Decarbonizing Transport:
Beyond Cars and Internal Combustion Engines

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CSE Climate Week
The International Council on Clean Transportation (ICCT)

- 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

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

* Pre-Covid estimate; https://theicct.org/publications/vision2050

Share of 2020 well-to-wheel CO₂ emissions
Transportation CO₂ emissions by region, with global aviation and marine sectors, in 2020 and 2050

https://theicct.org/publications/vision2050
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” CO$_2$ 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 vehicle zero emission vehicle targets growing rapidly

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

http://www.zevalliance.org/zero-emission-freight-2020/
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

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 to achieve 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

To achieve carbon neutrality, any remaining transport emissions would need to be offset by negative emissions in other sectors.

DRAFT results from a forthcoming ICCT publication in January 2021
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.