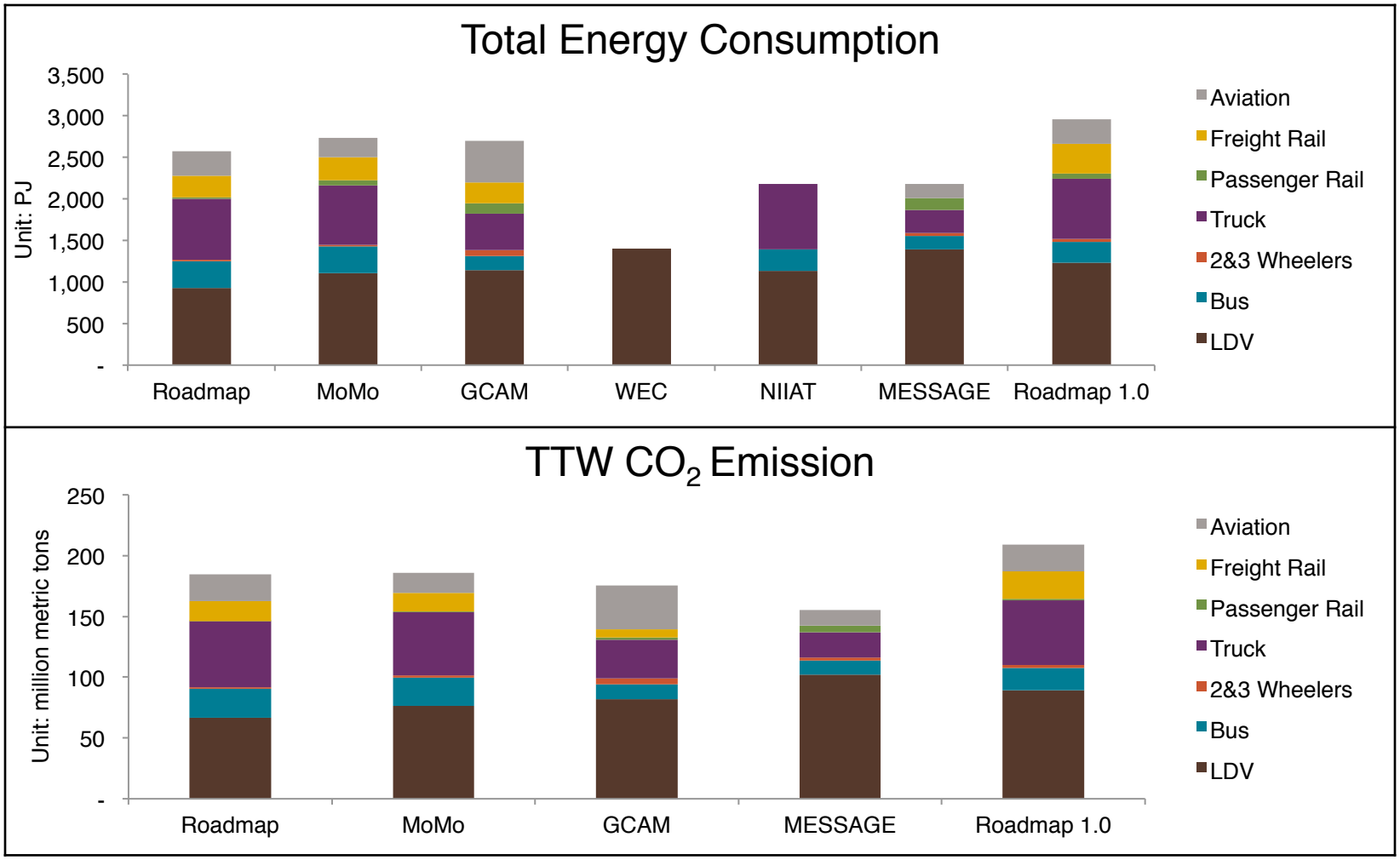
Russia Comparison



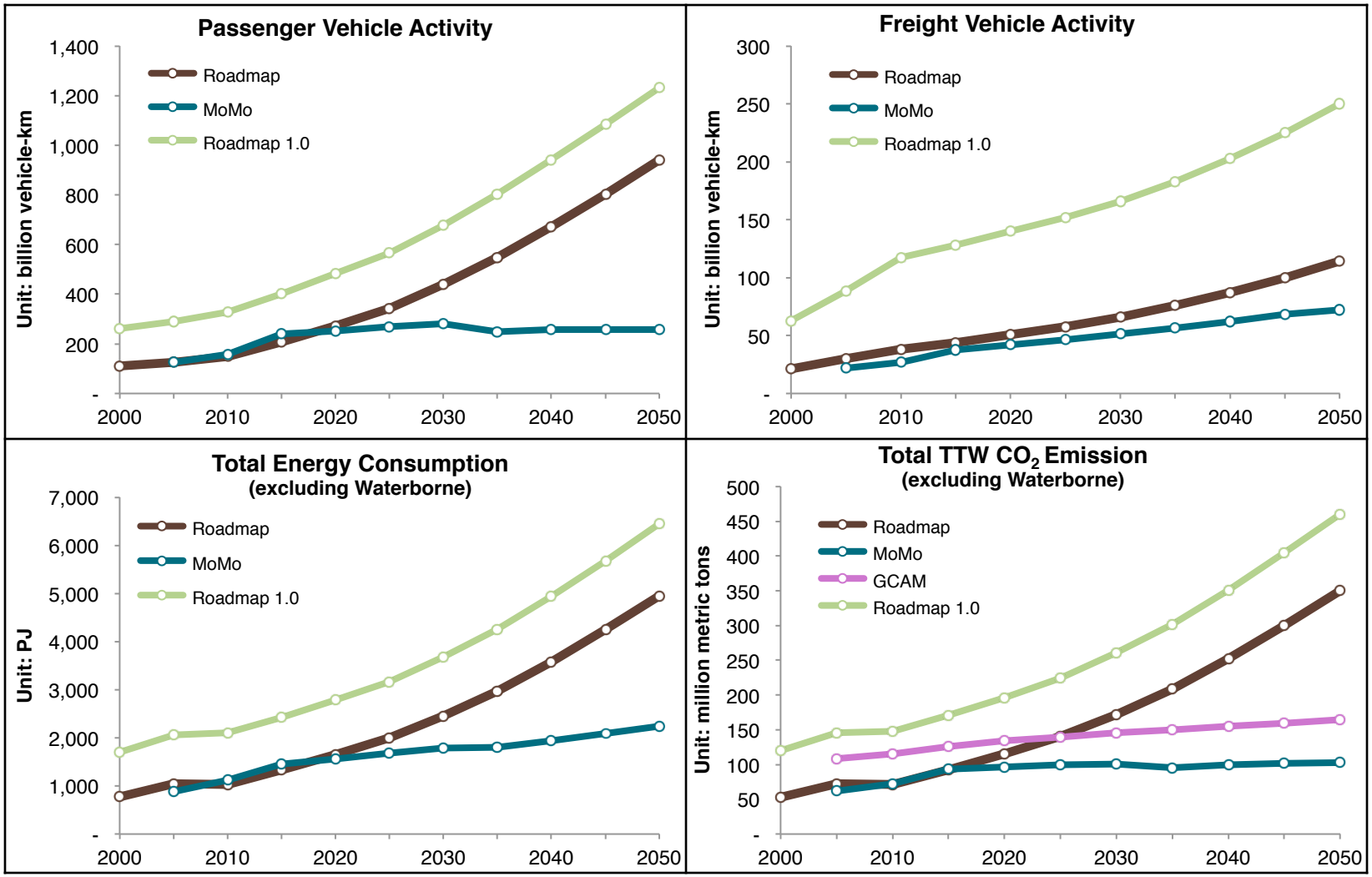
Russia Comparison



Russia 2010 Model Output Comparisons
(excluding Waterborne)



Non-EU Europe



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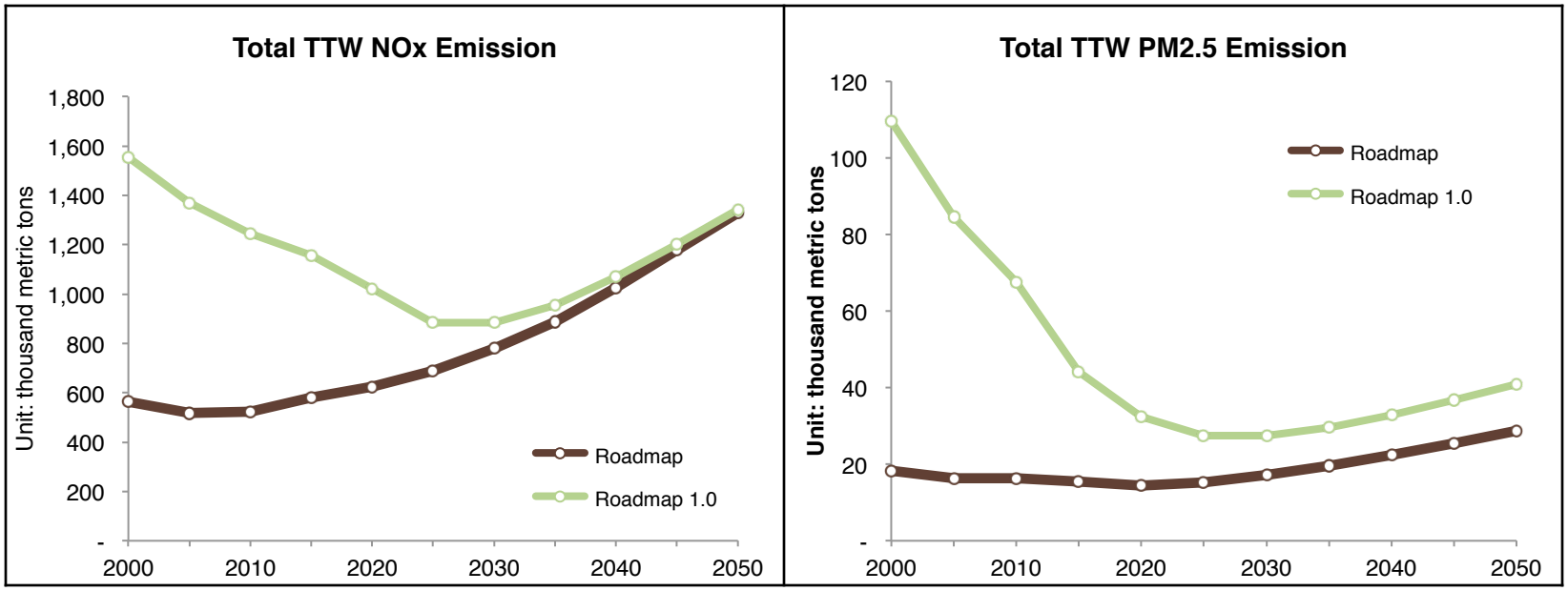
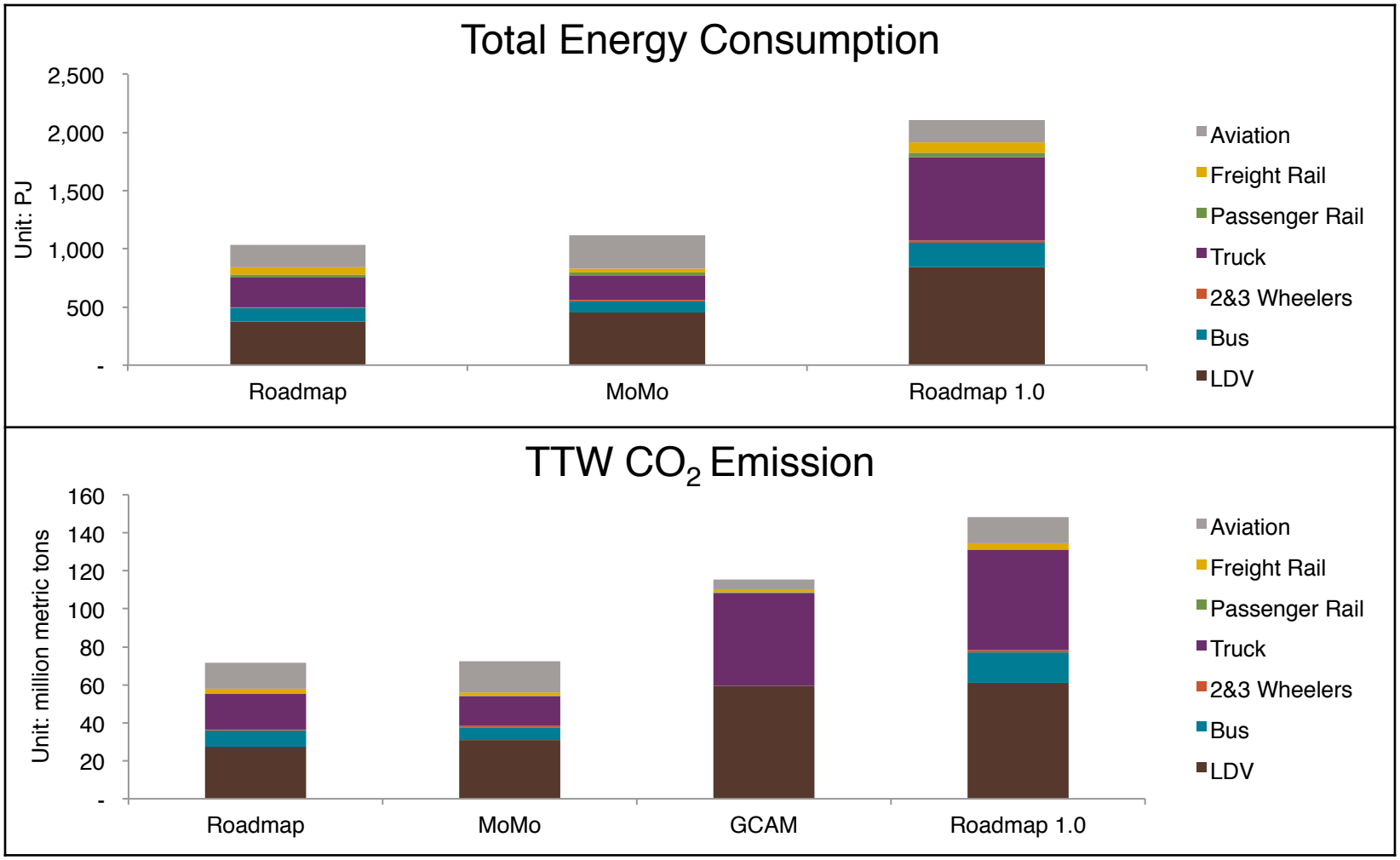
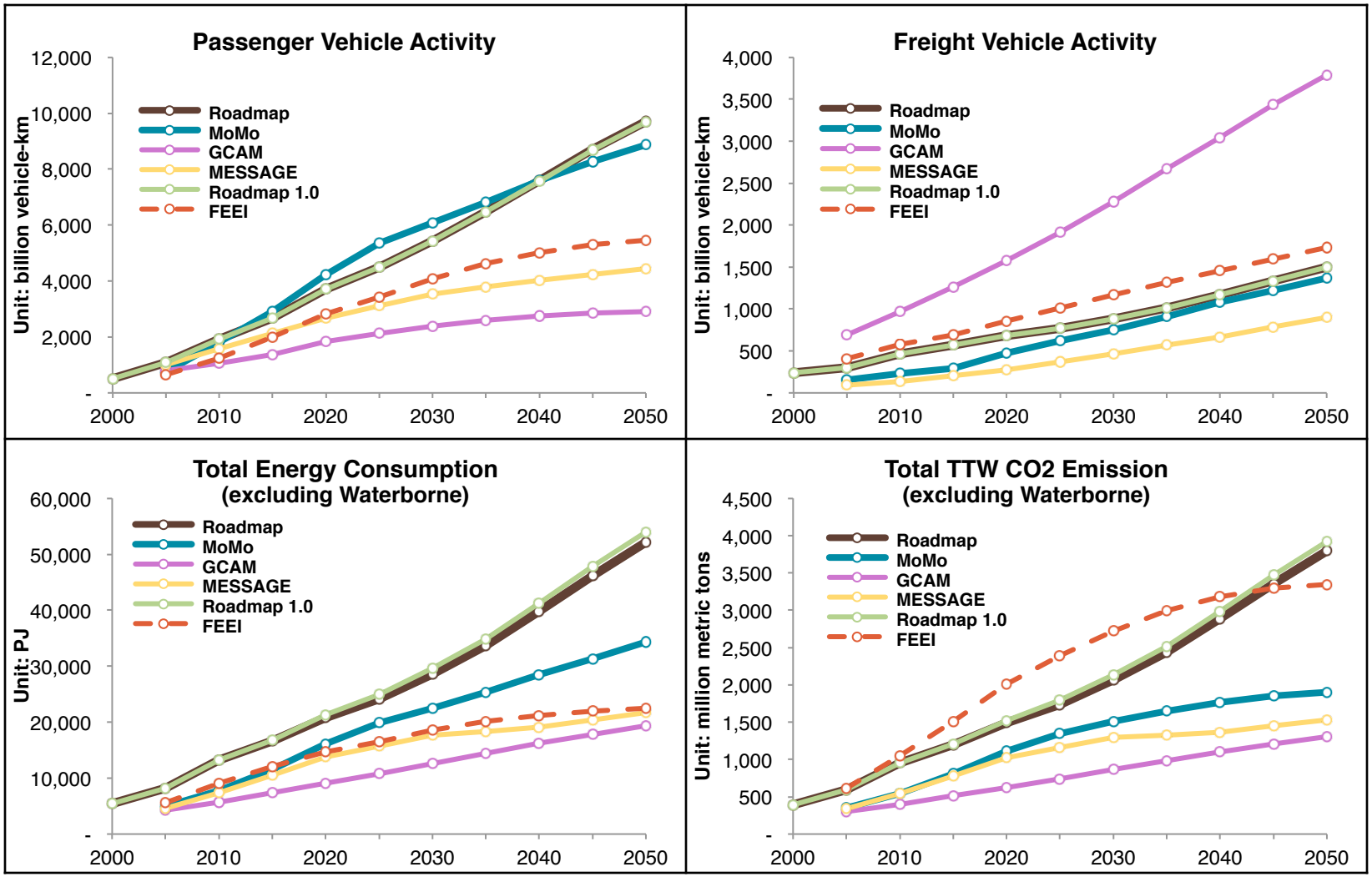
Non-EU Europe Comparison



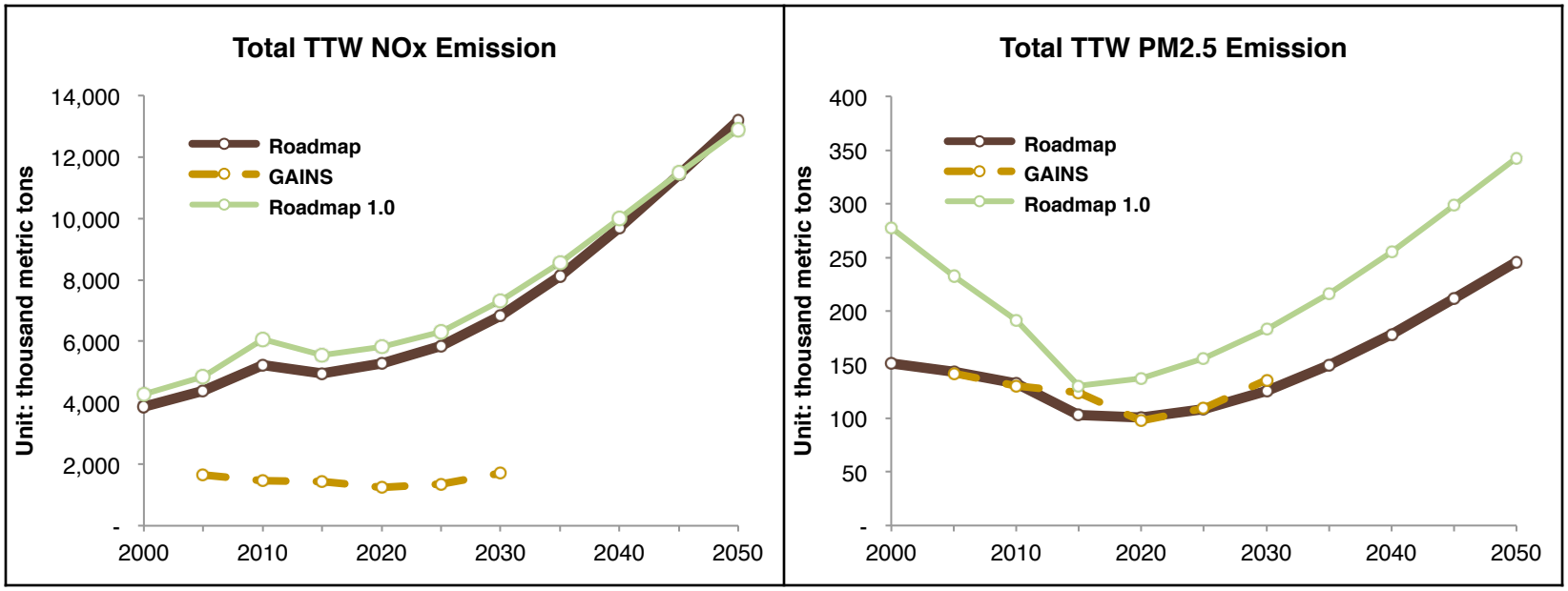
Non-EU Europe 2010 Model Output Comparisons
(excluding Waterborne)



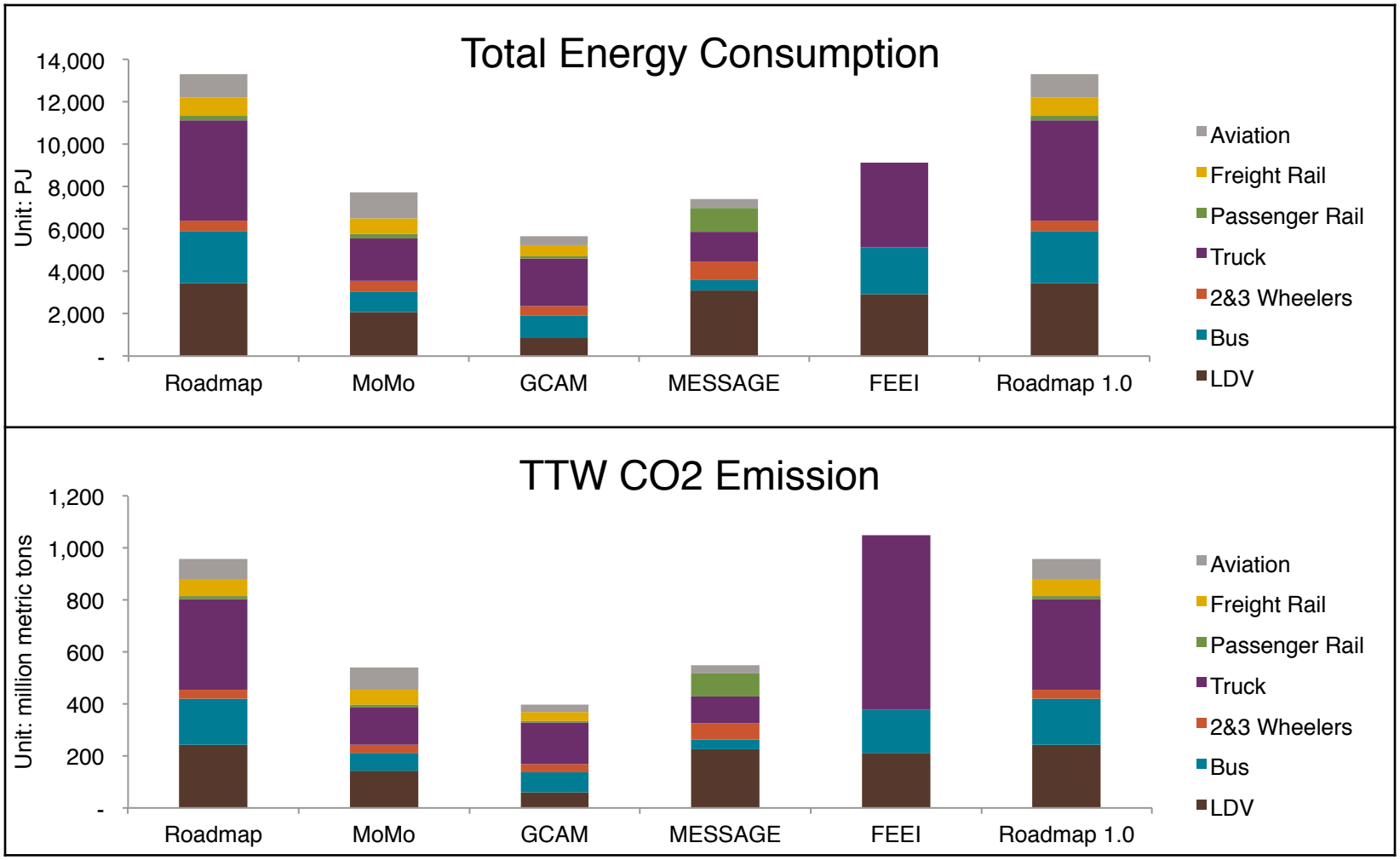
China Comparison



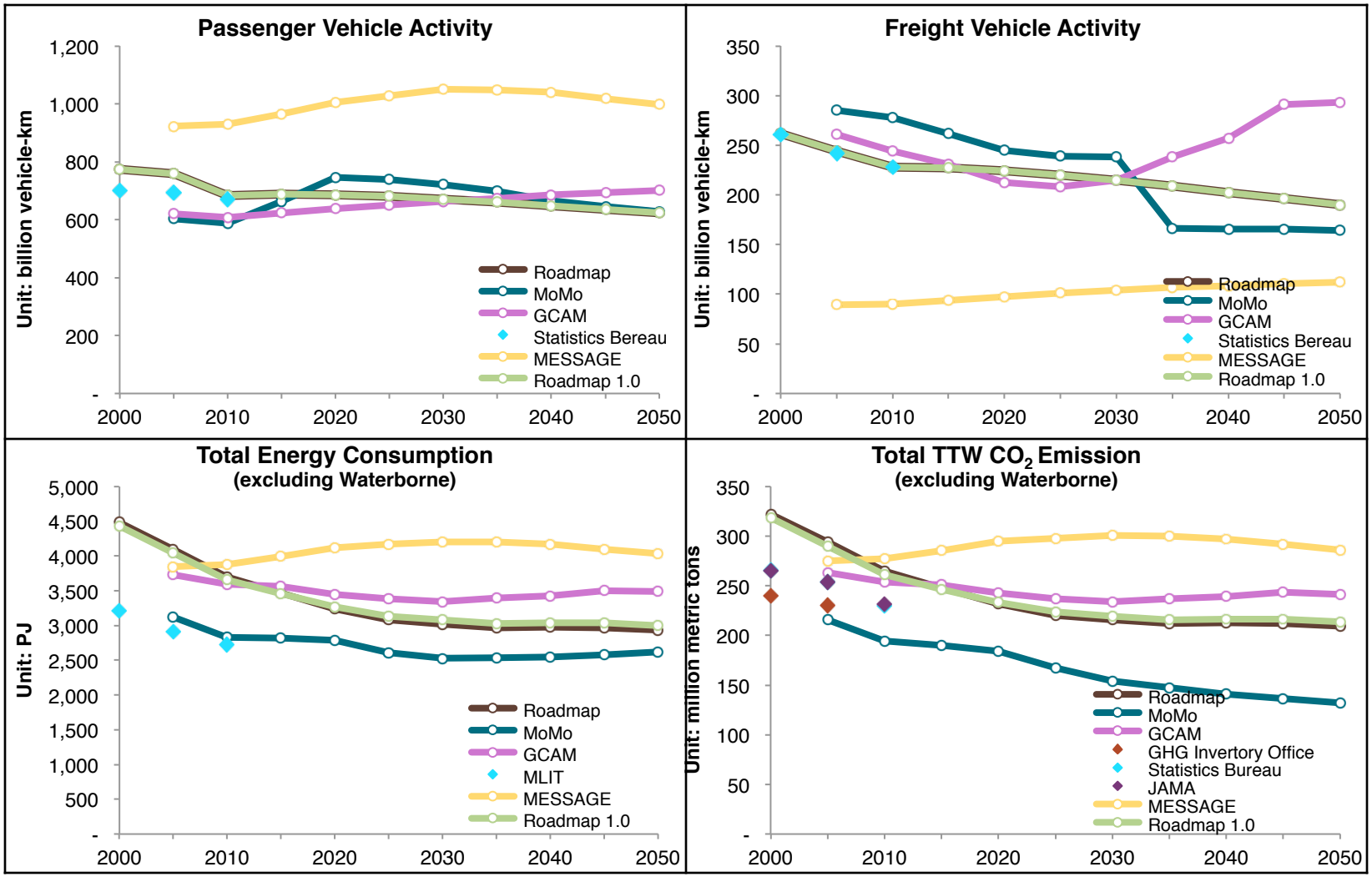
China Comparison



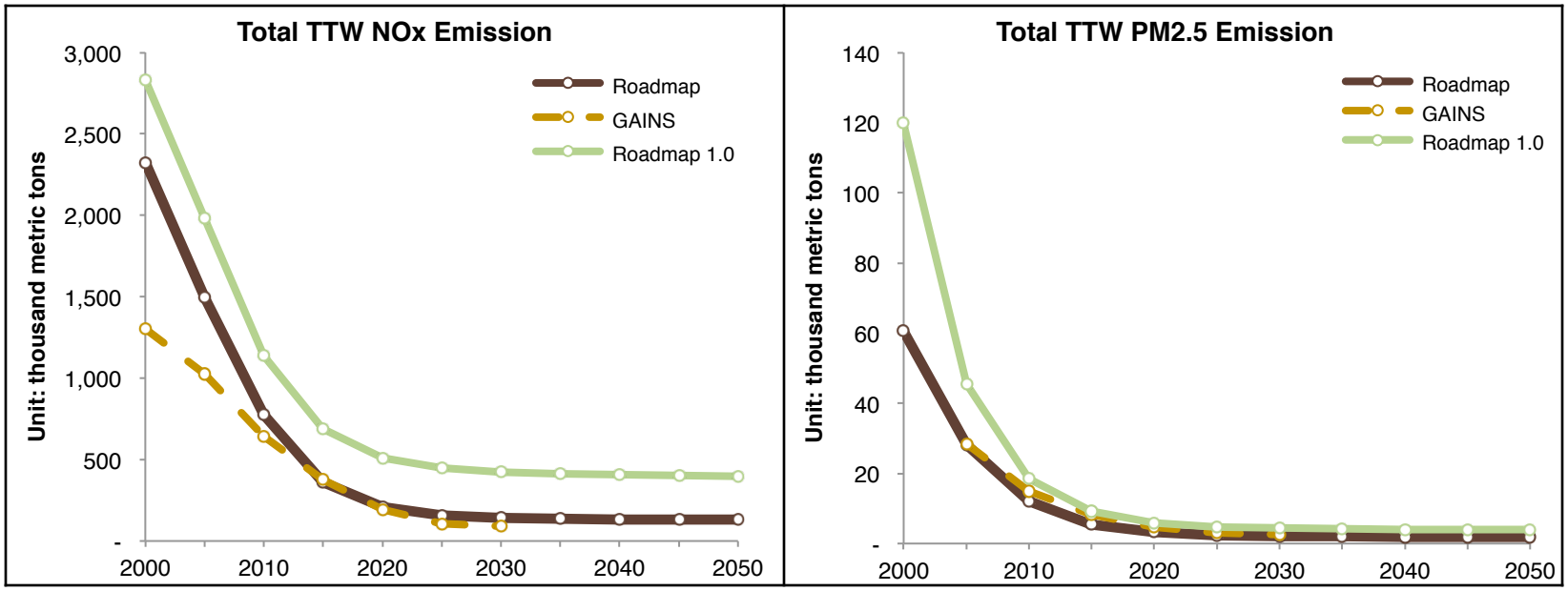
China 2010 Model Output Comparisons
(excluding Waterborne)



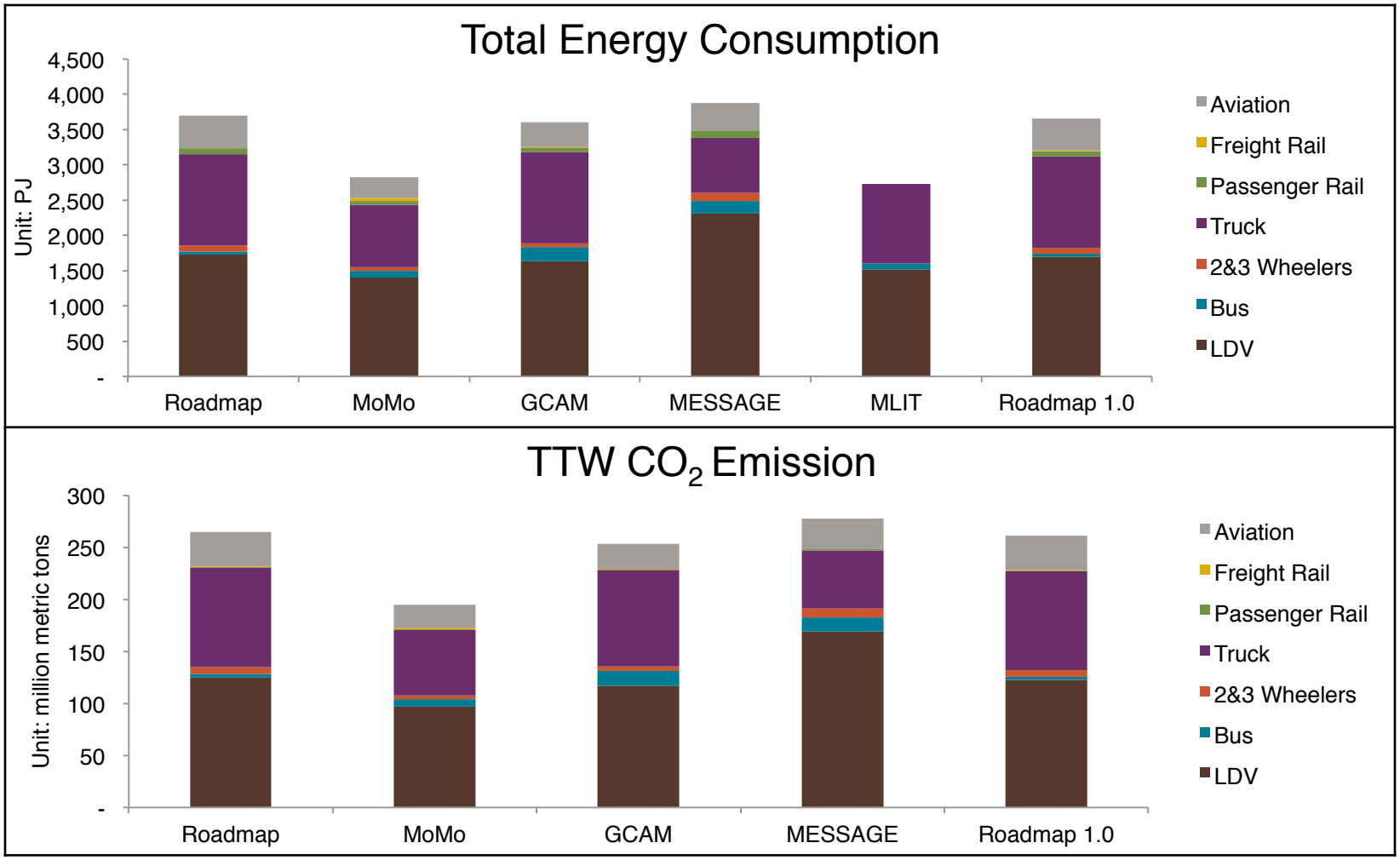
Japan Comparison



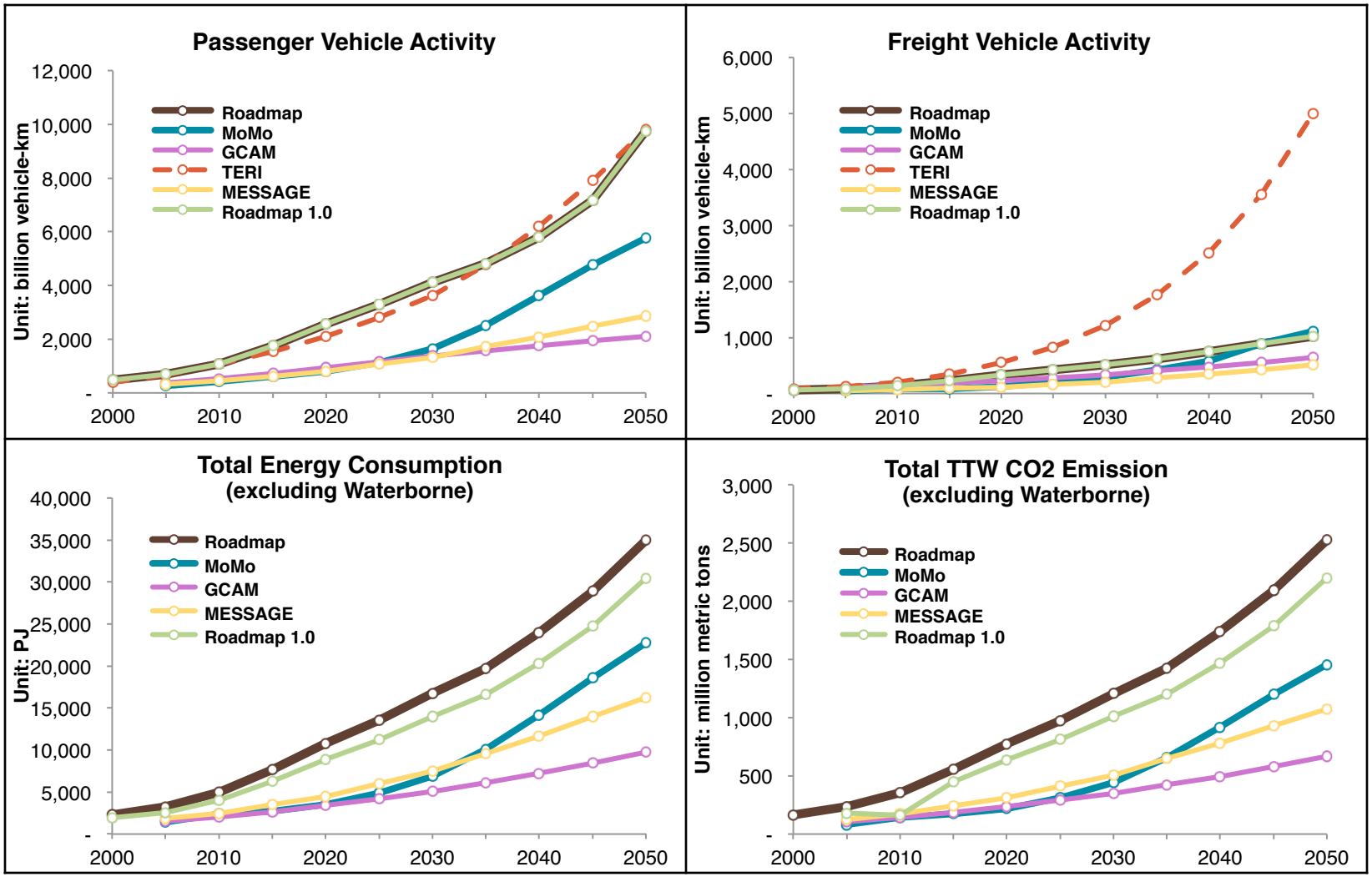
Japan Comparison



Japan 2010 Model Output Comparisons
(excluding Waterborne)



India Comparison



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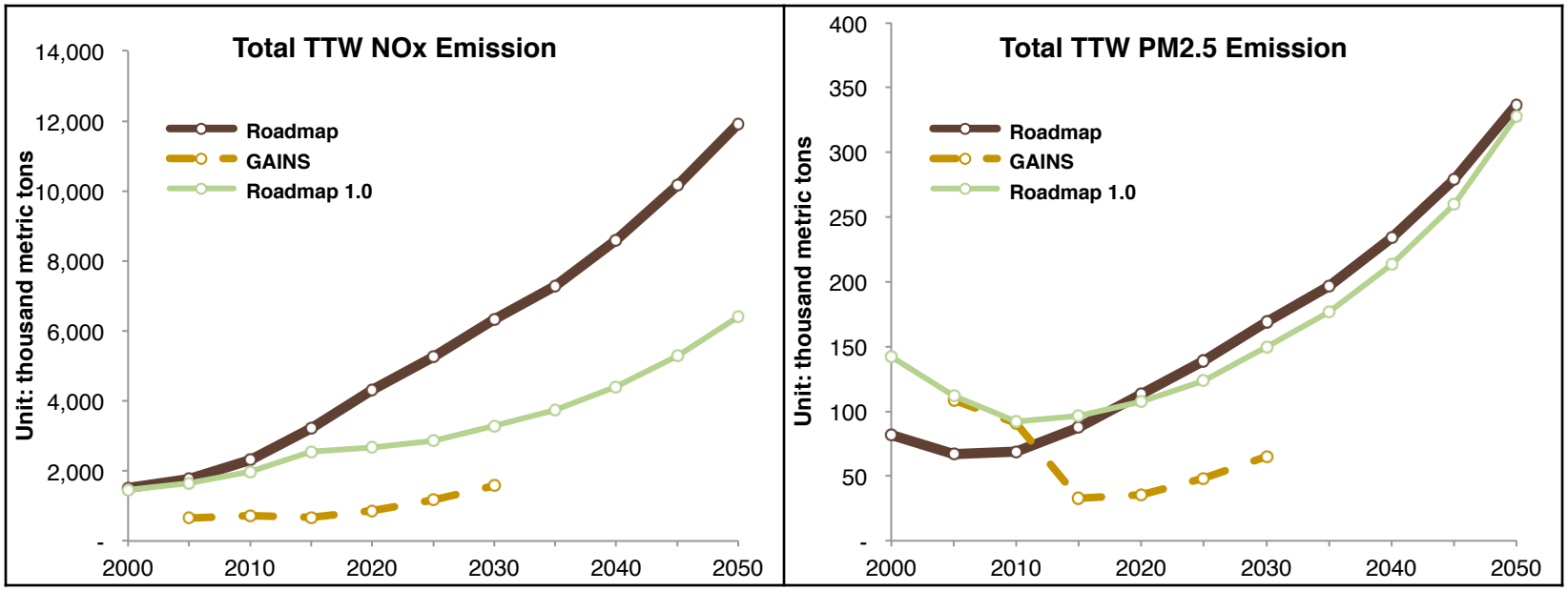
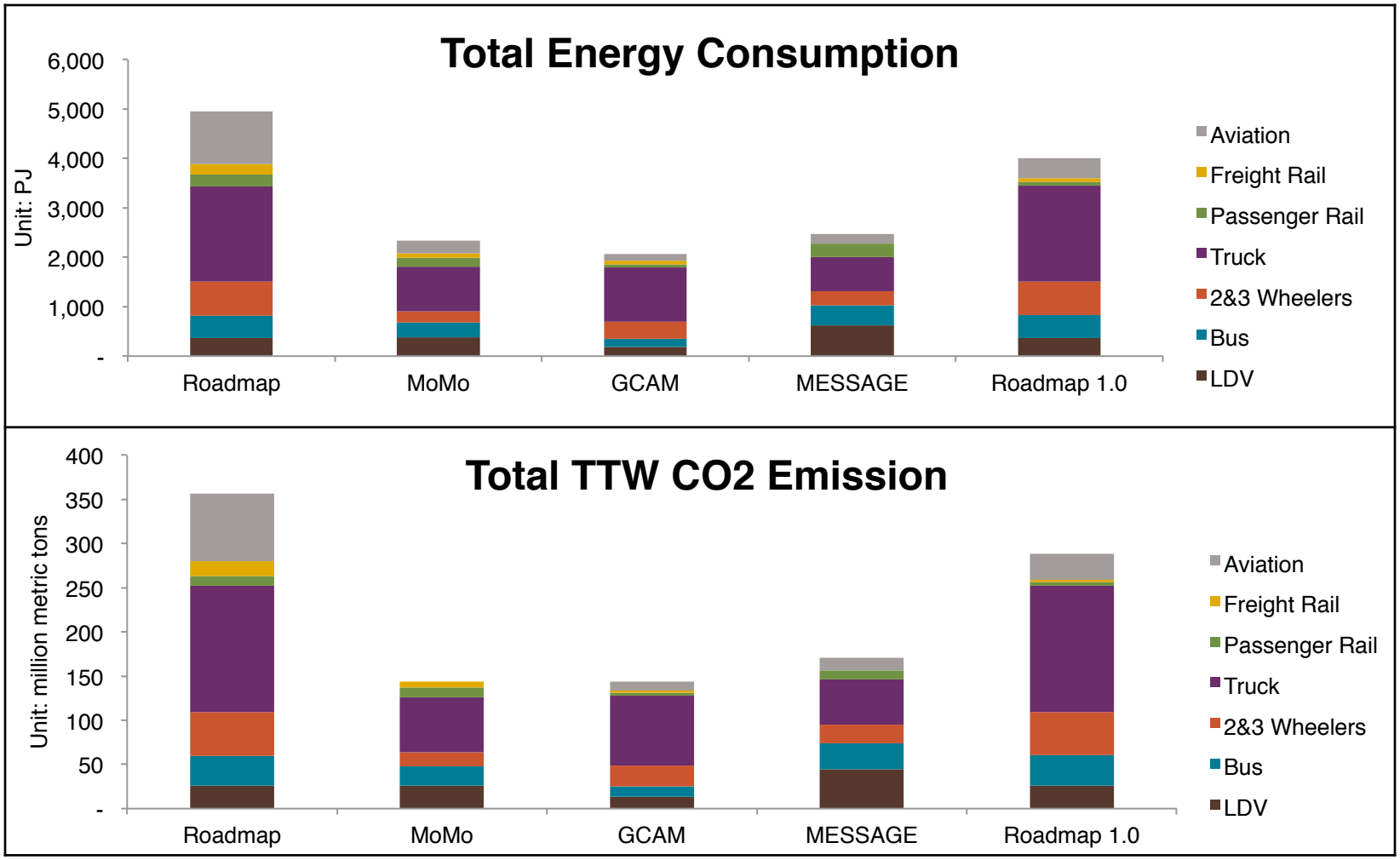
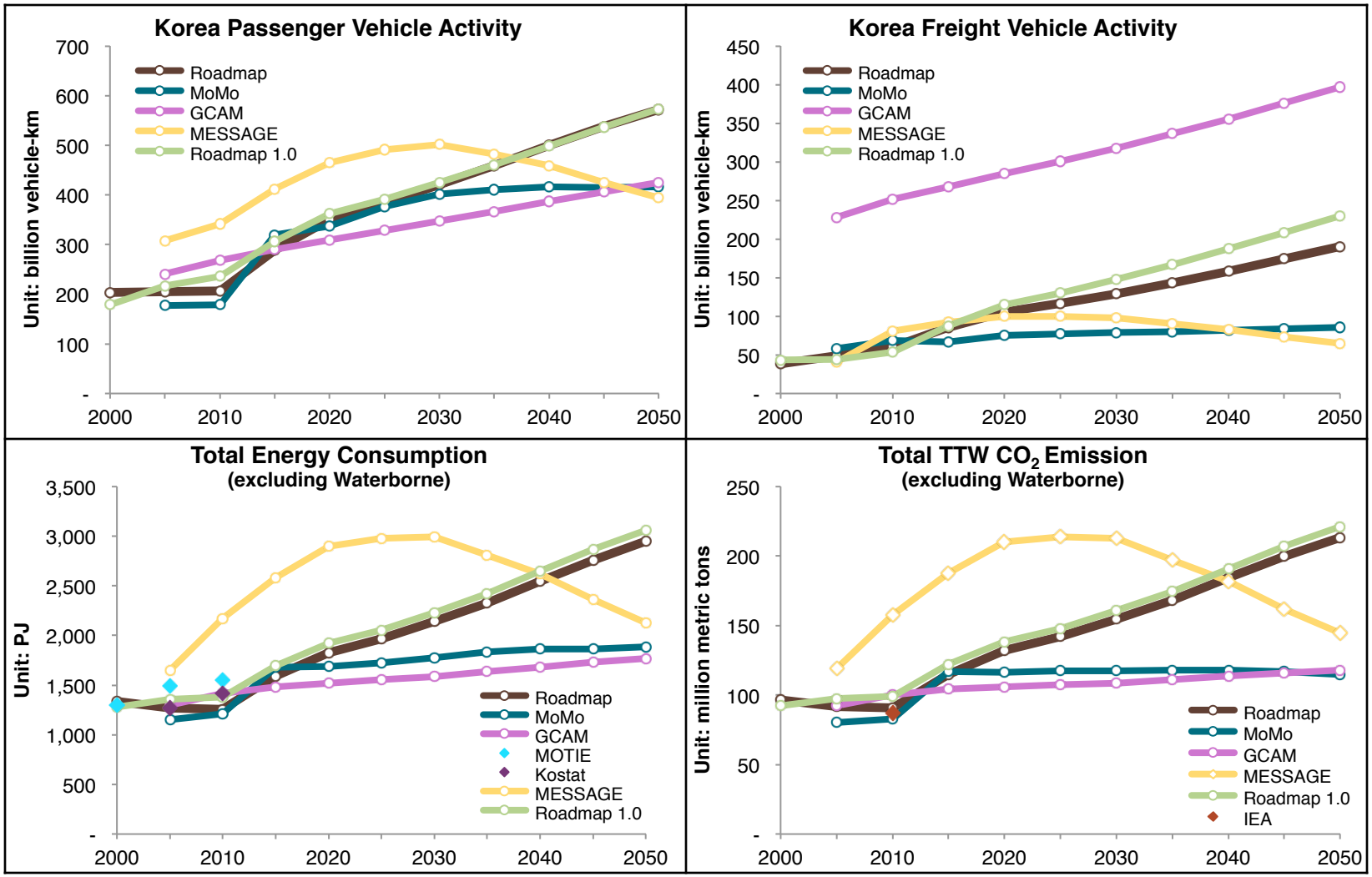
India Comparison



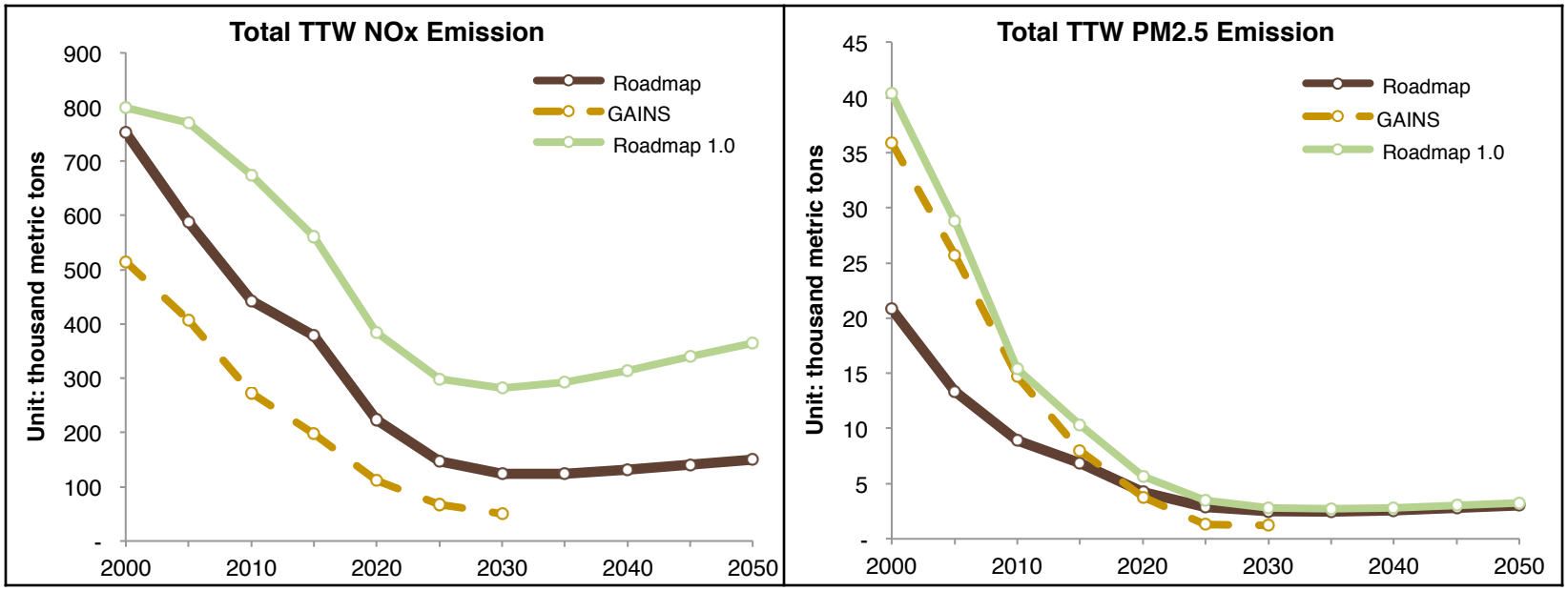
India 2010 Model Output Comparisons
(excluding Waterborne)



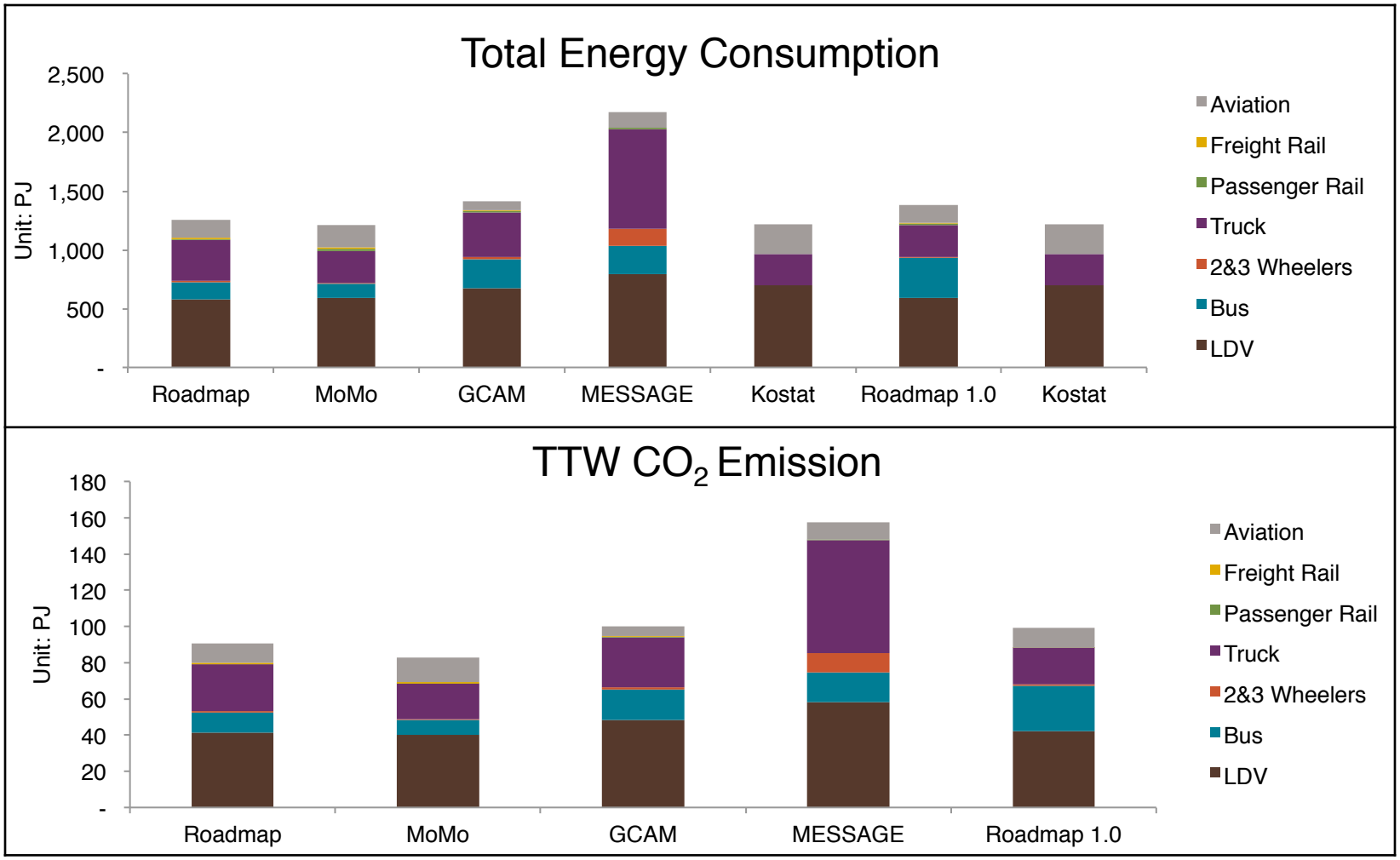
South Korea Comparison



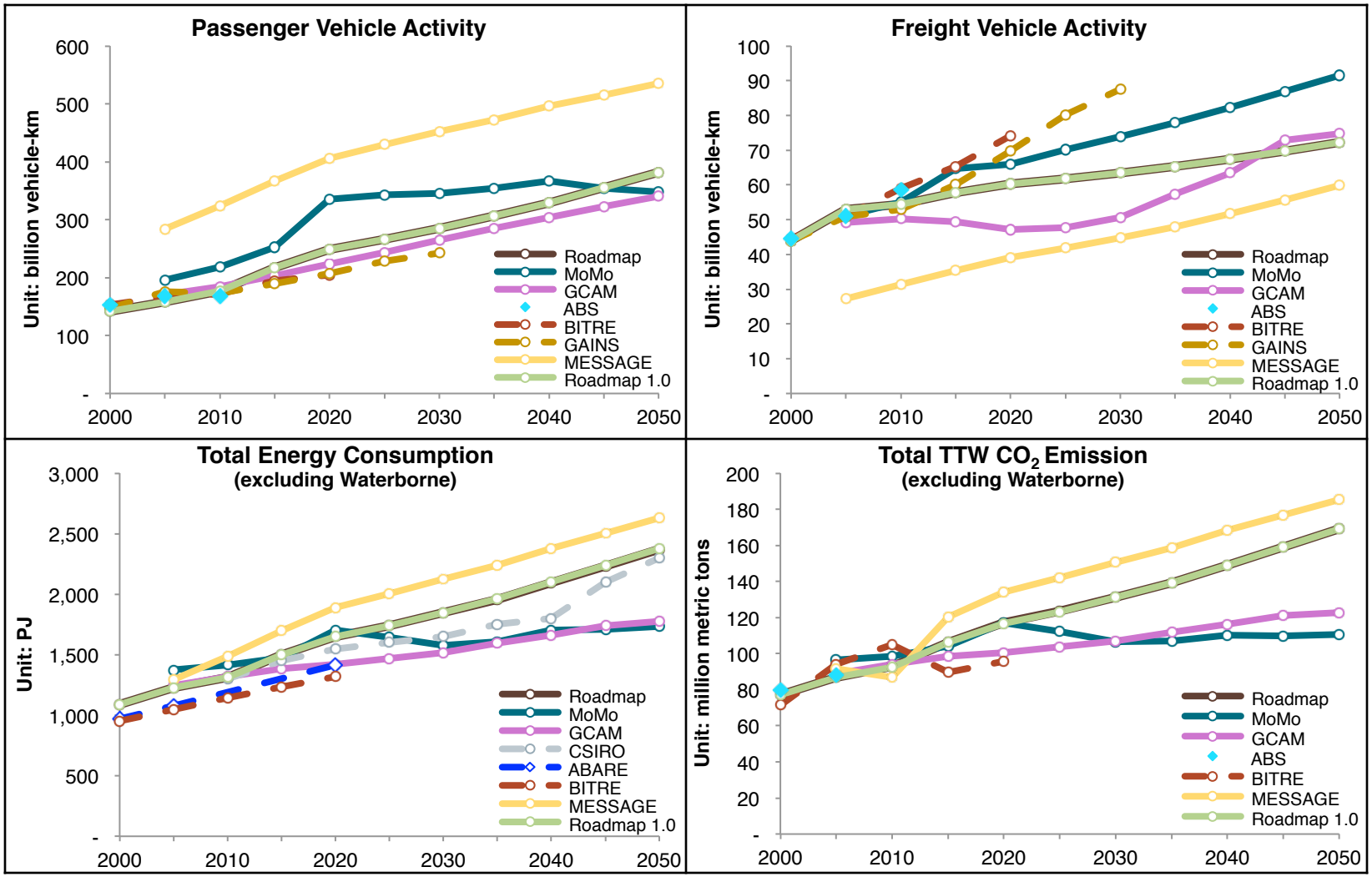
South Korea Comparison



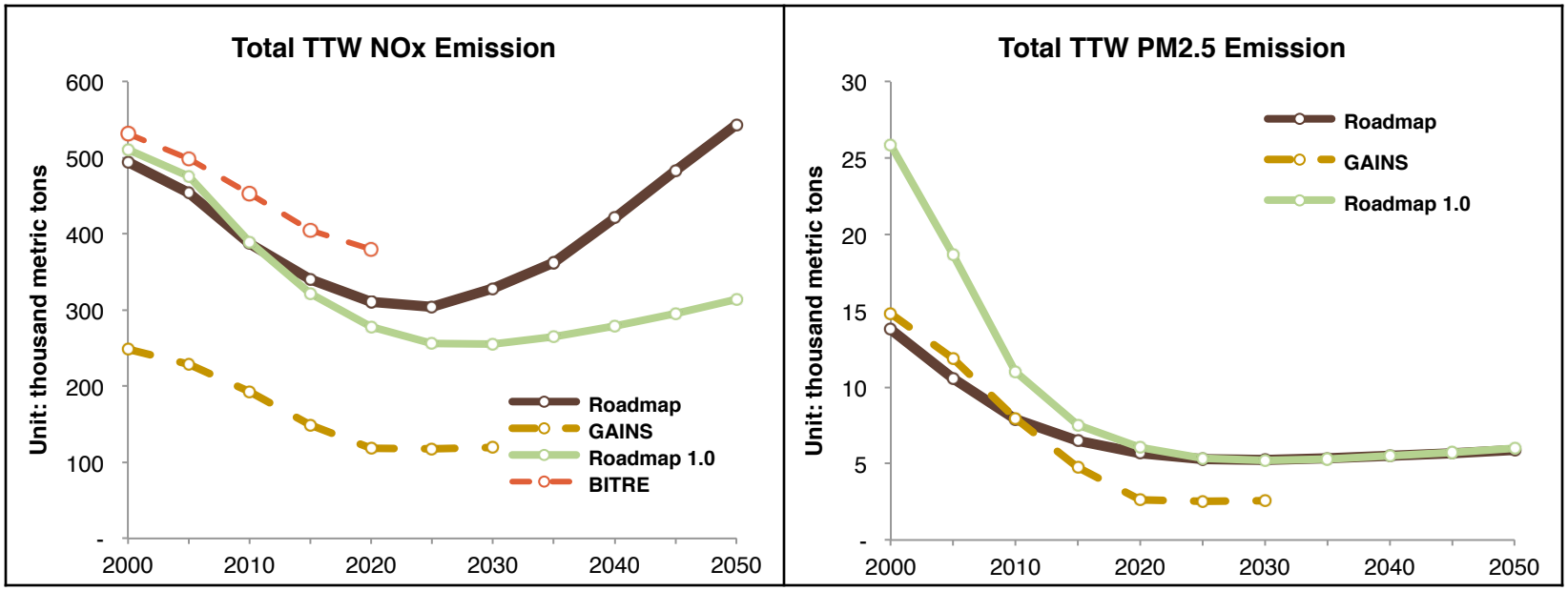
South Korea 2010 Model Output Comparisons
(excluding Waterborne)



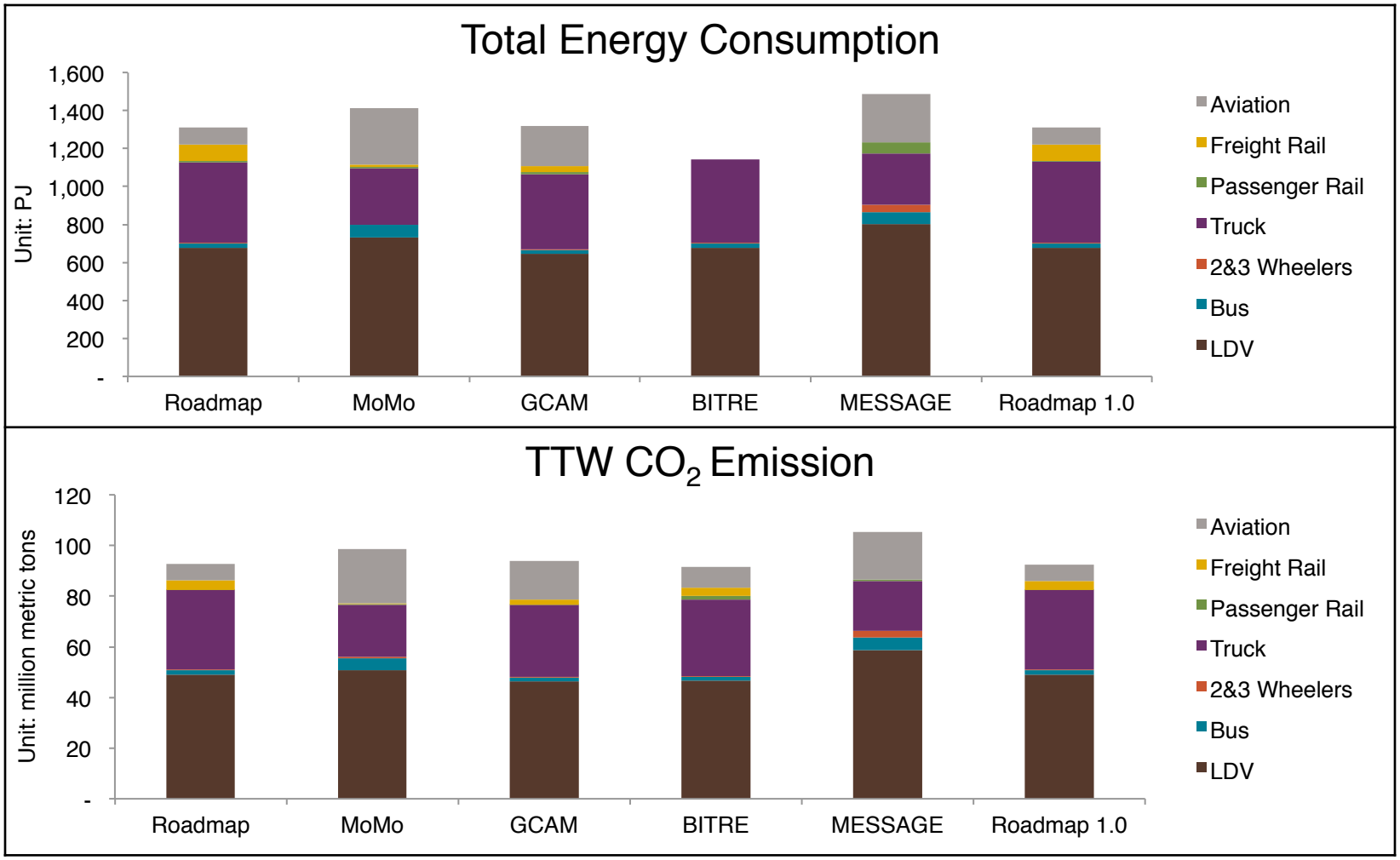
Australia Comparison



Australia Comparison



Australia 2010 Model Output Comparisons
(excluding Waterborne)



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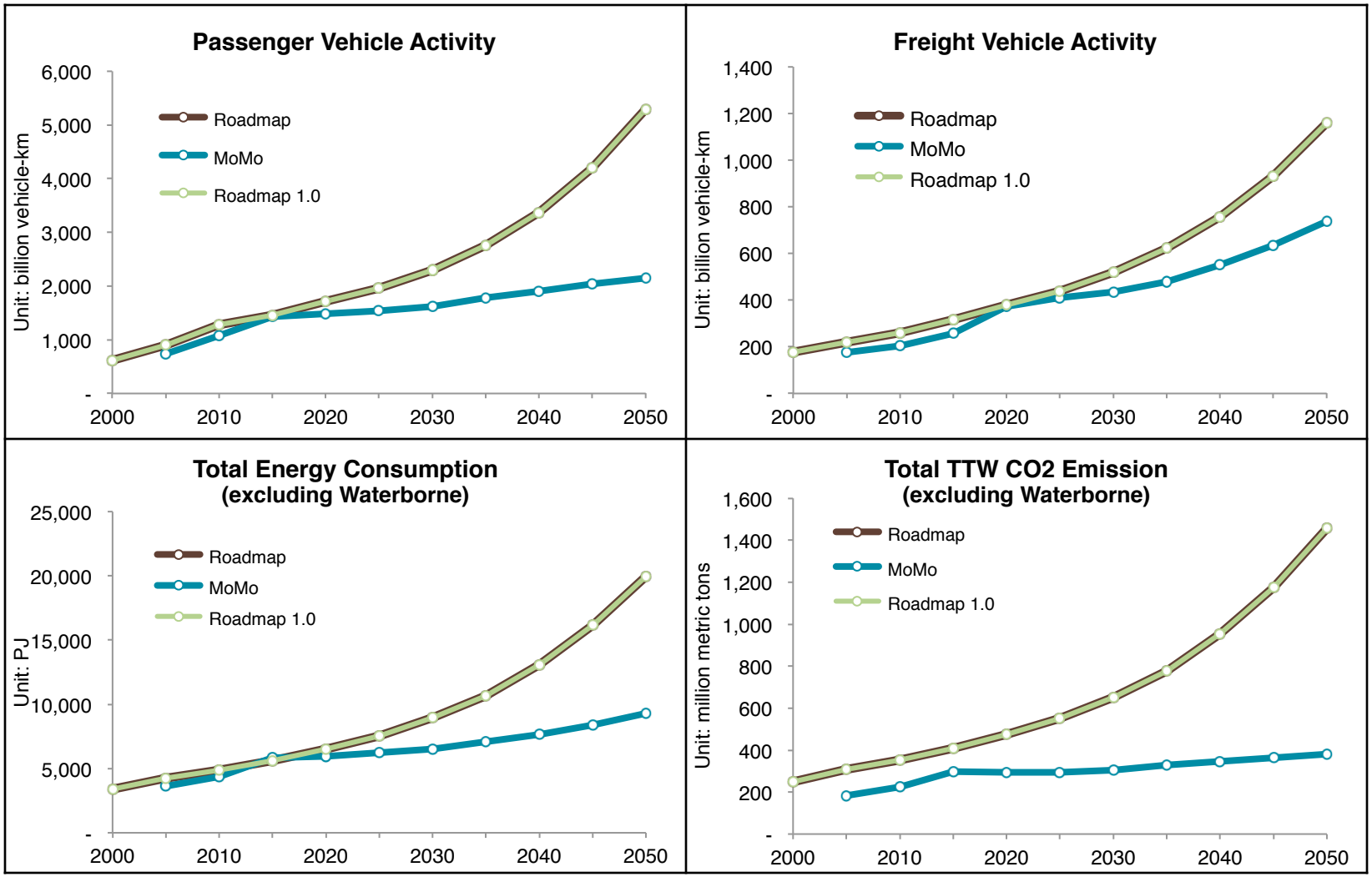
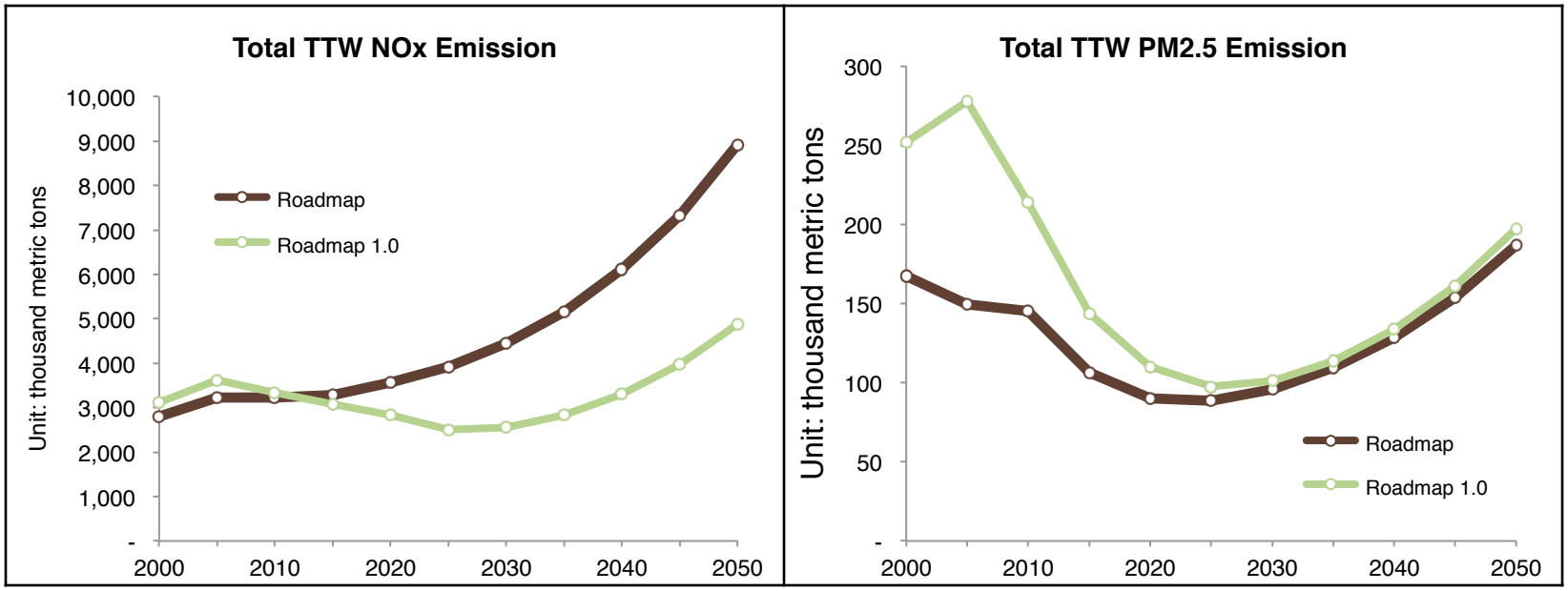
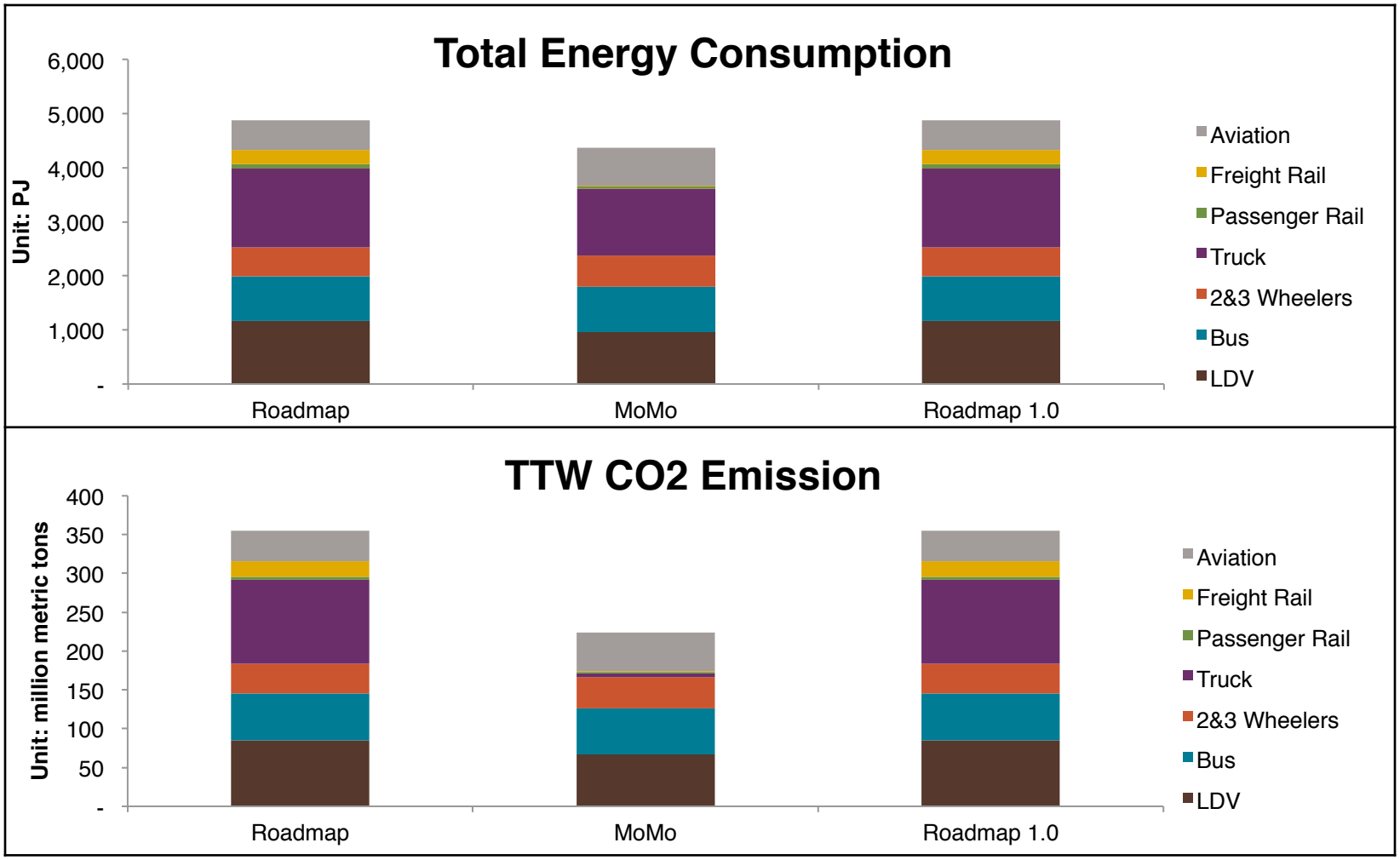
Asia-Pacific-40



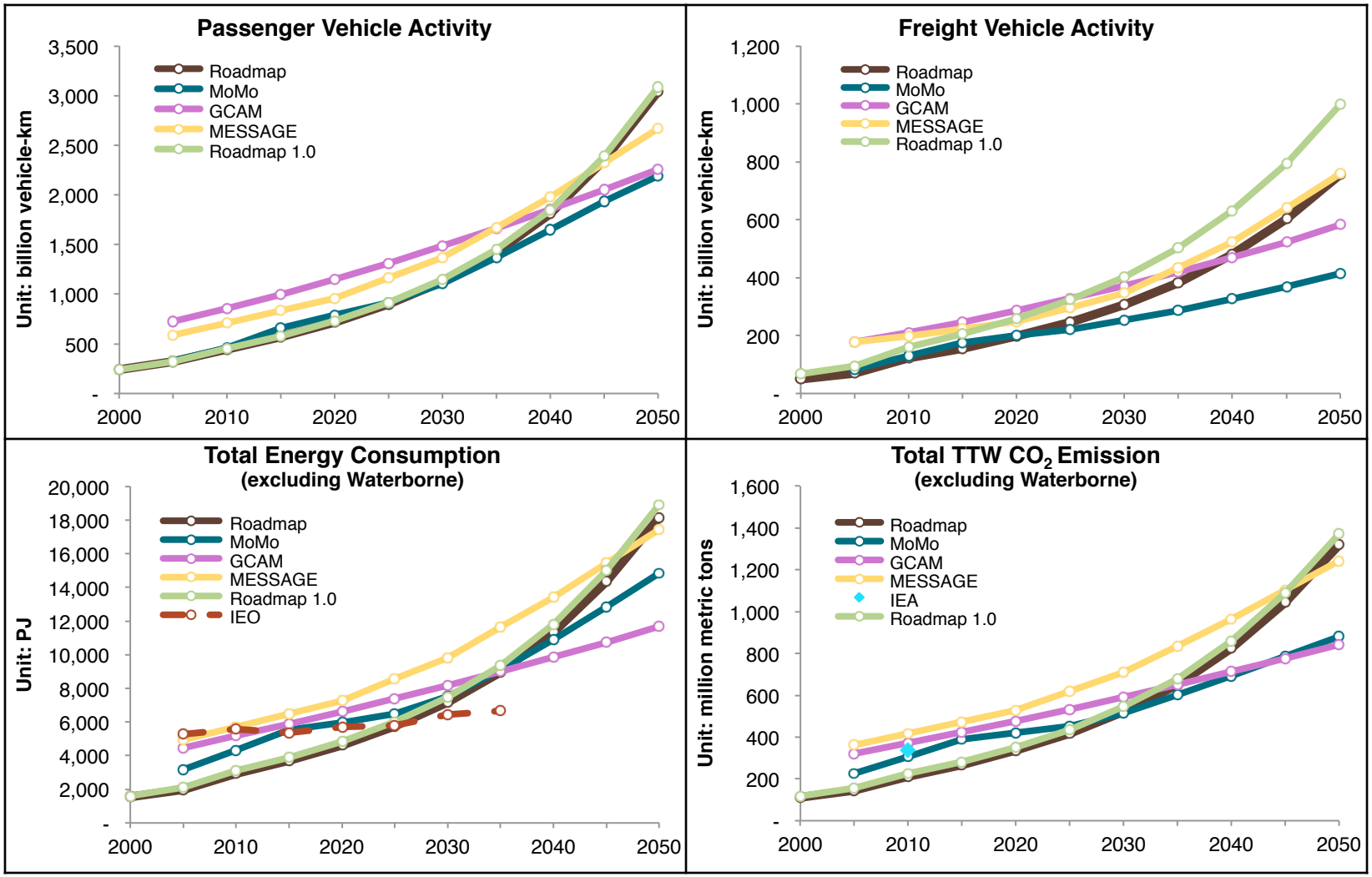
Asia-Pacific-40 Comparison



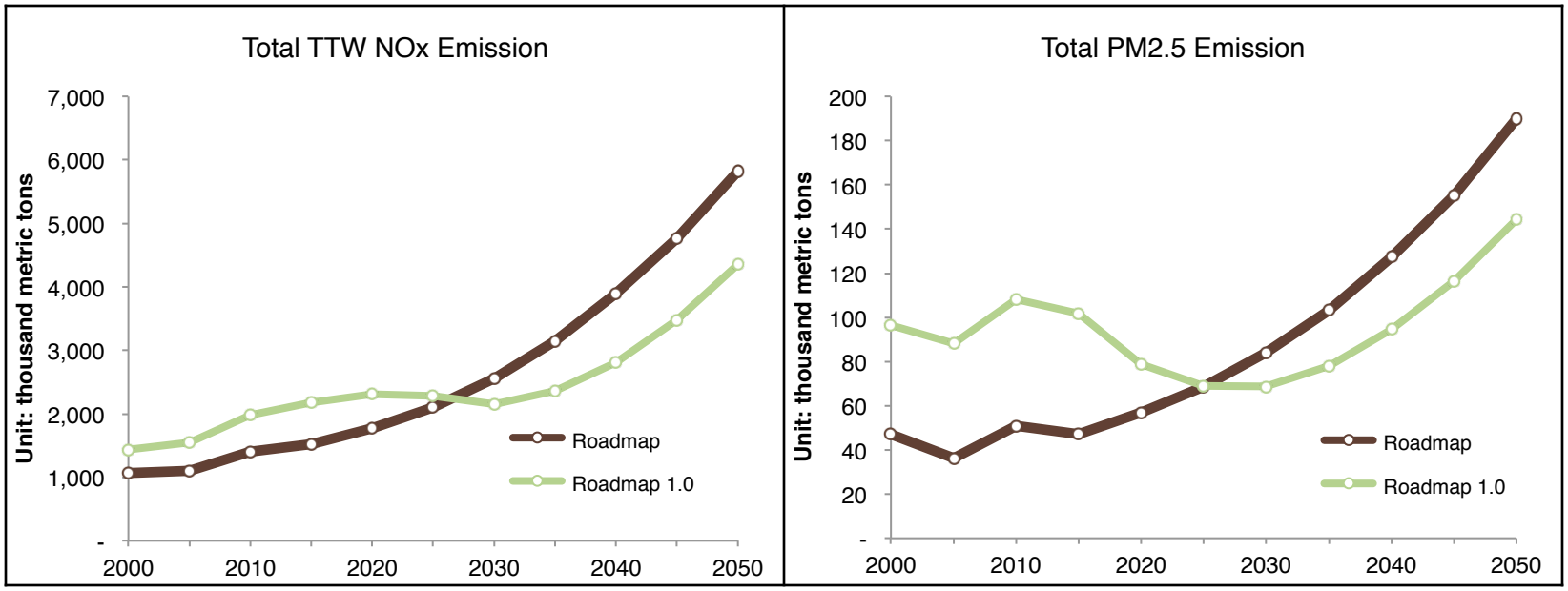
Asia-Pacific-40 2010 Model Output Comparisons
(excluding Waterborne)



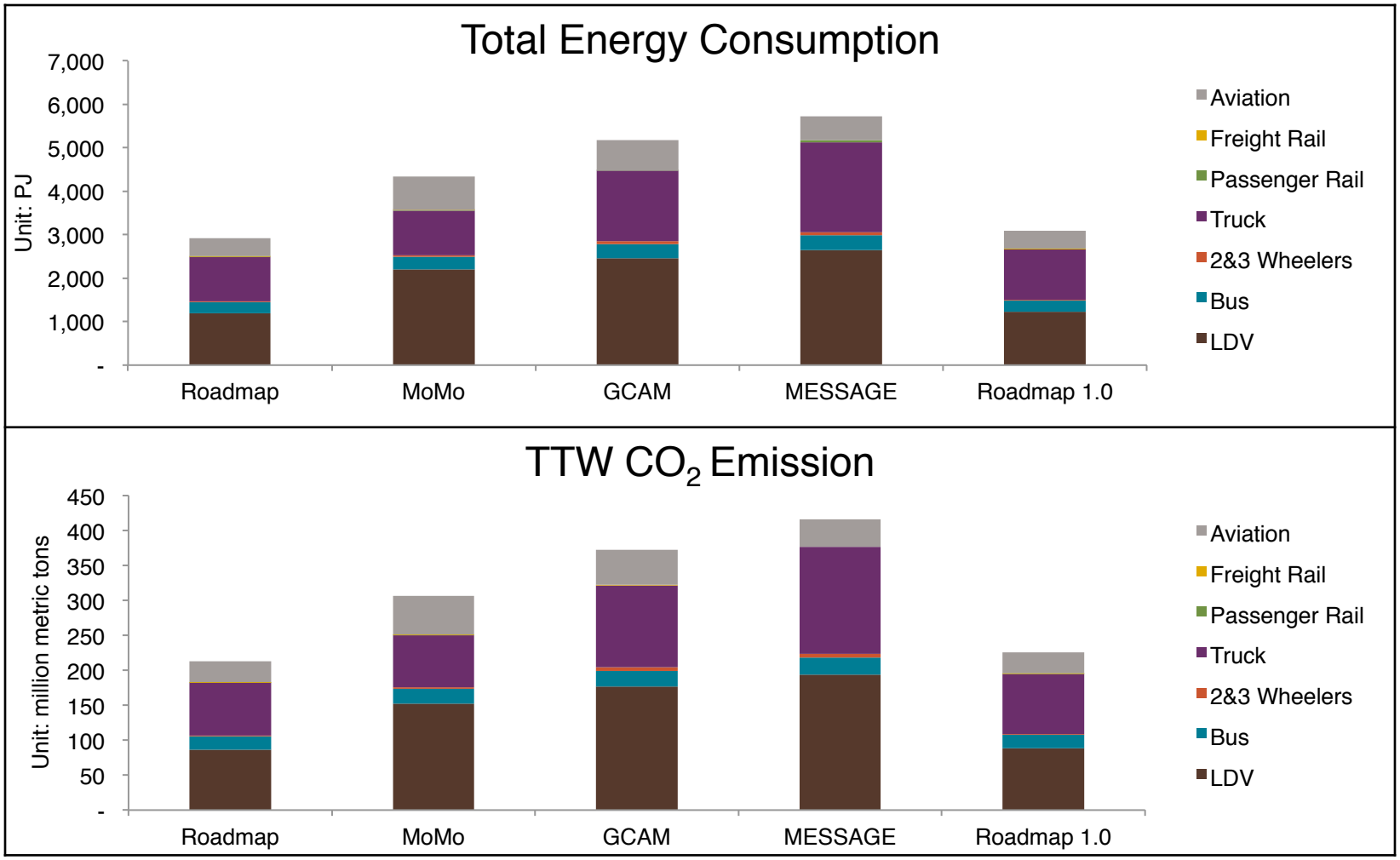
Middle East Comparison



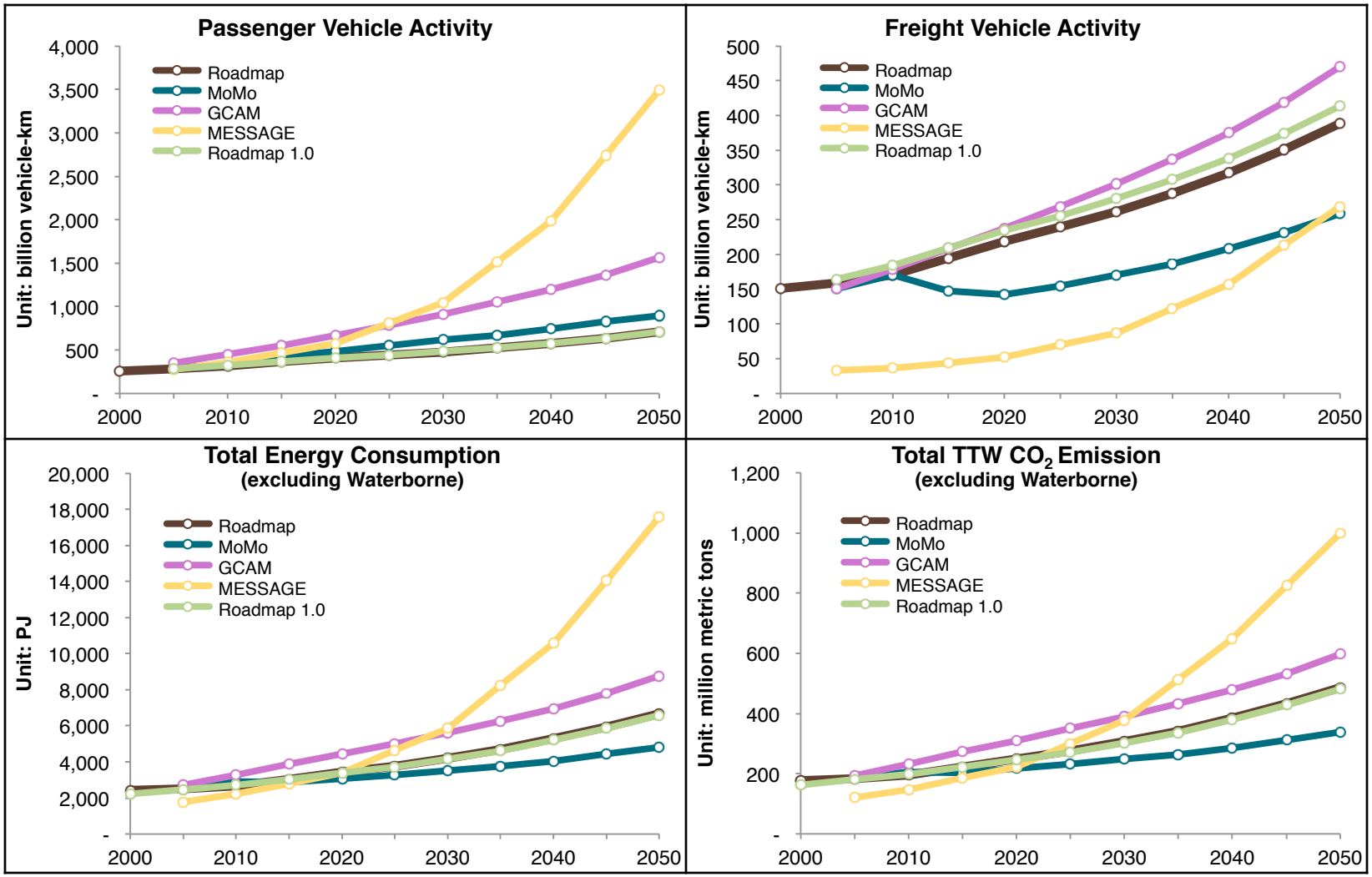
Middle East Comparison



Middle East 2010 Model Output Comparisons
(excluding Waterborne)



Africa Comparison



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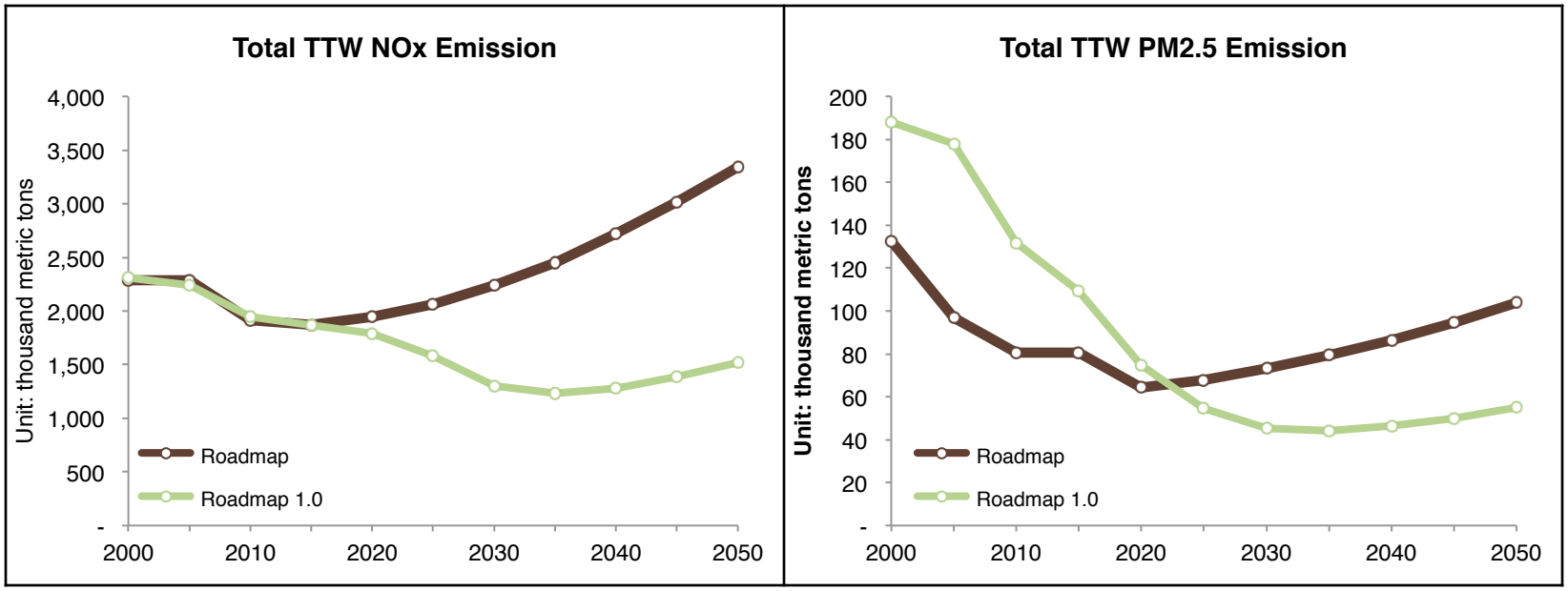
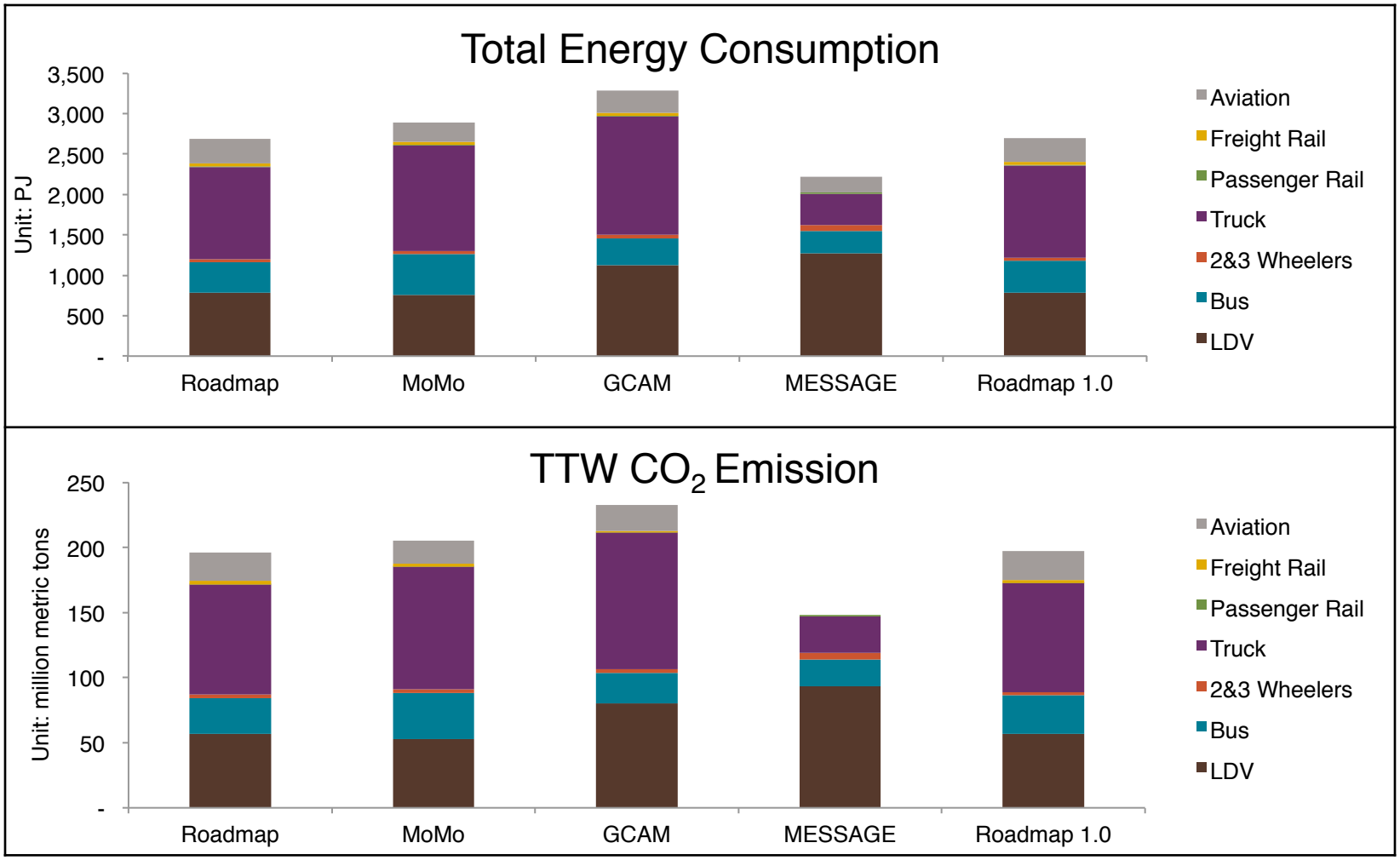
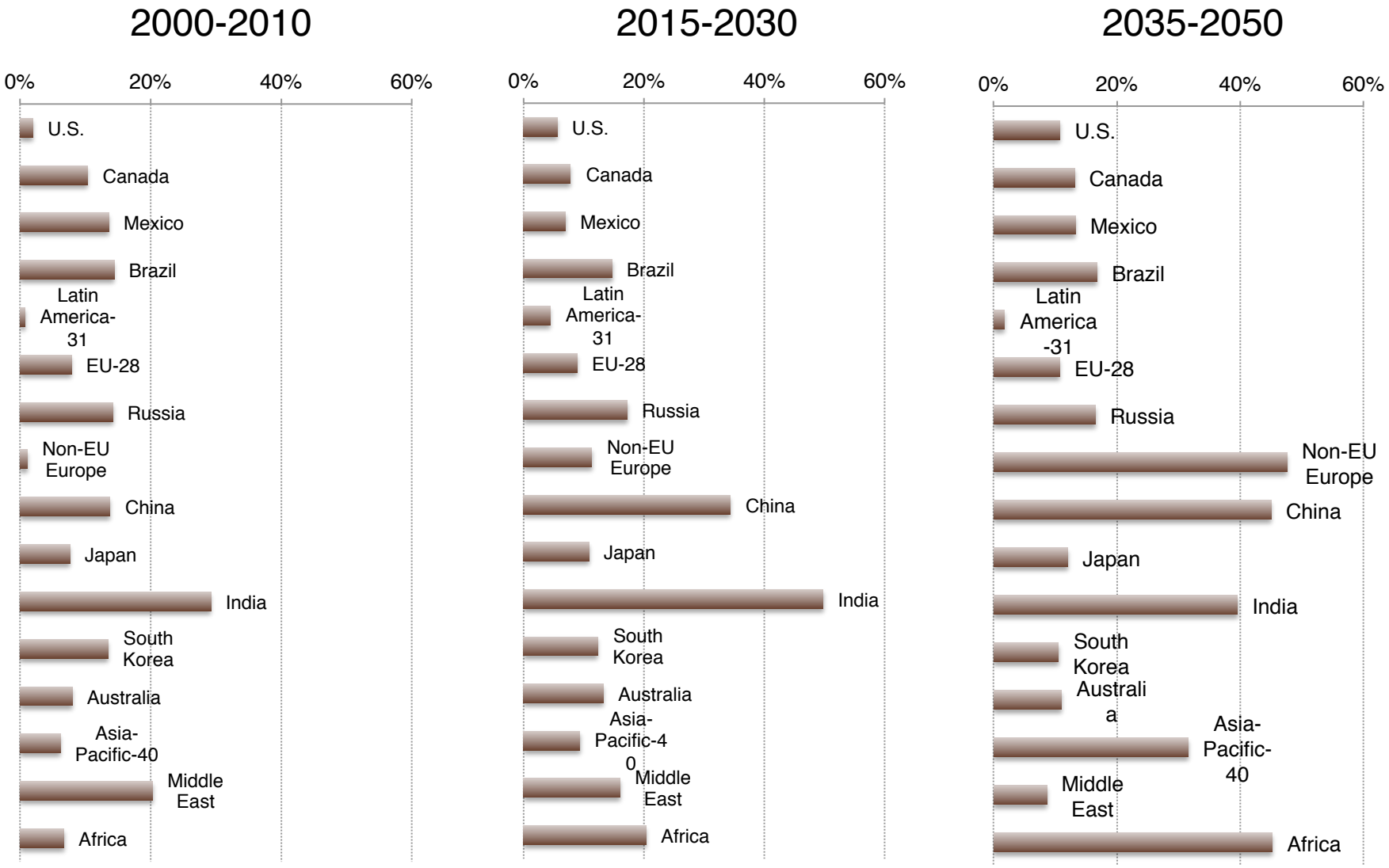


Africa 2010 Model Output Comparisons
(excluding Waterborne)



Passenger Vehicle Activity Average Variation



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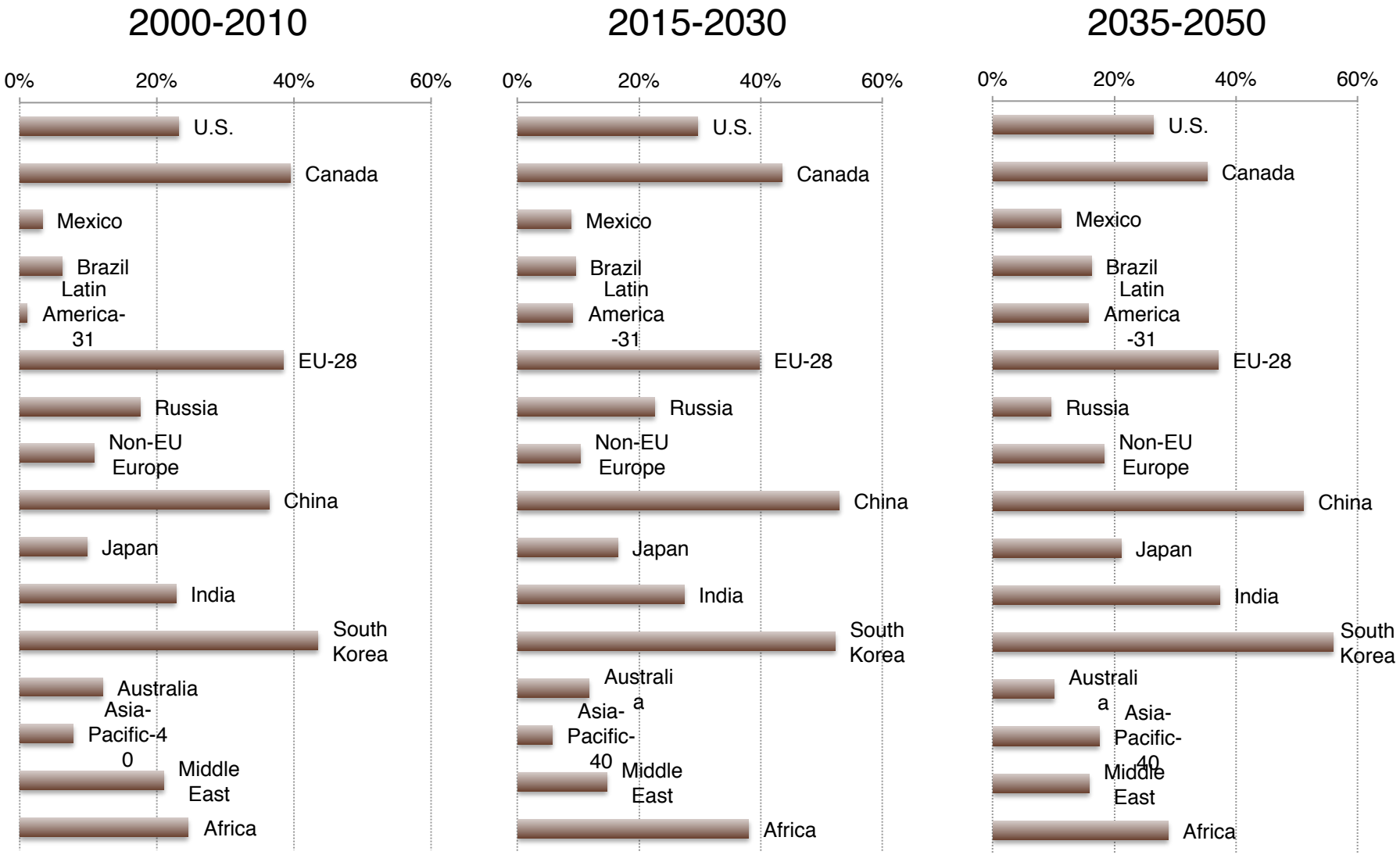
This represents the average absolute variation between model trajectories and the average trajectory.

Freight Vehicle Activity Average Variation



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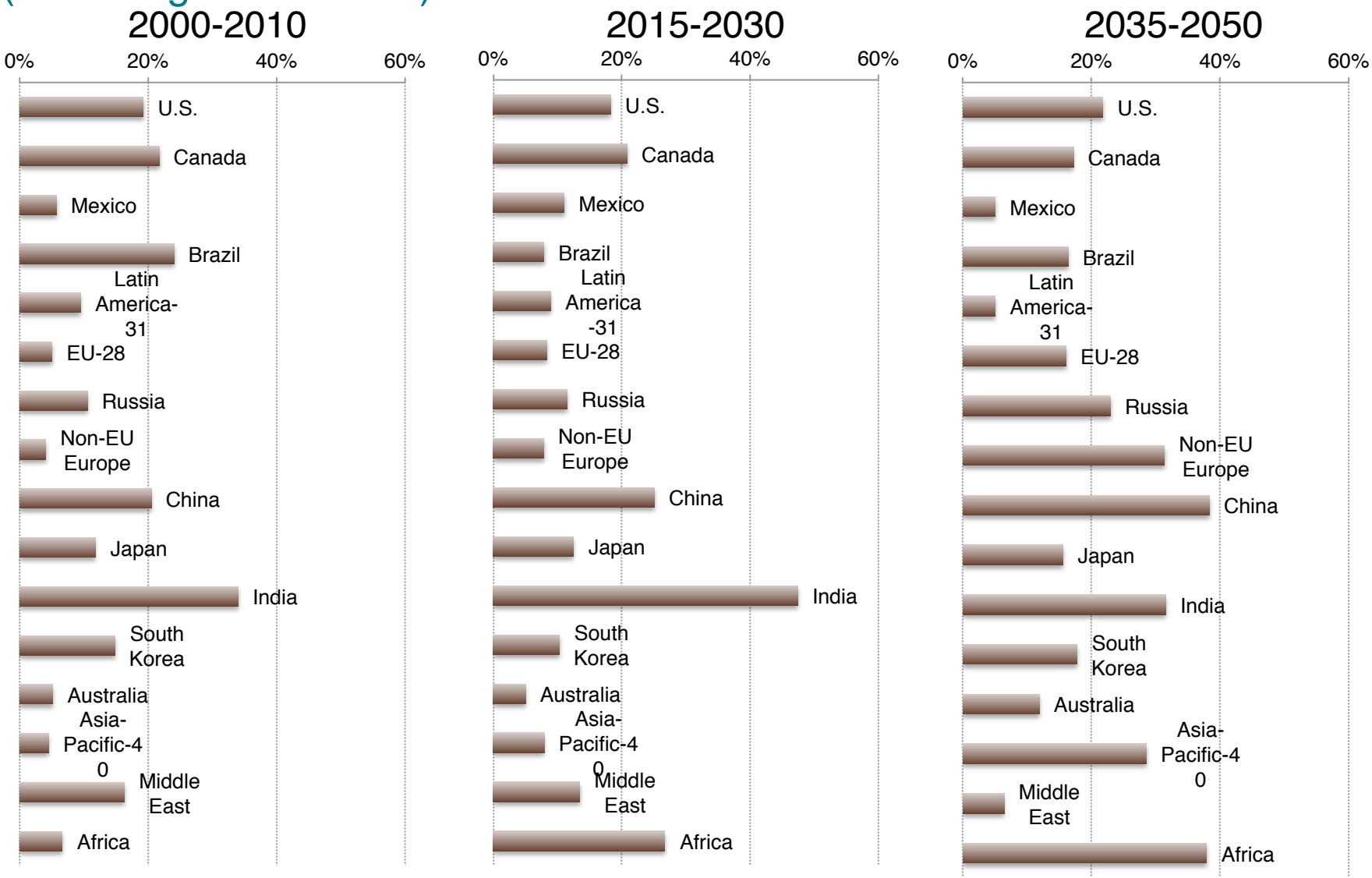
This represents the average absolute variation between model trajectories and the average trajectory.

Total Energy Consumption Average Variation

(excluding Waterborne)



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This represents the average absolute variation between model trajectories and the average trajectory.