


ZEV adoption and CO₂ emissions in the latest draft Roadmap scenarios

ITEM 7

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Progress in electrification is closing the gap with CO₂ emission reductions needed to meet Paris targets, but 1.5°C remains out of reach

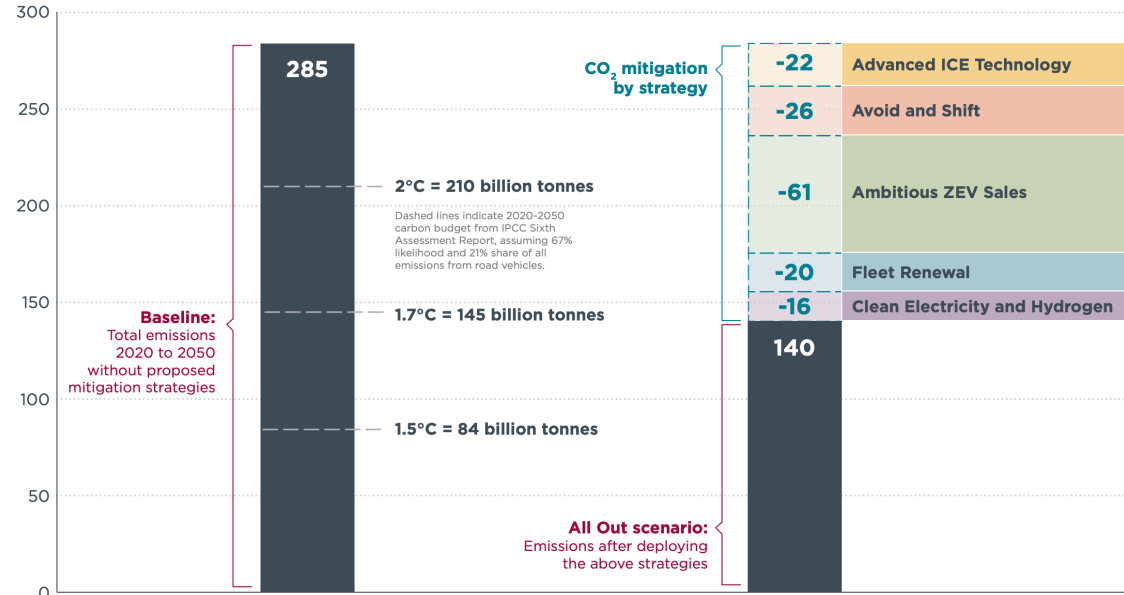


A portfolio of very ambitious policies would be needed to align road transport emissions with 1.7°C.

- Assesses five CO₂ mitigation strategies for road transport
 - No-overshoot
 - Proportional share of remaining CO₂ budget (WTW)
 - 66% probability
- Regardless of order of implementation, Ambitious ZEV Sales has the biggest impact.
- Avoid and Shift and Advanced ICE Technology have similar cumulative impacts. The latter is only effective if implemented in the coming decade.
- Scrappage (fleet renewal) is a potent complement to ambitious ZEV sales to accelerate emissions reductions in 2030 timeframe.
- Accelerating the decarbonization of electricity is needed to reach 1.7°C

Mitigation potential of ambitious but feasible strategies

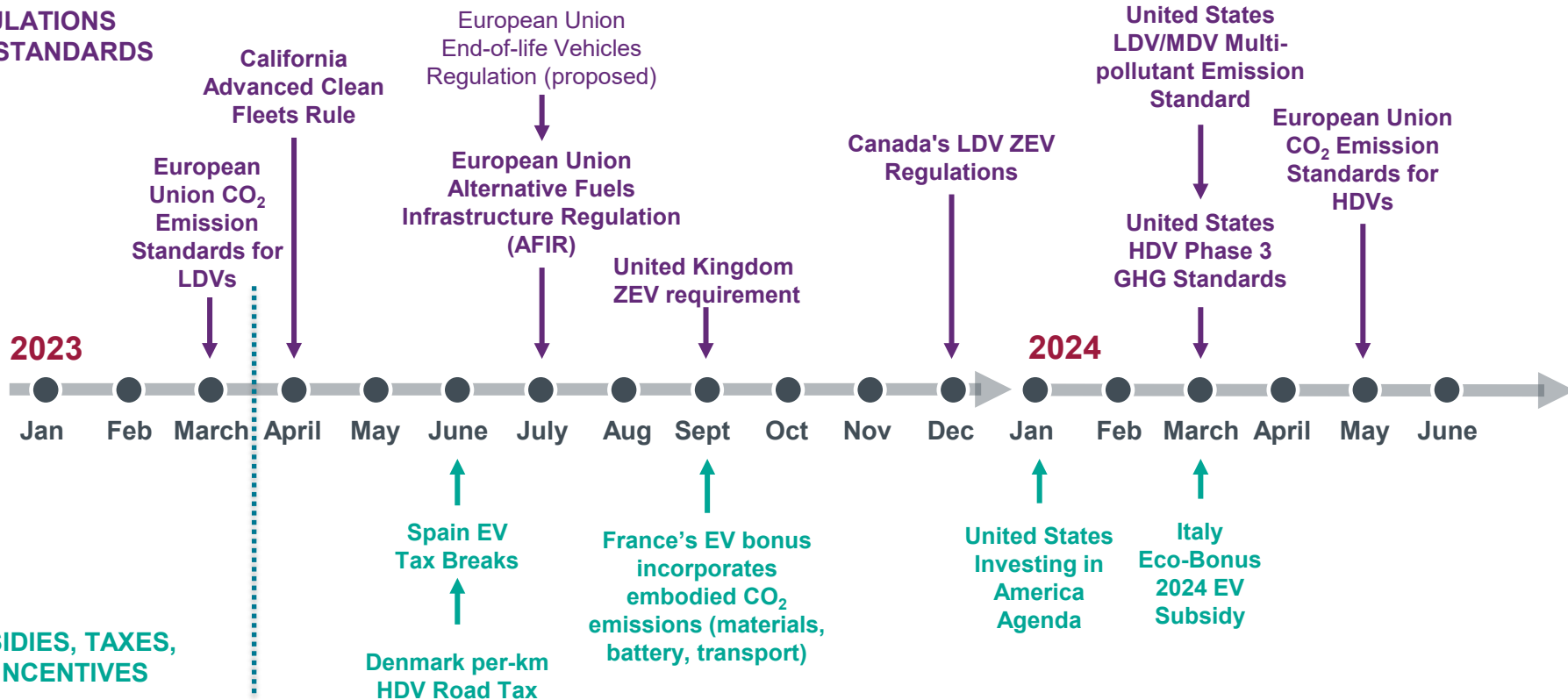
Cumulative well-to-wheel CO₂ transportation emissions (billion tonnes) projected from 2020 to 2050



Cumulative Baseline emissions and mitigation by strategy to reach cumulative residual emissions in All Out scenario, 2020–2050. The mitigation potential of each strategy is calculated independent of order of implementation.

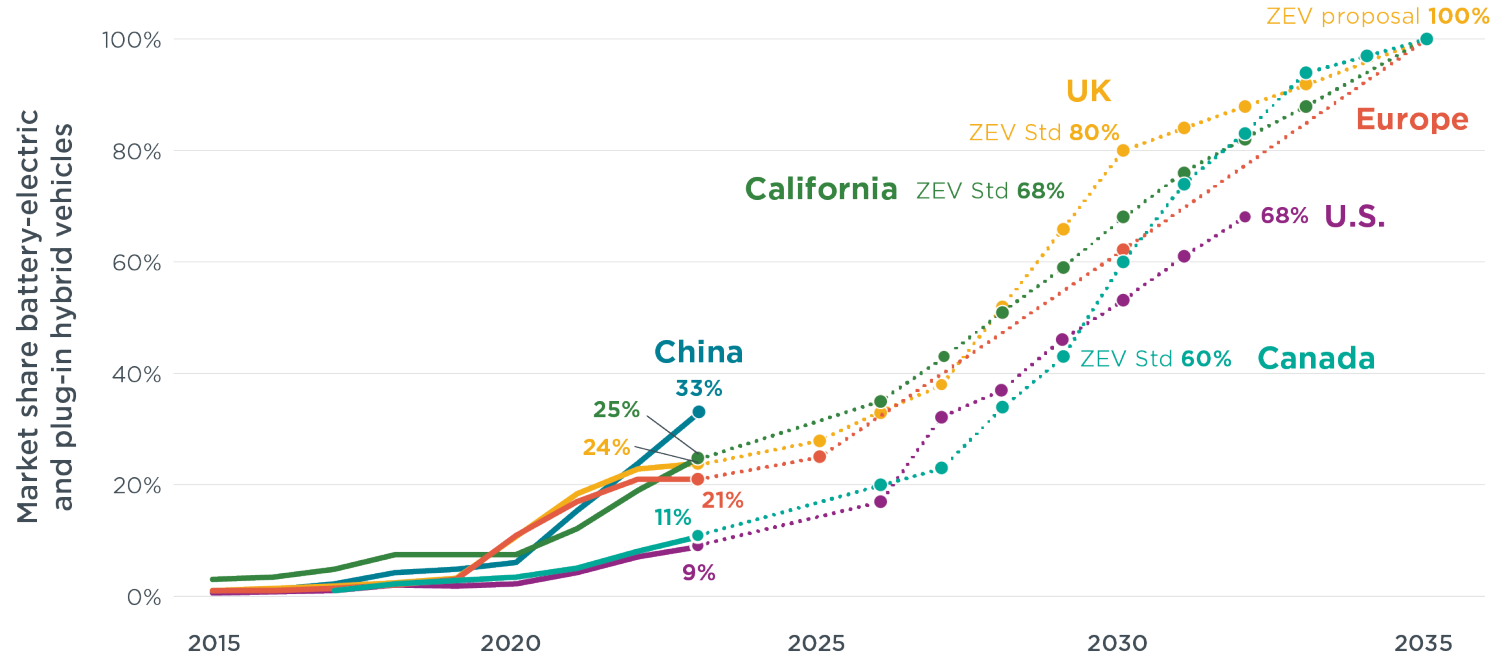
Adopted policies to accelerate ZEV sales

REGULATIONS AND STANDARDS



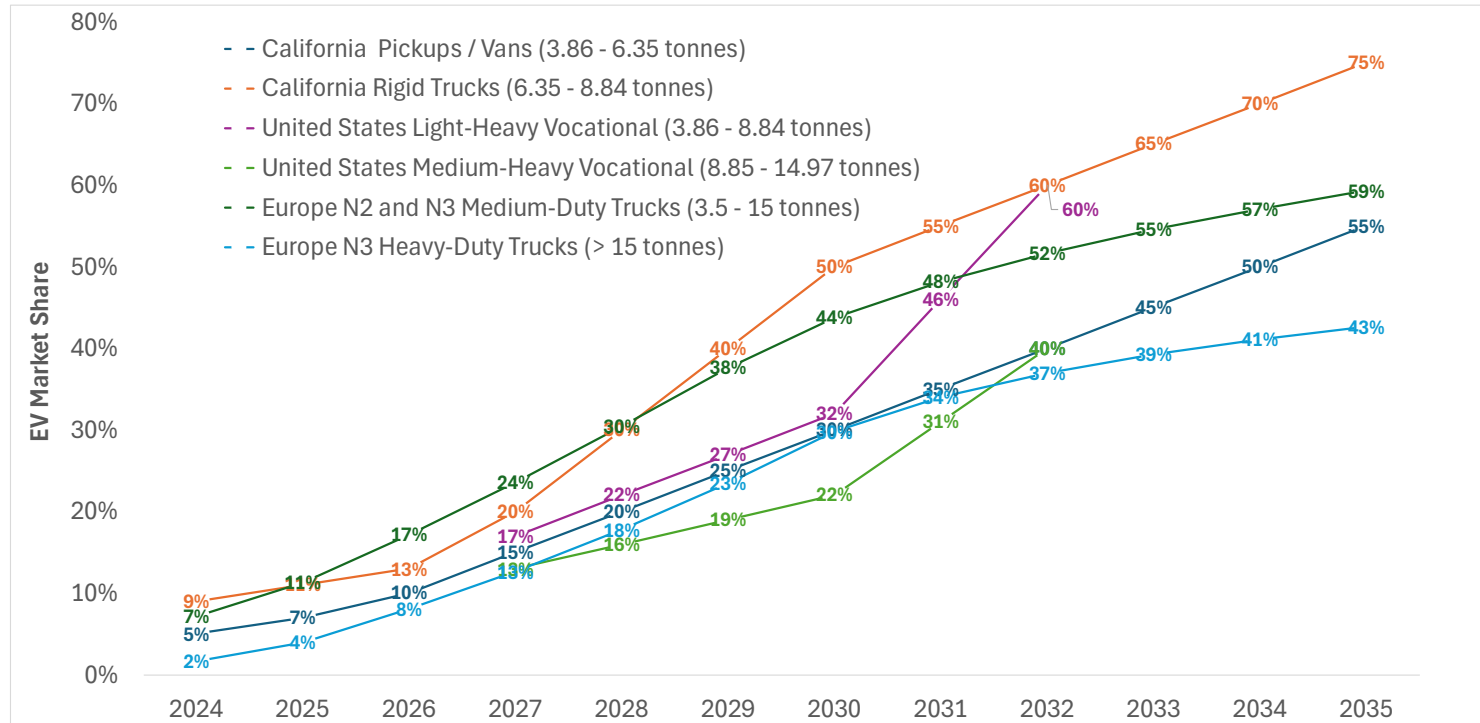
SUBSIDIES, TAXES, AND INCENTIVES

Light-duty standards in major markets are increasingly aligned with getting to 100% EVs by 2035



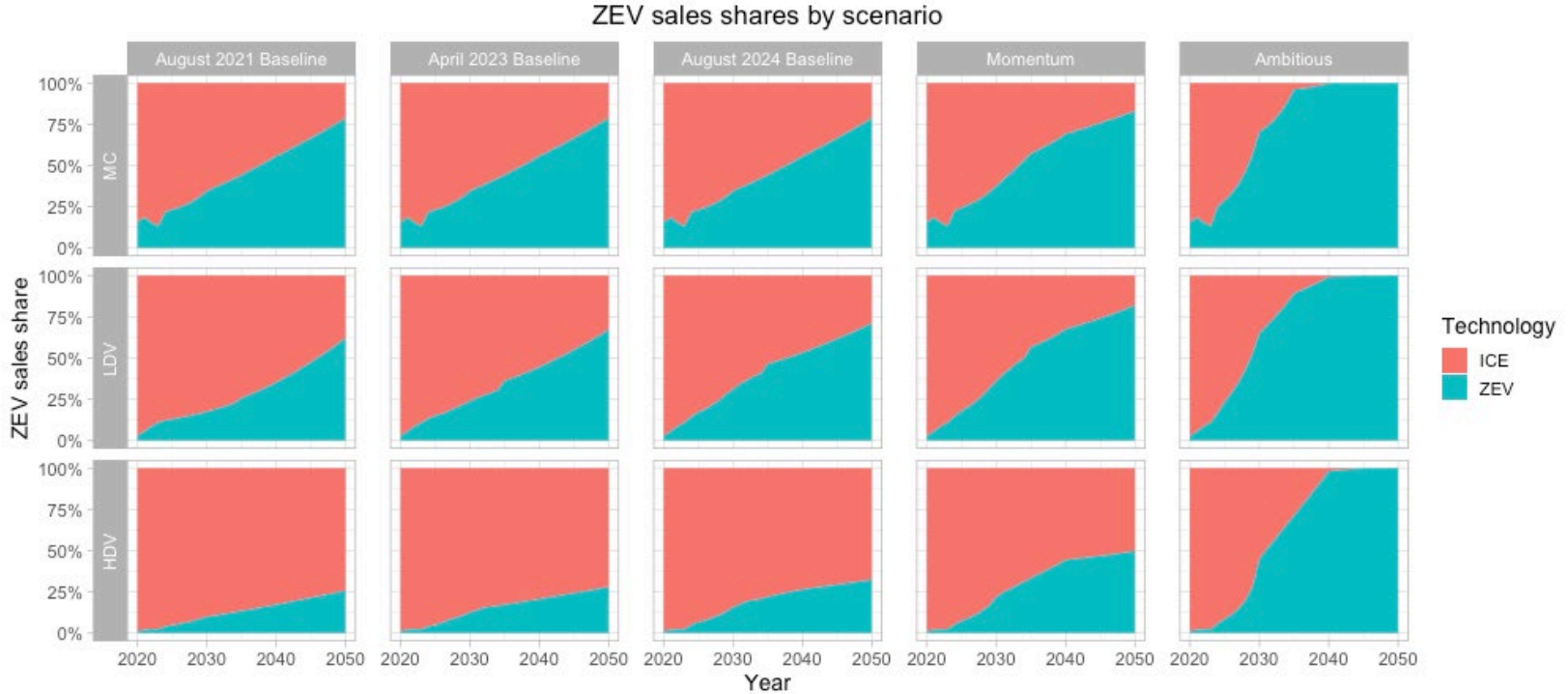
Dots indicate targets or official projections based on regulations. For the UK, ZEV sales shares for cars are shown, as mandated through 2030, together with proposed targets from 2031-2035.

CO₂ / GHG emissions regulations for trucks are set to drive rapid adoption of electric trucks over the coming decade



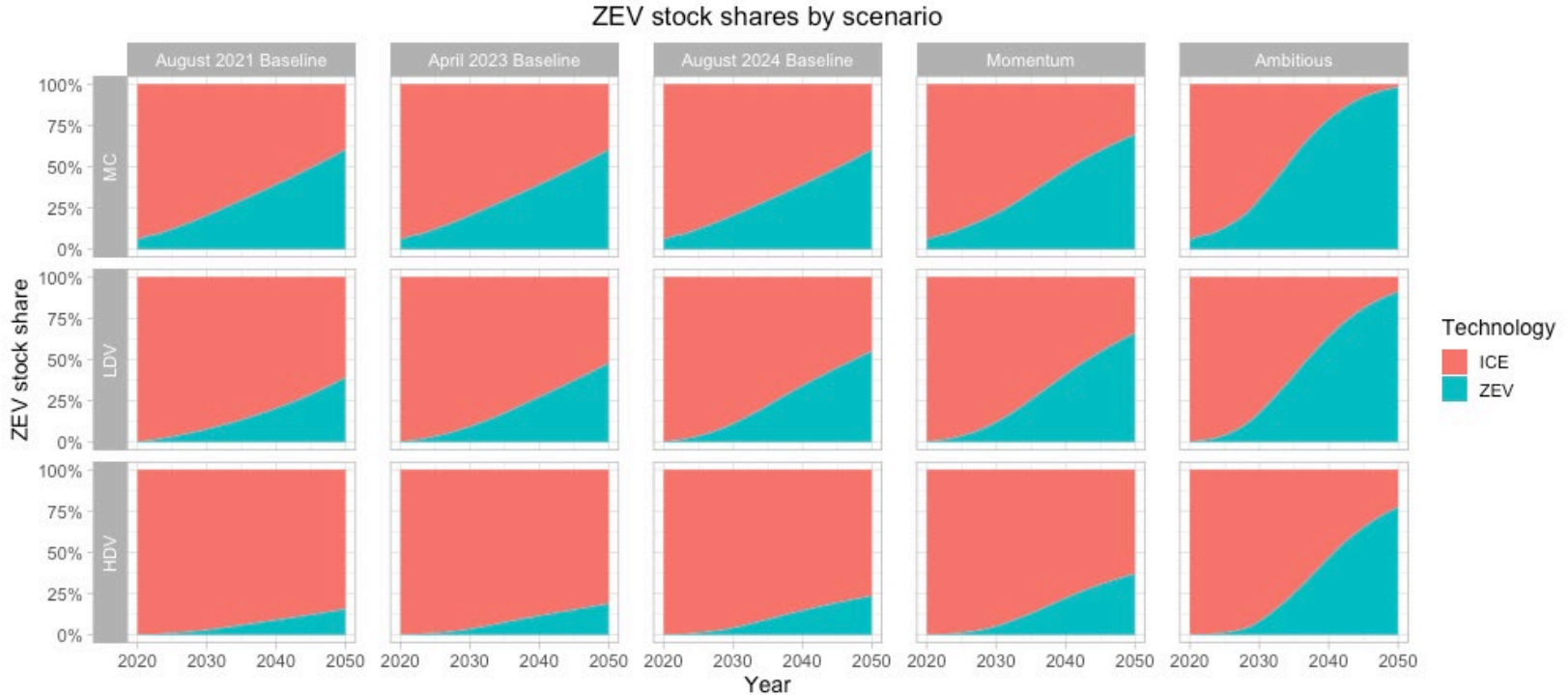
- **California's Advanced Clean Fleets Rule:** fleet composition milestones starting in 2025 and increasing to 100% by 2027 (for public fleets), and between 2035 and 2042 for private fleets, depending on segment.
- **Global MoU on Zero-Emission Medium- and Heavy-Duty Vehicles:** 30% ZEVs by 2030; 100% ZEVs by 2040; 38 signatories ⁶

ZEV sales penetration in new LDV and HDV sales projected in 2050 have increased by 10 and 8 percentage points, respectively



- Near-term changes, driven by the regulations mentioned previously, are even more pronounced:
 - Projected LDV sales shares in 2035 now stand at 47%, up from 26% (90% needed for Paris compliance)
 - Projected HDV sales shares in 2035 now stand at 22%, up from 13.5% (>70% needed for Paris compliance)

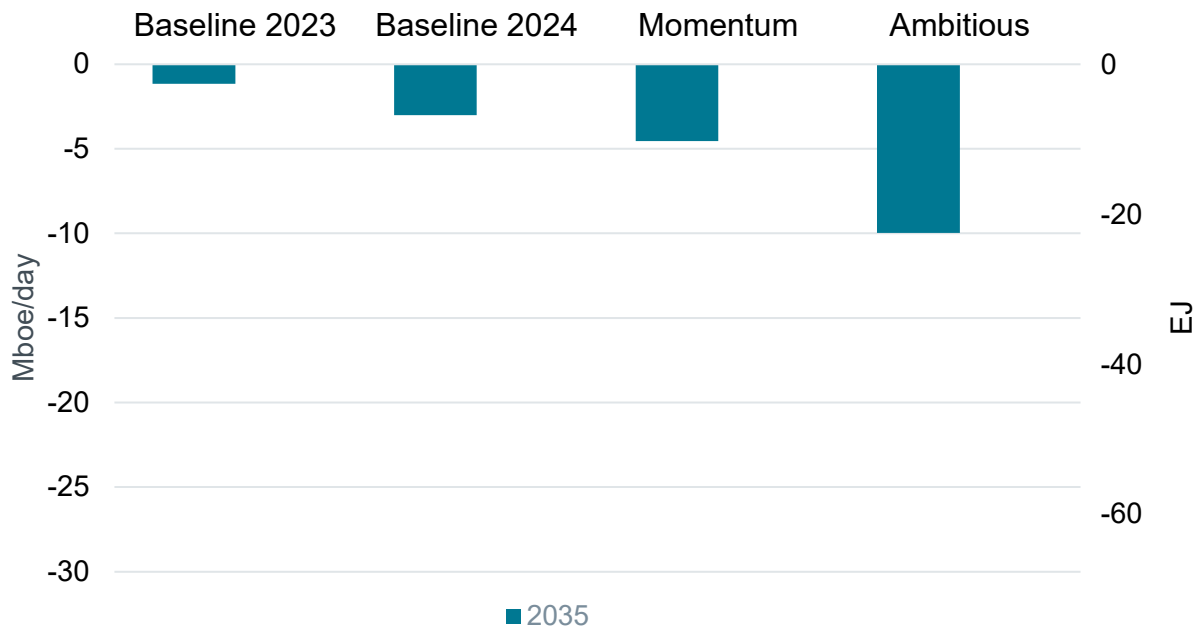
Regulations adopted in just the past three years have driven light-duty EV stock penetration projected in 2050 from less than 40% to 55%



- This closes one-third of the gap in the EV stock share needed to put LDVs on a Paris-compliant trajectory (>90%)
- For 2/3-wheelers, the gap between the current baseline (60%) and a Paris-compliant trajectory (98%) is smaller
- For HDVs, the gap between the current baseline (24%) and a Paris-compliant trajectory (77%) is still very wide

These dynamics have resulted in revisions in total road liquid fuels demand

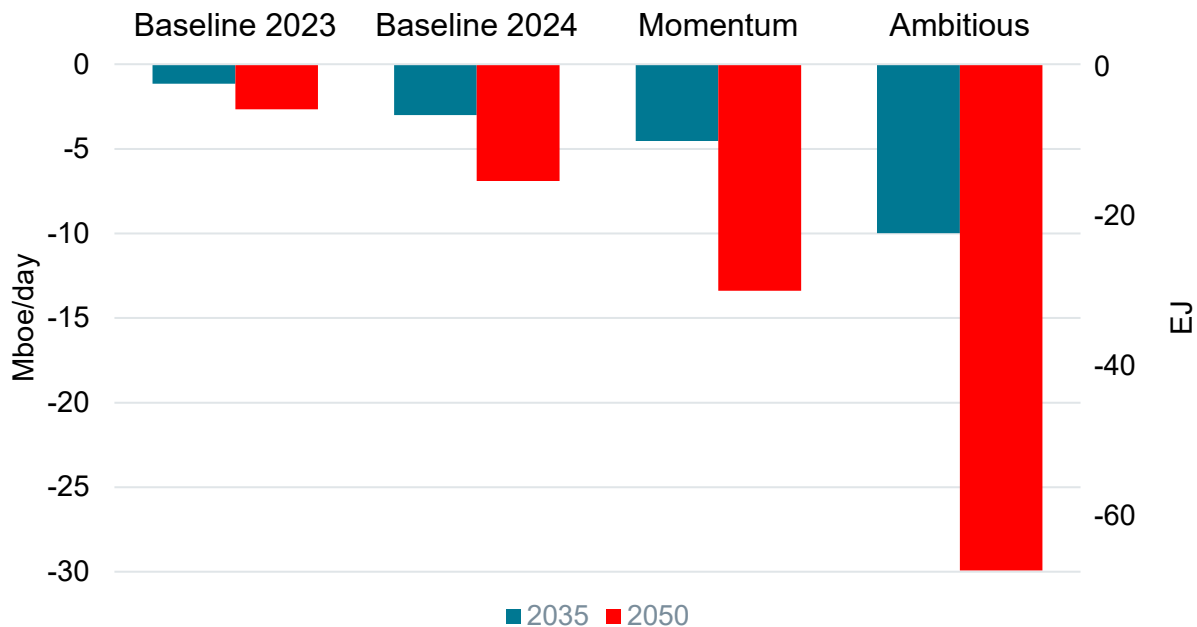
Liquid fuels demand reductions relative to the September 2021 Baseline



- For context, current road liquid fuel demand is around 41 EJ
- The share of liquid fuel reductions by vehicle category is around the current share of current consumption: 58.5% LDVs, 38% HDVs, 3.5% two- and three-wheelers

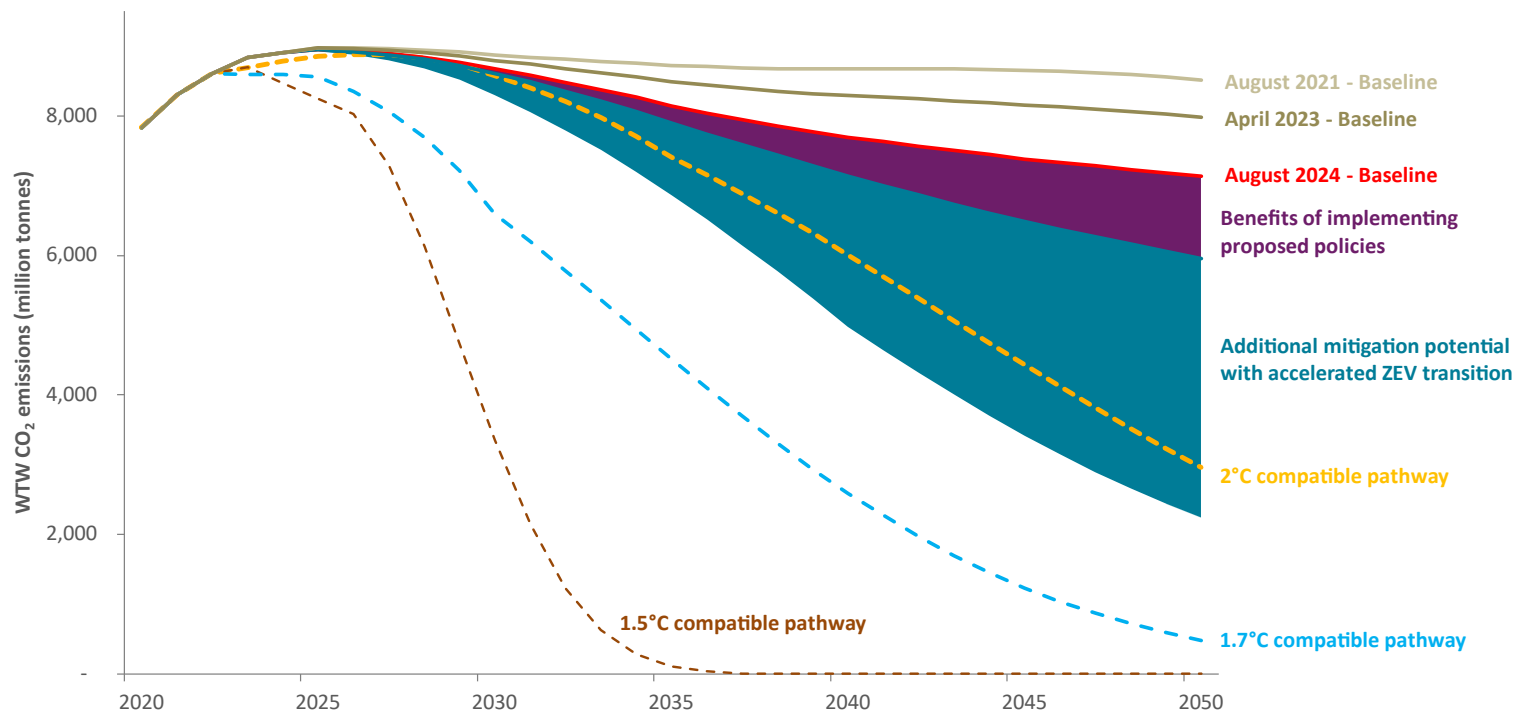
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Liquid fuels demand reductions relative to the September 2021 Baseline



- Over time, and especially in the Momentum and Ambitious scenarios, the liquid fuels savings shift increasingly to HDVs

The pathway to put global on-road transport on a 2°C-compatible emissions trajectory is challenging, but policies continue to shrink the gap.



Source: ICCT, *Vision 2050: Update on the Global Zero-Emission Vehicle Transition in 2023*, September 2023, plus updates to analysis done in September 2024

Data and methodology updates



Sales, stocks and mileage updates

Sales, stocks, and scrappage updates

- **EU** (ACEA, ACEM, IHS, IEA 2024 database)
- **USA** (MOVES4)
- **China** (VECC and China Statistical Yearbook)
- **India** (IEM, other literature)
- All other regions (IEA MoMo, UNEP used vehicle trade database)

Mileage limits

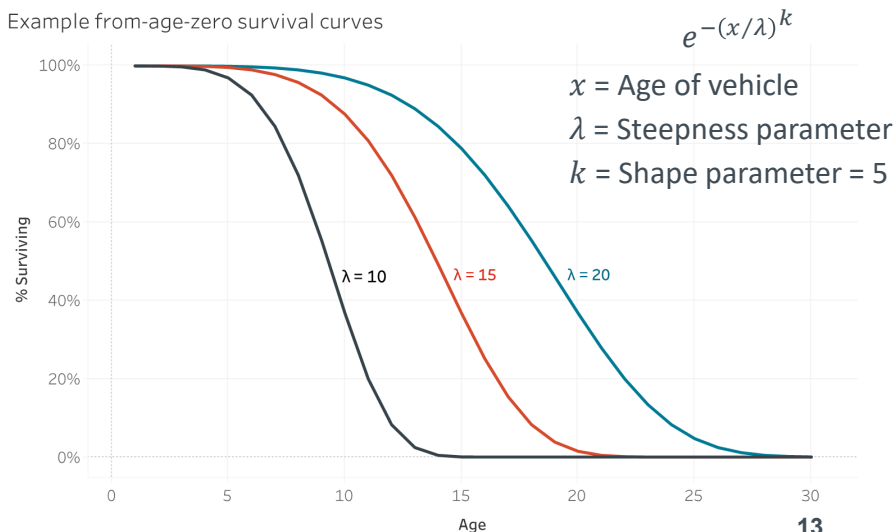
Limit	MC	PC	LCV	Bus	MDT	HDT
Lower Limit	1,700	5,000	7,300	8,000	10,700	14,800
Upper Limit	16,400	27,700	43,000	58,000	66,000	87,000

Scrappage curve limits

Upper and lower limits on survival steepness parameter
(age at which 40% of vehicles remain in the fleet)

Limit	MC	PC	LCV	Bus	MDT	HDT
Upper limit	15	28	28	24	28	28
Lower limit	9	15	7	13	13	11

Example from-age-zero survival curves



Projections of new EV sales shares

- Previous Global ZEV assessments were based on regulatory requirements for all markets, and assumed very conservative EV sales growth beyond these, except those where market assessments were very robust (North America and EU)

Cars and vans – EV projections, 9/2023

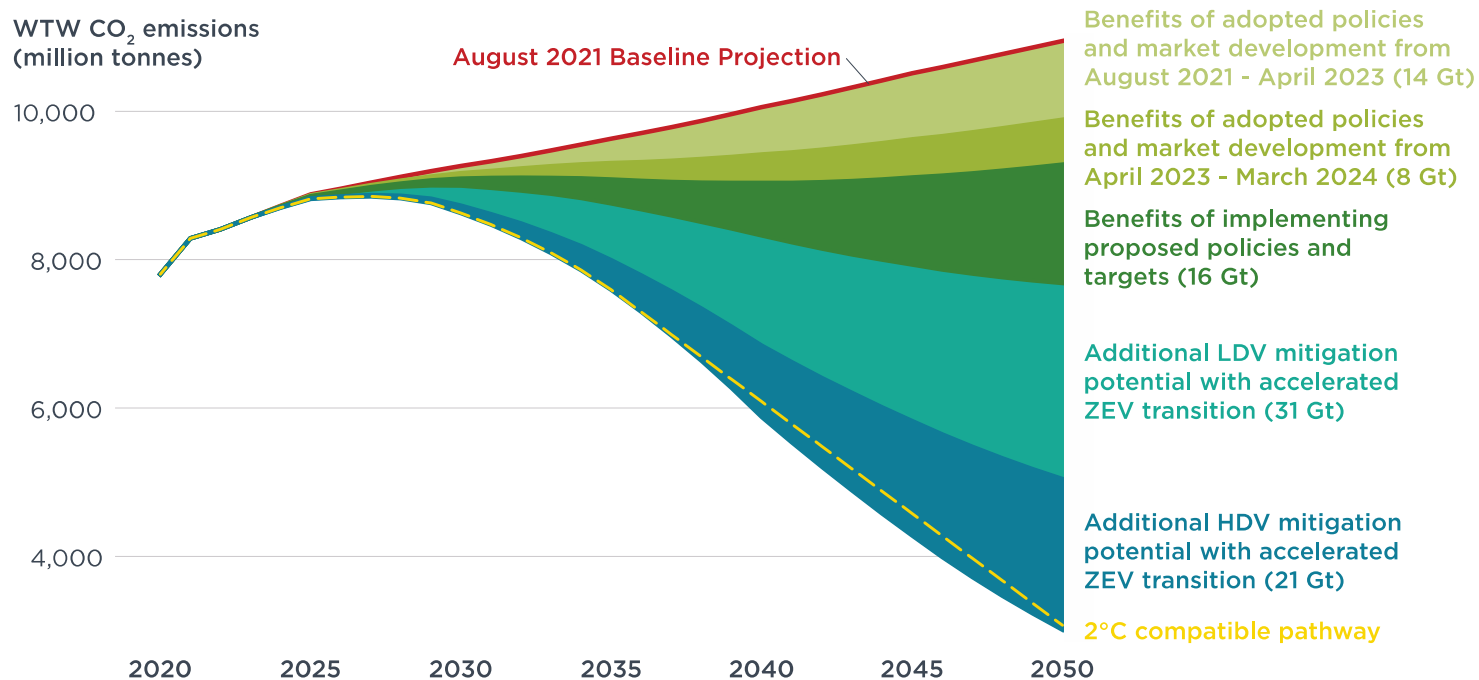
Cars and vans – EV projections, 9/2024

Vehicle activity projections (annual km traveled) – example of passenger cars

Thank You!



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