

Decarbonizing Transport:

Beyond Cars and Internal Combustion Engines

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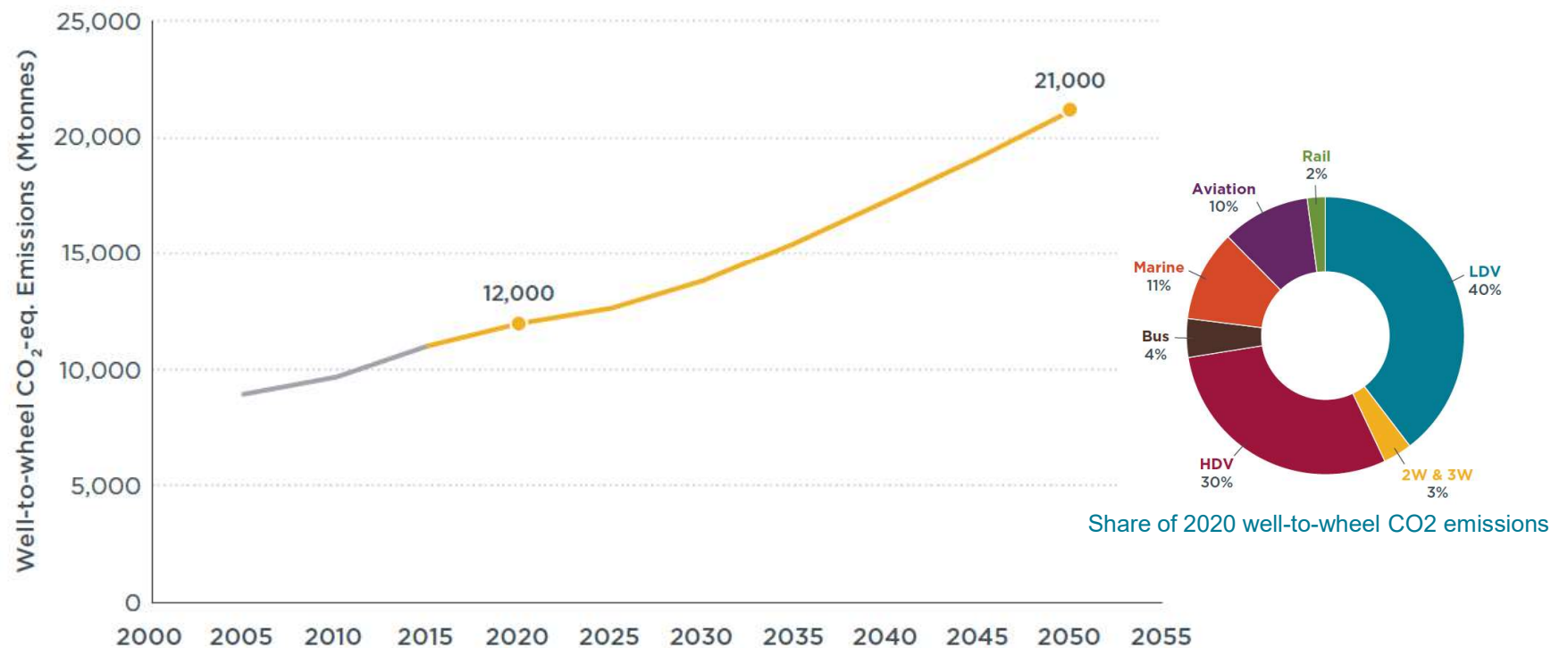
CSE Climate Week

The International Council on Clean Transportation (ICCT)

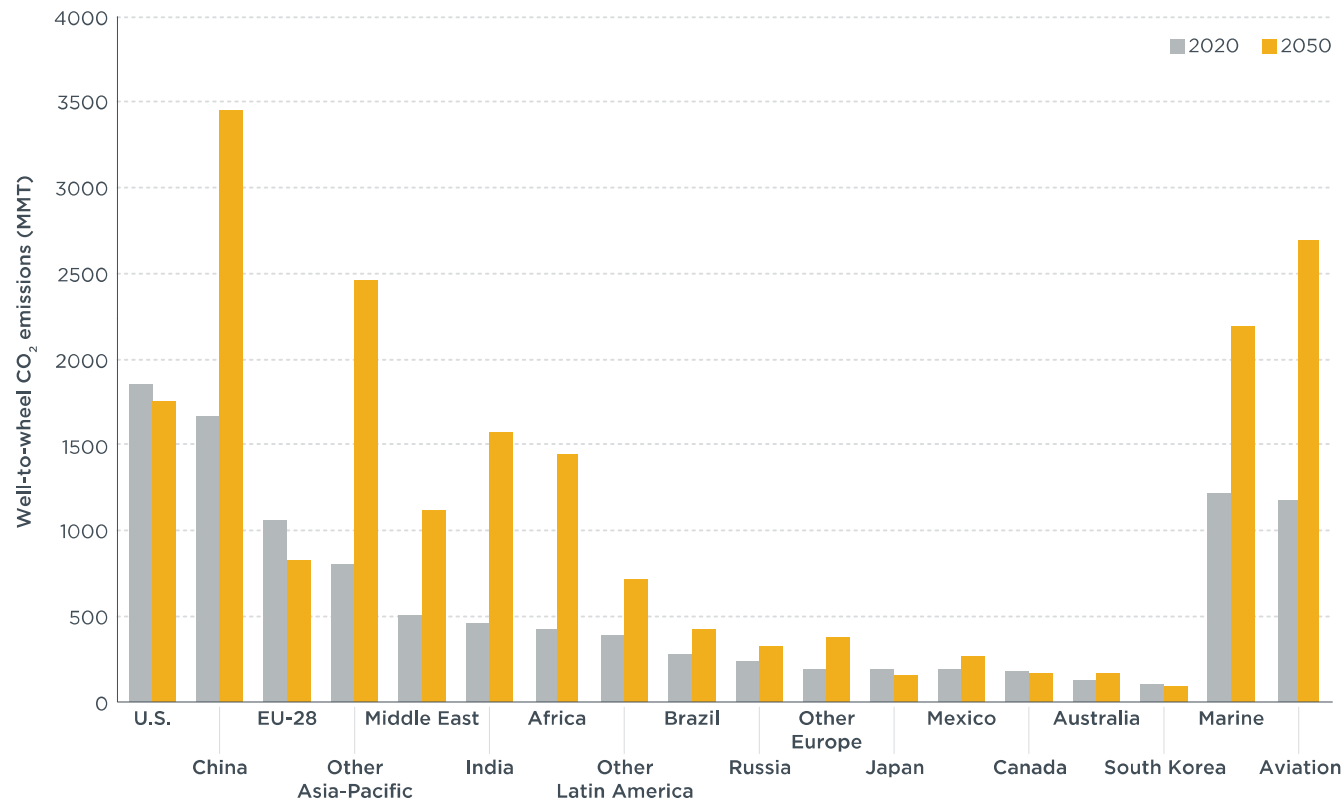
The mission of ICCT is to dramatically improve the environmental performance and efficiency of cars, trucks, buses and transportation systems in order to protect and improve public health, the environment, and quality of life.

- Non-profit research organization
- Air Pollution and Climate Impacts
- Focus on regulatory policies and fiscal incentives
- Activity across modes including aviation and marine
- Global outreach, with special focus on largest markets
- Offices in Washington D.C., San Francisco, Berlin, Beijing

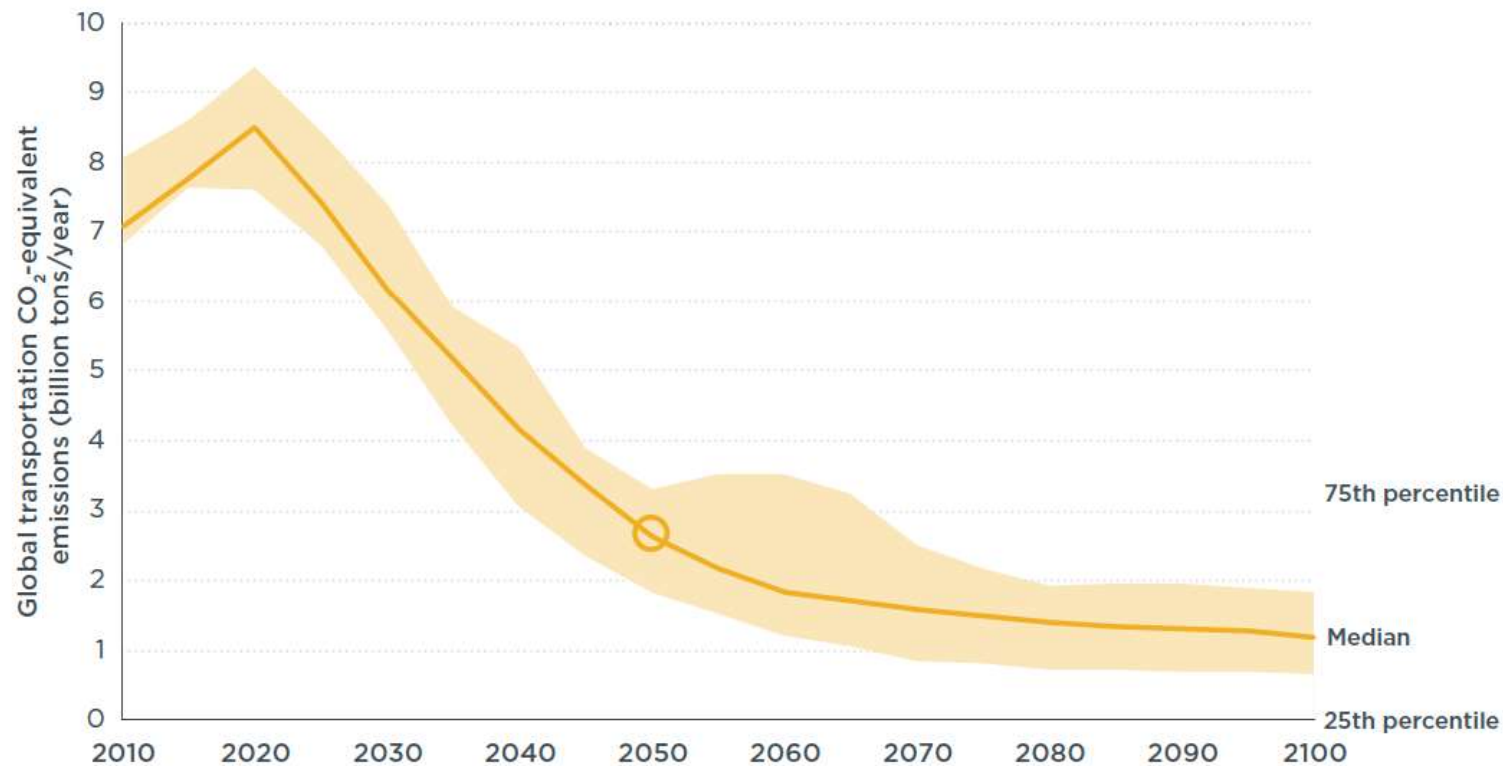
Annual CO₂-equivalent emissions from the global transportation sector have increased to ~12 Gt in 2020*



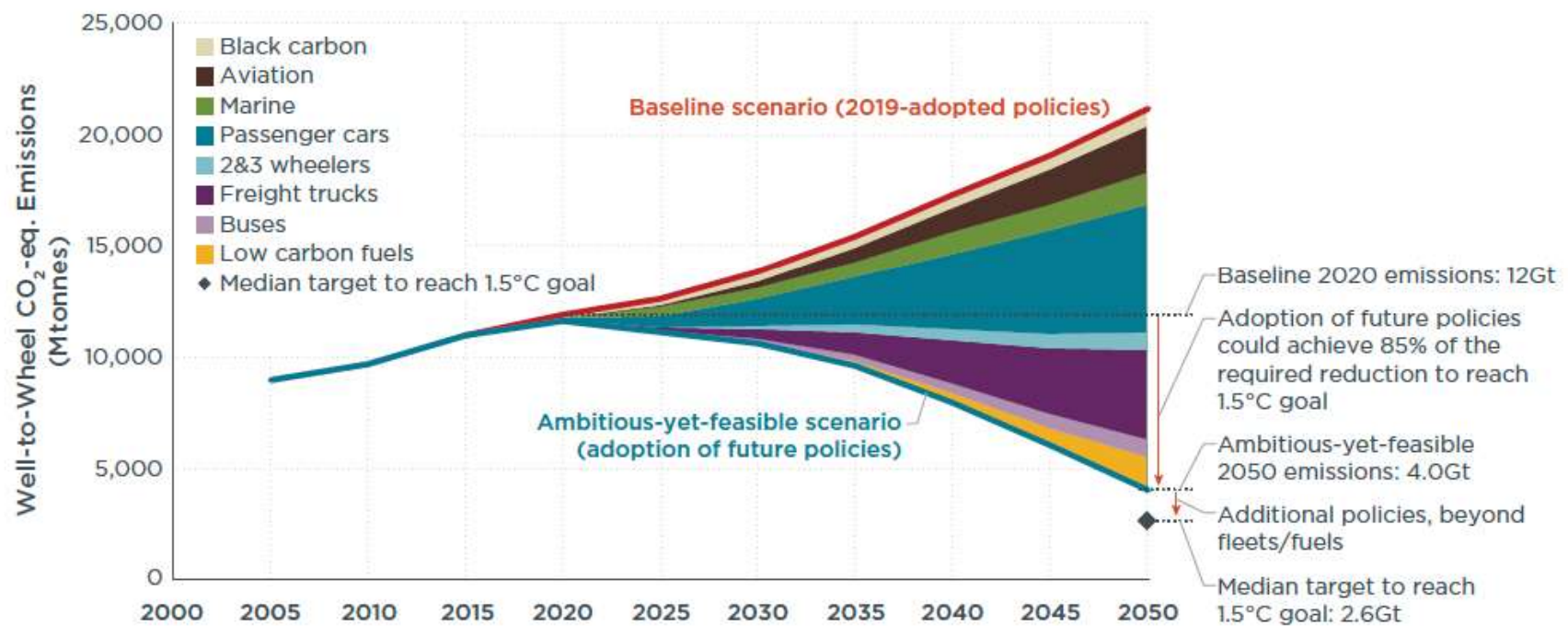
Transportation CO₂ emissions by region, with global aviation and marine sectors, in 2020 and 2050



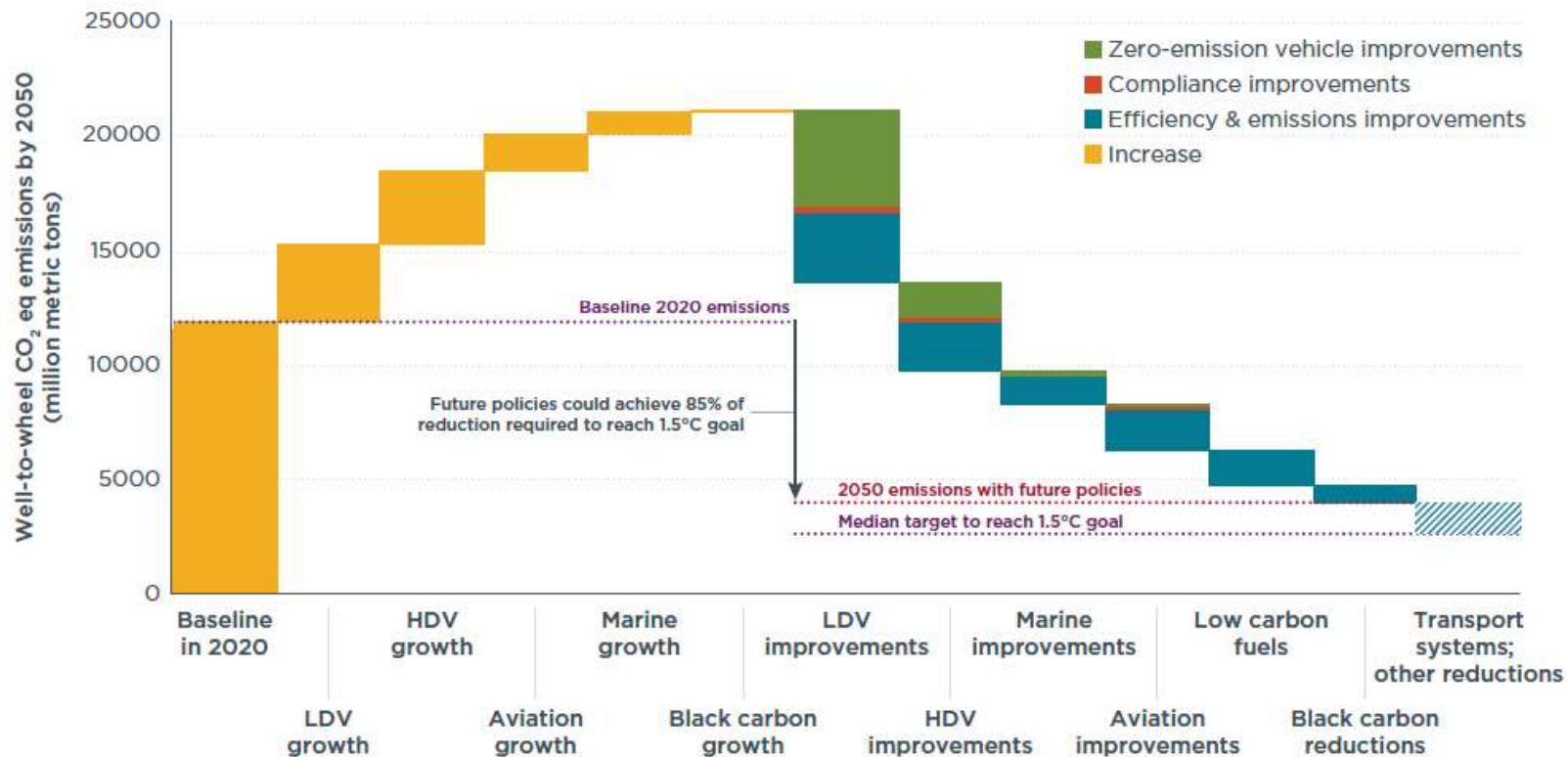
Global transport sector CO₂-equivalent emissions pathways, based on an analysis of 1.5°C scenarios with no or low overshoot. Our 2050 target is 2.6Gt.



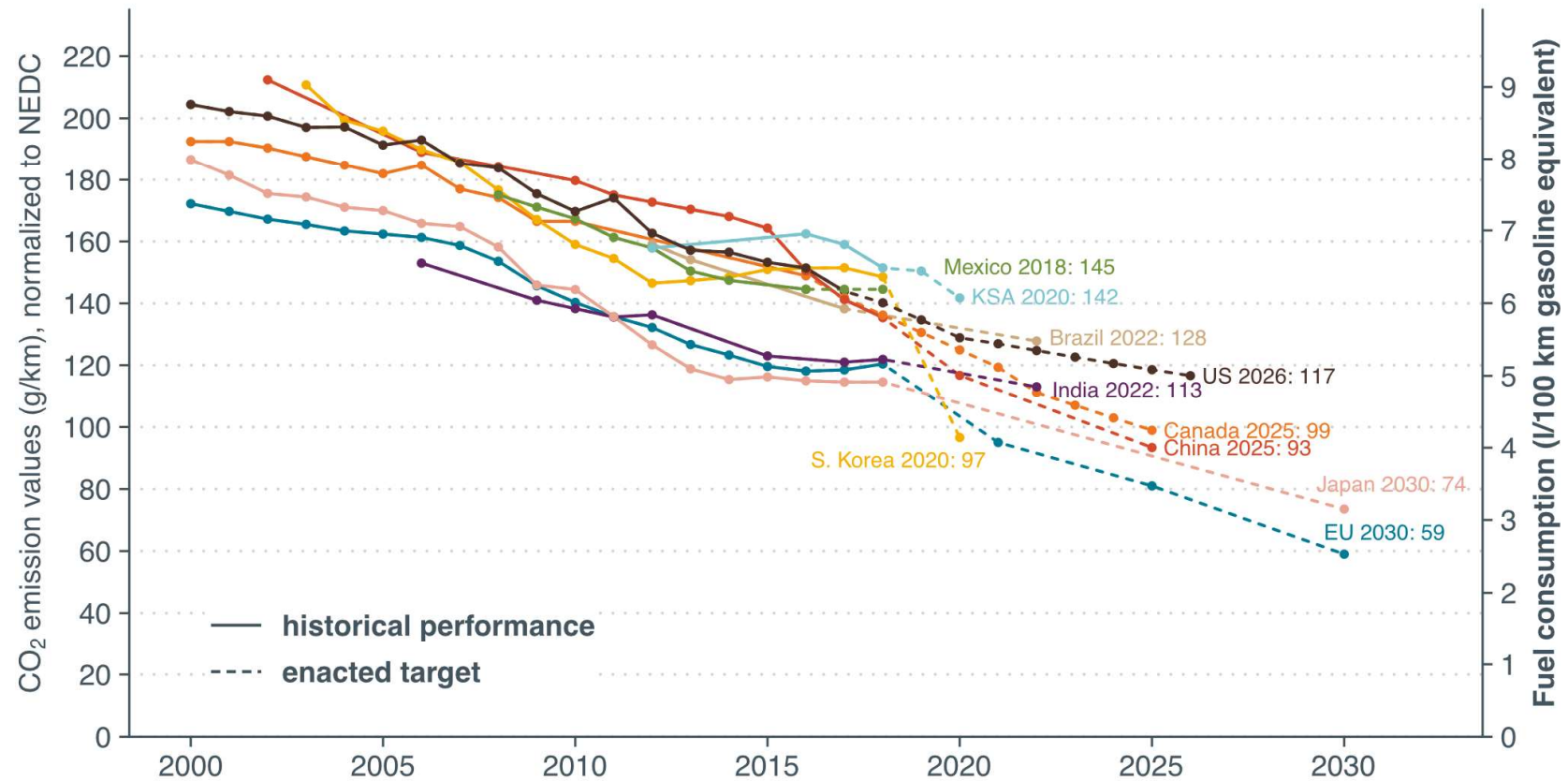
Global “Well-to-wheel” CO₂ reductions from transportation segments based on ICCT’s ambitious yet feasible scenario



Baseline CO₂ equivalent emissions and mitigation potential in 2050 by major transportation segment



Passenger car CO₂ emission and fuel consumption values, normalized to NEDC



Updated May 2020
Details at www.theicct.org/chart-library-passenger-vehicle-fuel-economy

Passenger vehicle zero emission vehicle targets growing rapidly

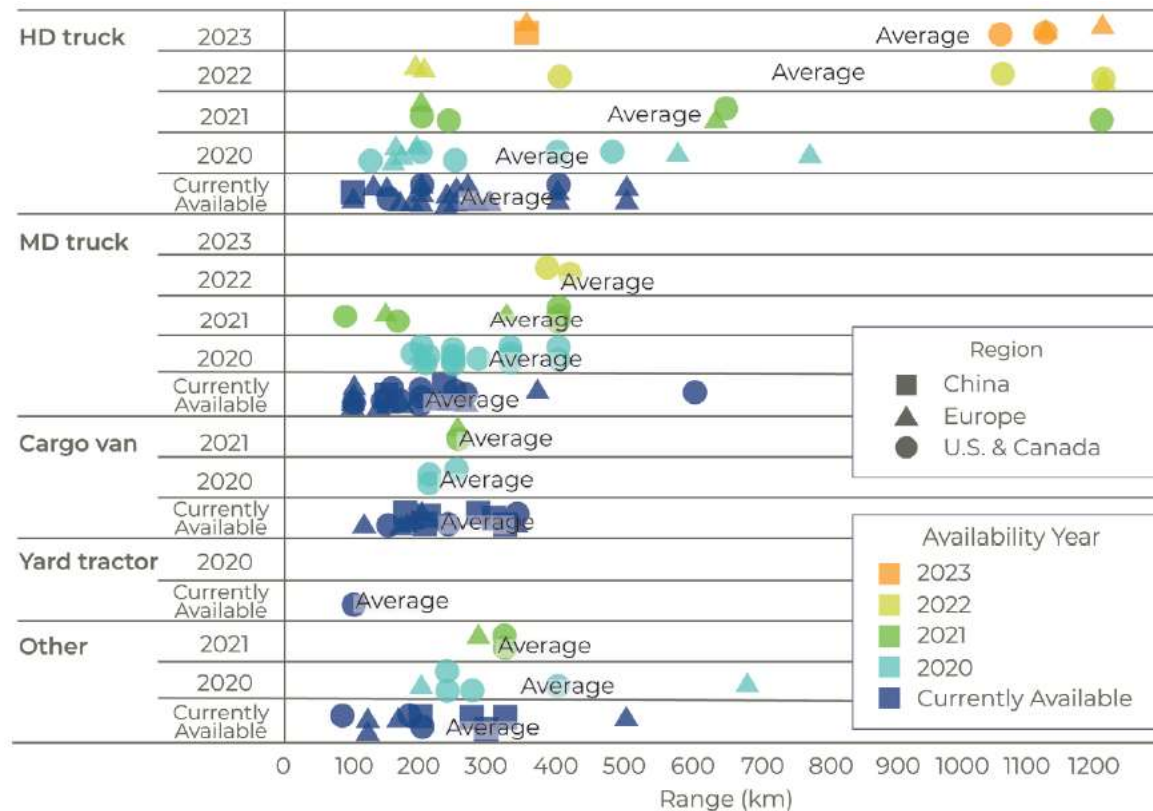
Government	Target year	Target
China	2023 2035	~7-8% New Energy Vehicles (NEVs) 50% Hybrids + 50% NEVs
California (+ Sec. 177 states)	2025 2035	~10% 100% PHEV+BEV+FCEV only
British Colombia	2040	100% PHEV+BEV+FCEV only
United Kingdom	2030 2035	HEV+PHEV+BEV+FCEV only PHEV+BEV+FCEV only
Japan	2035	50% Hybrids + 50% (PHEV+BEV+FCEV)
European Union (EU)	2025 2030	~15% ~30%

Average Li-ion battery prices have come down by ~89% in the last decade – on track to ~\$100/kWh by 2024



Source: BloombergNEF

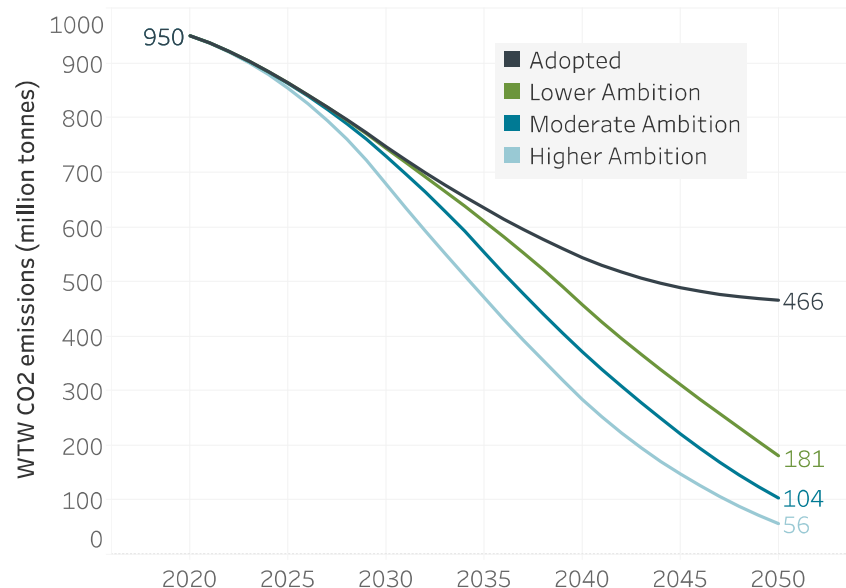
Zero-emission trucks (ZET) are becoming available for sale in US, EU and China



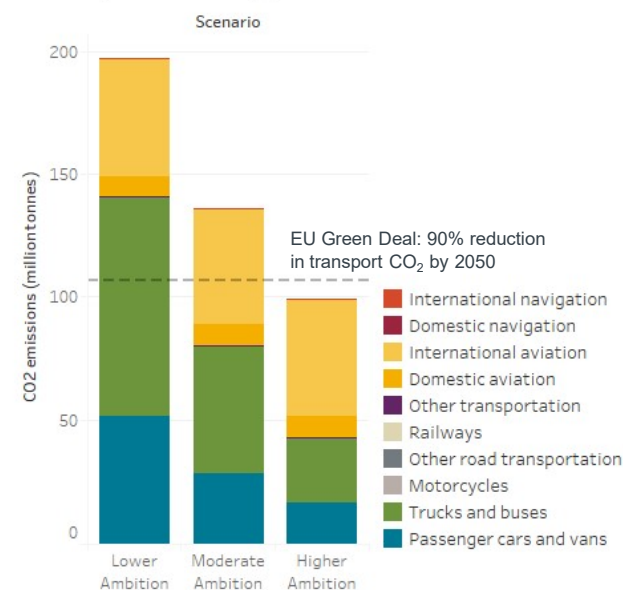
Decarbonization of EU light-duty and heavy-duty vehicles:

Low ambition: 100% ZEVs by 2040 for LDV and 2050 for HDV
 High ambition: 100% ZEV by 2030 for LDV and 2040 for HDVS

EU fuel lifecycle CO2 emissions from light-duty and heavy-duty vehicles



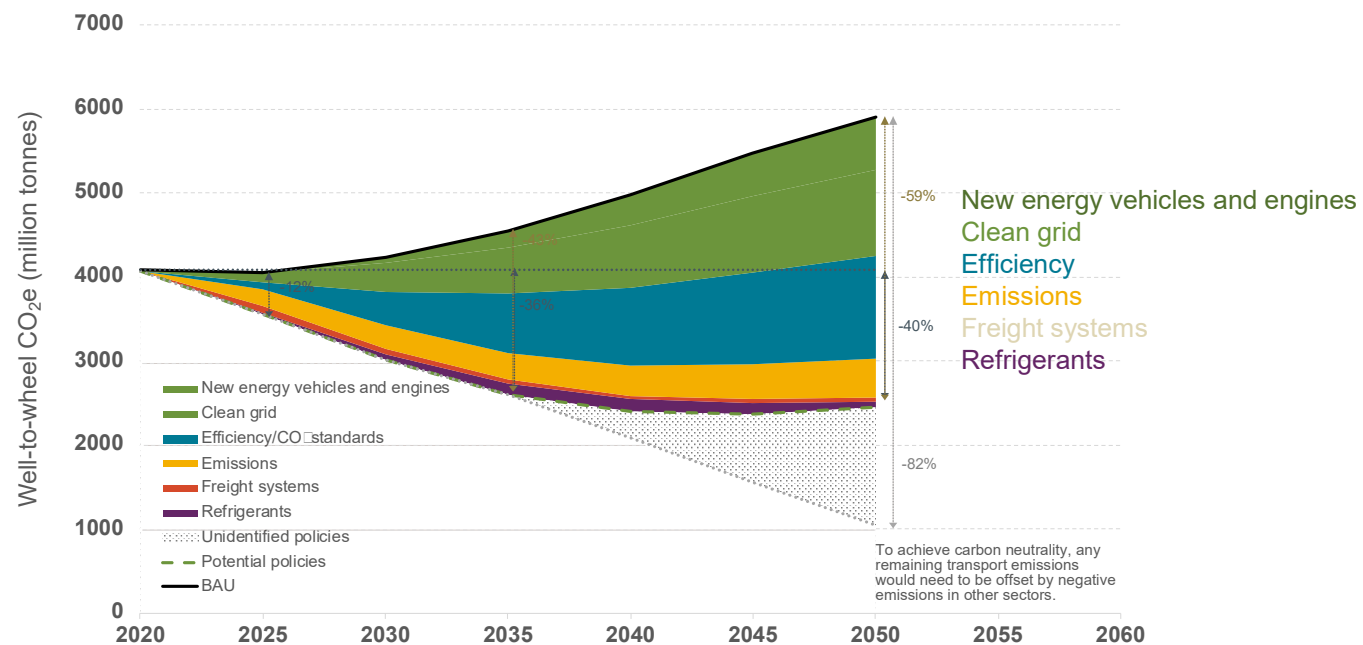
EU transport sector tailpipe CO2 emissions in 2050



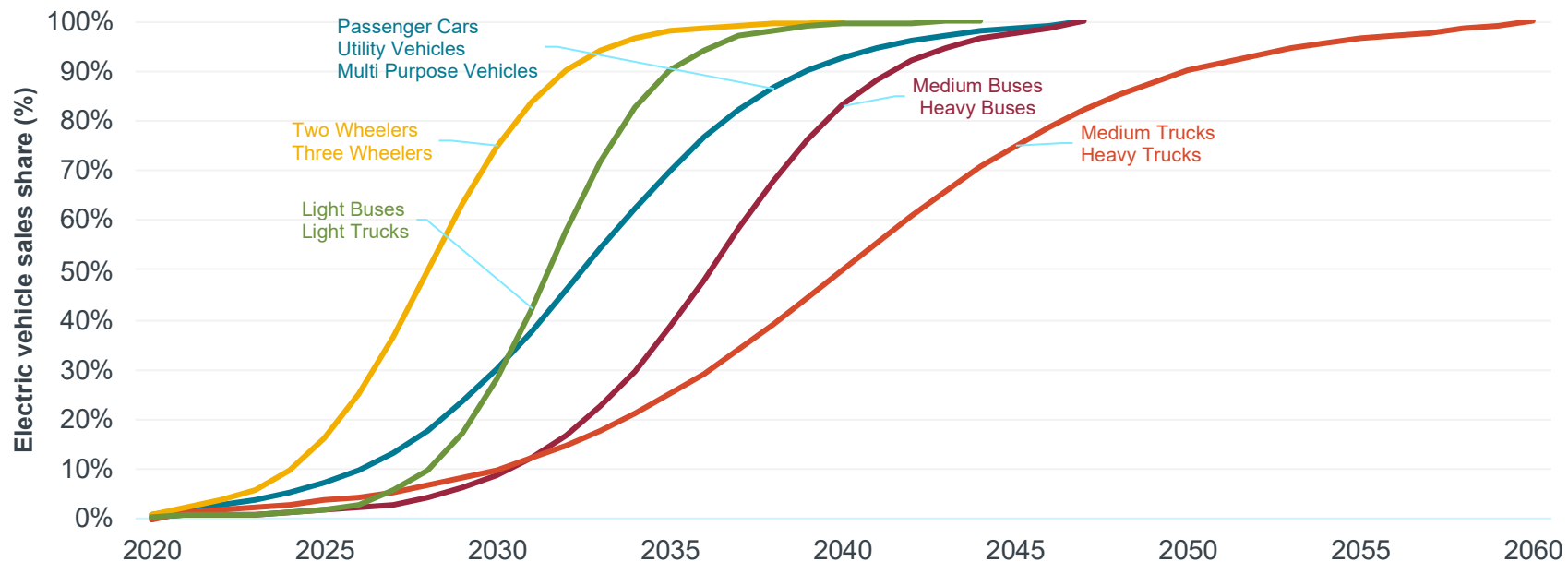
Transport sector projections are illustrative, representing an aggressive but feasible emissions trajectory. Motorcycles are projected by the ICCT's Roadmap model, assuming 100% ZEV sales shares in 2035 and ICE energy intensity improvements of 1.4% annually. Domestic and international navigation emissions are projected assuming the highest ambition allowed under the International Maritime Organization's initial GHG strategy. Domestic and international aviation emissions are projected to achieve the International Air Transport Association's 2050 target. Emissions from other subsectors are projected to decrease linearly to net-zero in 2050.

➤ DRAFT results from a forthcoming ICCT publication in January 2021

China will need additional measures post-2030 period to meet its net zero goals



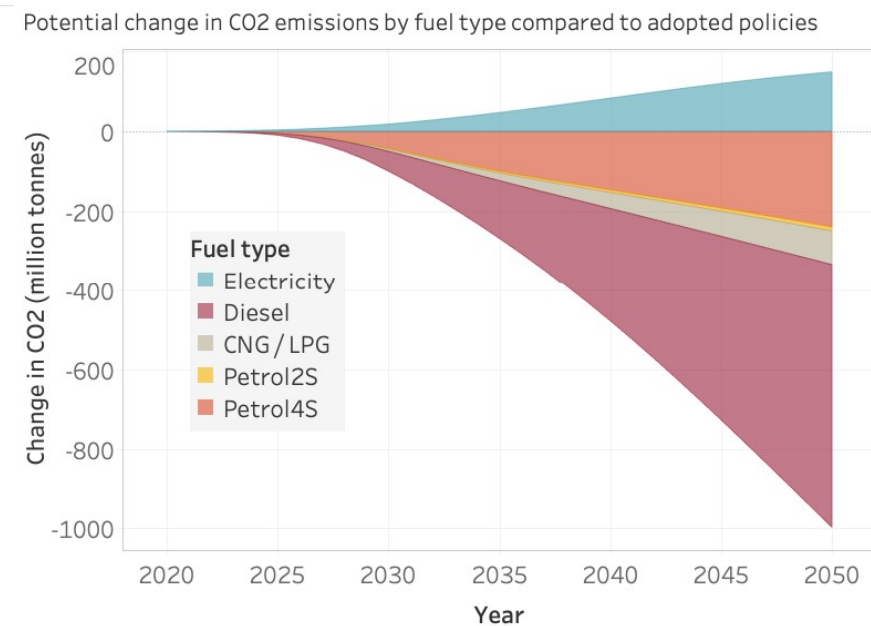
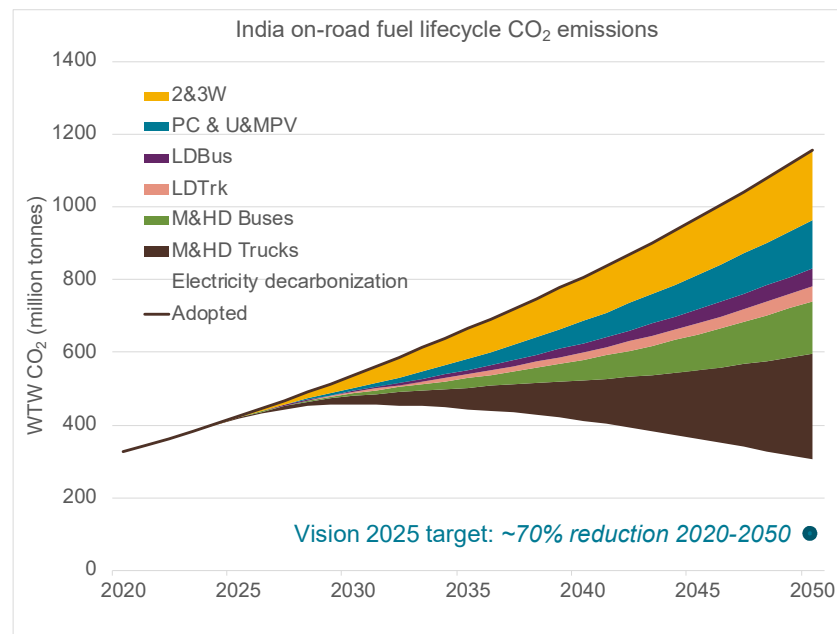
Goal is to fully electrify new vehicle sales in India before mid-century. Chart shows current optimistic, but plausible trajectory.



Transport and power sector emissions by scenario and year



India's transportation sector GHG emissions could peak by 2030 because of stringent fuel consumption standards, and aggressively promoting ZEVs



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