Driving Progress on the Zero-Emission Vehicle Transition

COP29 PROGRESS UPDATE

Acknowledgments

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The Road to Zero

The global push towards a sustainable future hinges on the decarbonization of key emitting sectors, with road transport standing at the forefront of this challenge.

Current estimates attribute 21% of global CO_2 emissions from burning fossil fuels to transportation.[1] While cars, trucks, and other road vehicles contribute the largest share of these emissions, zero-emission vehicle (ZEV) technologies offer a promising pathway forward.[2] This second edition of the COP Progress Update explores the increasing role ZEVs play towards achieving the Paris Agreement climate goals and decarbonizing road transport, delving into the progress made by diverse stakeholders over the last year.

The global transition to ZEVs has demonstrated considerable progress towards a sustainable future since COP28, however, to align with the Paris Agreement's objective of limiting global warming to well below 2 °C, an accelerated transition is critical. Adopted and proposed policies, as well as announced ZEV targets, are projected to push the road transport sector almost halfway towards a Paris-compatible CO_2 emissions trajectory compared to 2021. Achieving this trajectory will require reaching 100% ZEV sales for new light-duty vehicles in major markets by 2035 and for new medium- and heavy-duty vehicles by 2040, with other countries following suit within a 5- to 10-year timeframe. An accelerated global ZEV transition coupled with complimentary measures, including avoid-and-shift policies, maximizing the efficiency of new internal combustion vehicles, and decarbonizing the electricity and hydrogen used in zero-emission vehicles, will bring us closer to a well-below 2 °C emissions pathway.

A multi-pronged approach is essential to accelerate the ZEV transition. To meet climate goals, governments must implement robust policies and regulations that incentivize ZEV adoption, including financial incentives, vehicle performance standards, and infrastructure investments. Businesses must accelerate the development and deployment of ZEV technologies, while also investing in research and development to drive further innovation.

Progress Toward a Paris-Aligned ZEV Transition

54
countries

representing 30% of global light-duty vehicle sales, have adopted binding policies or set voluntary commitments to achieve 100% ZEV sales on a Paris-aligned timeline.

38
countries

representing 27% of global medium- and heavy-duty vehicle sales, have set voluntary commitments to achieve 100% ZEV sales on a Paris-aligned timeline.

The global push towards ZEV adoption is gaining momentum, driven by a network of international initiatives dedicated to accelerating progress. These initiatives are making significant strides in establishing coordinated targets, developing effective implementation strategies, and providing crucial support to their members.

These initiatives include:

- EV100
- EV100+
- First Movers Coalition trucking commitment
- Fleet Electrification Coalition, under the Sustainable Freight Buyers Alliance
- Global Memorandum of Understanding on Zero-Emission Medium- and Heavy-Duty Vehicles
- Zero-Emission Government Fleet Declaration
- Zero Emission Vehicles Declaration

Building on last year's update, this report highlights successful case studies from diverse stakeholders—including governments, automakers, truck manufacturers, and fleet owners and operators—to showcase the tangible impact of these initiatives and their contributions towards a Paris-aligned emissions pathway.

Global ZEV Progress

In a continuation of momentum since COP28, governments have made significant strides in phasing out internal combustion engine vehicles and enacting policies to solidify these commitments. Notably, recent policy developments show a growing momentum towards ZEVs, with leading governments setting sales requirement timelines and implementing regulations to significantly reduce CO_2 emissions from road vehicles.

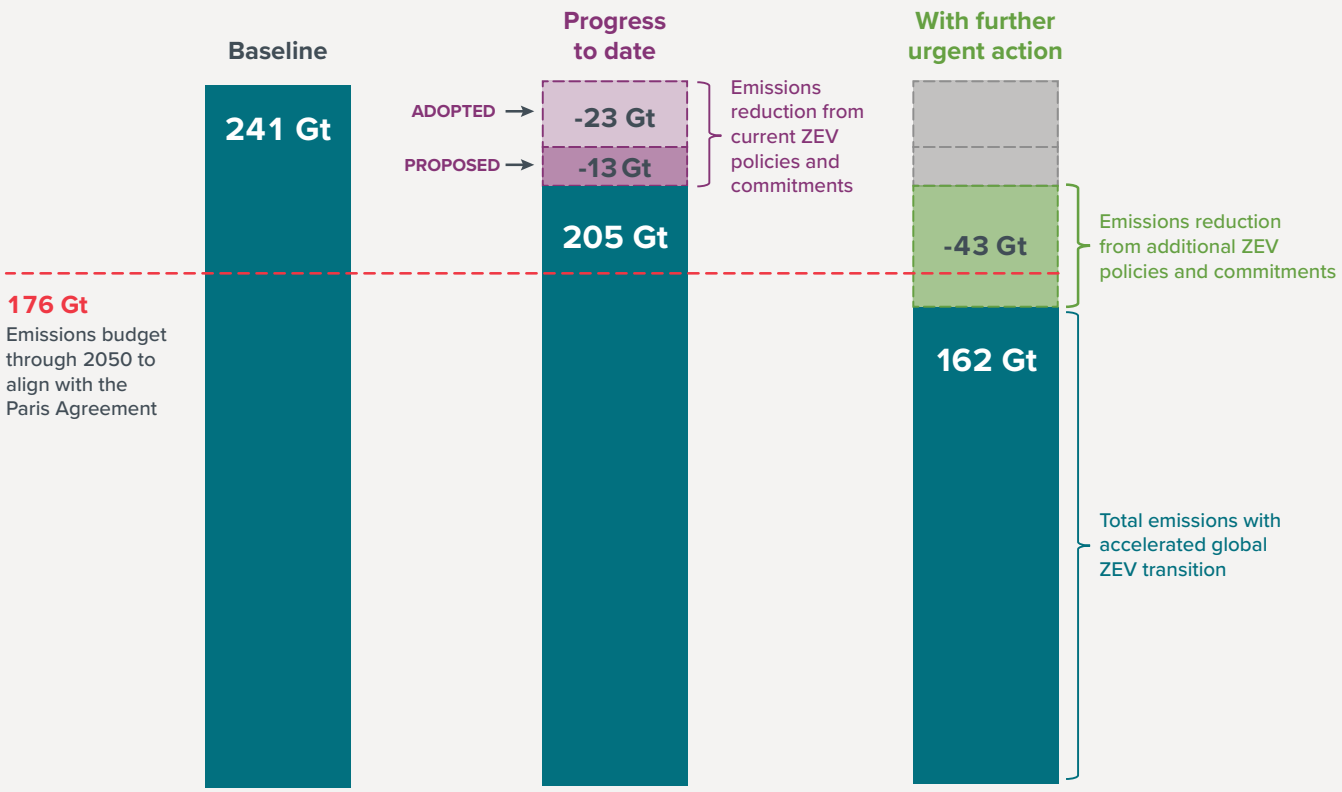
In late 2023, Canada adopted a ZEV regulation that requires all new cars and light trucks sold in the country to be zero emission by 2035.[3] The rule is expected to slash CO_2 emissions from light-duty vehicles by 82% by 2050 compared to 2020 levels, based on modeling by the International Council on Clean Transportation.[4] Meanwhile, the United Kingdom adopted a new ZEV mandate, which sets targets for car and van manufacturers to increase their sales of ZEVs.[5] The targets start at 22% of car sales and 10% of vans sales in 2024, rising to 80% for cars and 70% for vans in 2030.

Signaling global ambition towards cleaner technologies, the world's largest vehicle markets have introduced new stringent rules to reduce greenhouse gas emissions from road transport. Earlier this year, the United States strengthened its federal greenhouse gas emission standards. By 2032, light-duty vehicles must cut CO_2 emissions by 50%, while medium-duty vehicles must reduce emissions by 40%, compared to 2027.[6] The United States has also set new targets for heavy-duty vehicles, including a 25% reduction in emissions for sleeper cabs and a 60% reduction for light-heavy vocational vehicles. Similarly, the European Commission finalized new CO_2 emissions standards for heavy-duty vehicles, requiring a 45% reduction by 2030, 65% by 2035, and 90% by 2040.[7]

These and other adopted policies, along with other market developments, are expected to avoid nearly 23 gigatons (Gt) of CO_2 emissions between 2024 and 2050 (Figure 1).[8] Furthermore, proposed policies and voluntary ZEV targets, if implemented, could lead to additional CO_2 reductions of up to 13 Gt between 2024 and 2050. These include proposed updates to vehicle performance standards, ZEV sales requirements, and international commitments like the Zero Emission Vehicles Declaration and the Global Memorandum of Understanding on Zero-Emission Medium and Heavy-Duty Vehicles (Global MOU).

Figure 1. Progress towards a Paris-aligned ZEV transition

Cumulative well-to-wheel CO_2 transportation emissions (Gt) projected from 2024 to 2050



Red line indicates 2023–2050 carbon budget from IPCC Sixth Assessment Report, assuming 67% likelihood and 21% share of all emissions from road vehicles.
The baseline scenerio accounts for the projected effects of policies as of August 2021 and anticipated market development affecting ZEV sales through 2050.

Accelerating the transition to zero-emission vehicles in road transport offers a major opportunity to achieve Paris Agreement goals. By setting and achieving additional commitments and policies in countries that have not yet adopted Paris-aligned ZEV policies, an additional 43 Gt of CO_2 emissions could be avoided through 2050. Achieving this accelerated ZEV transition scenario could put road transport on an emissions pathway compatible with limiting warming to under 2 °C.[9]

The ZEV Declaration and the Global MOU offer a framework for countries to align behind a single phase-out target for both light and heavy-duty vehicles. Aligning efforts across various initiatives could establish a shared vision and catalyze a swift industry-wide shift in investments and drive down ZEV costs more rapidly. As a result, emerging and developing economies, with targeted support, could experience a more seamless transition to ZEVs, ultimately paving the way for a truly inclusive global transition.

Leading the Way: Highlights from Initiatives

EV100

Commitment

Transition 100% of their owned and contracted fleets up to 3.5t and 50% of their fleet between 3.5 and 7t to electric vehicles and install charging infrastructure for employees and customers by 2030.

Highlights

- 636,019 EVs have been deployed by members in 71 markets worldwide, including 231,411 in the last year.
- Members, advocating for a 2035 deadline for zero-emission cars and vans, oppose attempts to weaken the targets and seek to prevent early revision of the EU Regulation. 2019/631 on CO_2 emission standards.
- Members are actively engaging with policymakers in the European Union, India, Japan, the United Kingdom, and the United States, advocating for strong emission standards and supporting the transition to ZEVs.

EV100+

Commitment

Procure only zero-emission medium-duty vehicles by 2030 and a full deployment of zero-emission medium- and heavy-duty vehicles by 100% by 2040.

Highlights

- Members have committed to electrifying 90,000 heavy-duty vehicles globally.
- Successfully advocated for stricter CO_2 standards for HDVs in the EU Regulation 2024/1610 and the inclusion of electric trucks in India's PM E-drive scheme.

First Movers Coalition

Commitment

Trucking owners and operators commit to making at least 30% of their purchases of new heavy-duty trucks, along with 100% of their purchases of new medium-duty trucks, zero-emission by 2030.

Retailers and manufacturers commit to requiring that all their trucking service providers also make at least 30% of their heavy-duty and 100% of their medium-duty new truck purchases zero-emission by 2030.

Highlights

- Increased membership to 101 in 2024, bringing on two new trucking sector members.
- Wallenius Wilhelmsen joined the Coalition, pledging to power 5% of its deep-sea shipping operations and 30% of new truck purchases with zero-emission technology.
- Holcim, a trucking-sector member, will add 1,000 electric Mercedes-Benz trucks to its European fleet, aiming for a 24% reduction by 2030.

Fleet Electrification Coalition

Commitment

At least 30% of sales of new medium- and heavy-duty vehicles are electric by 2030 in Europe, China, India, and the United States.

Highlights

- Launched shipper-led consortiums and completed successful pilots, focusing on key corridors in the United States (I-90), Poland, the Port of Rotterdam, Kenya (Northern Corridor), and China. These efforts will enable rapid project scaling and replication.
- Secured commitments from major shippers for nearly 80,000 electric trucks by 2030 and rallied shipper support for stricter EU CO_2 emissions standards for HDVs.
- Established a data partnership with 25 shippers in India to pinpoint electric truck applications approaching total cost of ownership parity, supporting upcoming medium- and heavy-duty vehicle efficiency standards.

Electric truck model; courtesy of David Park, Uplifted Visuals. Global MOU countries and endorsers at the Global Summit; courtesy of CALSTART. EV charging station in Delhi, India; courtesy of the World Bank.

Global MOU

Commitment

100% zero-emission new truck and bus sales by 2040 with an interim goal of 30% zero-emission vehicle sales by 2030.

Highlights

- Signatories include 36 national governments, 174 subnational governments, fleet owners, manufacturers and suppliers, utility and infrastructure providers, and financial institutions.
- Eight national governments have joined since COP28, marking momentum among small island nations.
- The Zero-Emission Vehicle Island Taskforce was launched to tackle unique barriers faced by island nations in adopting ZEVs through collaborative problem-solving and capacity building.

ZEV Declaration

Commitment

100% zero-emission vehicle sales for cars & vans by 2035 in leading markets and 2040 globally.

Highlights

- Since COP28, Colombia, Nigeria, and Costa Rica have signed the ZEV Declaration, signaling momentum from emerging markets to electrify their light-duty fleets.
- Türkiye achieved an 805% increase in electric vehicle sales between 2022 and 2023, driven by fiscal incentives and the launch of its domestically produced electric car.
- Chinese manufacturer and signatory BYD achieved a milestone by selling 3 million electric vehicles in 2023.

Zero-Emission Government Fleet Declaration

Commitment

100% zero-emission civil government-owned and -operated light-duty fleets, and acquisitions of zero-emission medium-and heavy-duty vehicles, by 2035.

Electrifying the Road Ahead

Driven by an accelerating shift towards electric vehicles, the road transportation sector is undergoing a profound transformation. Governments, automakers, truck manufacturers, and fleet owners and operators are all paving the way for a zero-emission future. This section examines the key players and trends shaping the global EV markets, highlighting the significant progress being made by members of the seven key initiatives.

Governments pave the way for faster electric vehicle adoption

Governments worldwide are playing a vital role in accelerating EV adoption through a range of policies and incentives. These include regulations promoting the transition to electric vehicles, financial incentives for consumers and businesses, and charging infrastructure investments. We are at a pivotal moment in the global shift towards EVs as the market has rapidly evolved over the last decade. Sales of EVs continued to surge in 2023, with many markets reporting significant year-over-year increases, while the auto market experienced a modest recovery.

Emerging economies are becoming a major force in the global EV market, with sales experiencing rapid growth driven by government support, fuel price volatility, and increasing environmental awareness. India's EV sales grew by over 200% in 2023, driven by government incentives and expanding charging infrastructure. Several government initiatives in India, including purchase incentives under the Faster Adoption and Manufacturing of Electric Vehicles (FAME II) scheme, supply-side incentives under the Production Linked Incentive, tax benefits, and the Go Electric Campaign, have stimulated demand for EVs.

Governments worldwide play a vital role in accelerating ZEV adoption by setting high-level targets and adopting binding regulations.

Türkiye sets a record for EV sales

A signatory to the ZEV Declaration and Global MOU, Türkiye experienced a remarkable 805% growth in EV sales from 2022 to 2023, supported by fiscal incentives and the release of its first homegrown battery electric car. Türkiye is quickly emerging as a leader in electric vehicle adoption, with an EV sales share rising from 1% to 6% between 2022 and 2023.[10] This rapid growth is fueled by various factors, including the emergence of a domestic EV manufacturer, TOGG, and a suite of government policies designed to incentivize EV adoption. The national Energy Market Regulatory Agency predicts this trend will continue, with over 4.2 million EVs projected to be on the road by 2035.[11]

The government is actively encouraging EV adoption through financial incentives, including special rates on the vehicle registration tax and an exemption from value added tax. As the country has a history of high vehicle taxes, these measures are particularly impactful.

Beyond consumer incentives, Türkiye is investing heavily in domestic production; US$5 billion has been allocated for EV manufacturing and US$4.5 billion for battery production.[12] TOGG has received substantial government support, including loans and tax breaks, streamlined processes for permits and licenses, and guaranteed public fleet purchases.

Türkiye's commitment extends to international partnerships. The development of a $1 billion BYD assembly plant, targeting 150,000 vehicles annually by 2026, was announced in July 2024.[13] The plant aims to serve both domestic and European markets.

Türkiye's nascent success story offers a key example of the potential for rapid EV adoption in emerging markets through supportive policies, domestic production, and strategic partnerships. Its progress will be closely watched as a model for an accelerated ZEV transition globally.

Several countries are actively addressing key market barriers to EV adoption by focusing on charging infrastructure deployment and reliability standards. Paraguay's National Electric Mobility Strategy sets clear targets for deploying ultra-fast chargers along major highways and in strategic locations to significantly reduce charging times and expand the accessibility of EV charging nationwide.[14] France aims to install 7 million charging stations by 2030, including a significant number of public AC and DC chargers, backed by €200 million in government funding.[15]

New Zealand released its charging infrastructure strategy to support its ambitious emission reduction targets.[16] The strategy outlines a collaborative approach to establishing a comprehensive and accessible charging network nationwide, aiming to address barriers hindering widespread EV adoption, ensuring equitable access for all communities, and

future-proofing the infrastructure for emerging technologies. By enabling convenient and reliable EV charging, the strategy supports New Zealand's transition to a low-emission transport future.

Automakers are expanding their global reach and electrifying the light-duty vehicles

Driven by a surging demand for electric vehicles, major automakers are spearheading a global shift towards zero-emission light-duty vehicles. Key players like BYD, Ford, GM, Jaguar Land Rover, Mercedes-Benz, and Volvo Cars—all signatories to the ZEV Declaration—have committed to ambitious electrification targets, investing heavily in research, production, and new markets.

This transition, however, is not without its challenges. Automakers face hurdles related to supply chain disruptions, evolving battery technologies, and scaling up production. Despite these obstacles, the long-term commitment to electric mobility remains strong, signaling a promising future for EVs and a declining reliance on internal combustion engines.

BYD's global footprint

Chinese automaker BYD, which specializes in electric vehicles, has emerged as a global leader in the EV market, achieving success through a strategic blend of innovation, vertical integration, and a focus on global expansion. A signatory to the ZEV Declaration and endorser of the Global MOU, the automaker sold 3 million EVs worldwide in 2023, a testament to its commitment to electrification.[17] The company's success is largely attributed to its focus on emerging markets, where it witnessed a 334% surge in exports from 2022 to 2023. BYD's EVs are now available in 70 countries across 6 continents.

BYD's global expansion strategy is multifaceted, encompassing strategic partnerships and overseas manufacturing facilities. In 2023 BYD announced a $1.2 billion investment in a new factory in Brazil, marking its entry into South America.[18] The automaker also opened a new factory in Thailand, aiming to produce 150,000 EVs annually, and established a manufacturing facility in India focusing on producing electric buses and passenger cars.[19] These investments reflect BYD's commitment to serving regional markets with locally produced EVs, especially in emerging markets where the demand is growing.

Beyond manufacturing, BYD is actively partnering with local companies to establish a comprehensive charging network. This includes investments in Europe, where BYD is collaborating with local partners to install charging stations to service 100,000 EV customers across the continent.[20] In Brazil, BYD is collaborating with local partners to install 600 new fast charging points in eight major cities.[21]

Truck manufacturers and fleet operators: Electrifying medium- and heavy-duty transport

The electrification of commercial vehicles is a pivotal component of the global transition towards ZEVs. Many leading corporations are actively engaging in offtake agreements and strategic investments to facilitate the widespread adoption of zero-emission truck technologies. Key examples include the agreement between Holcim and Mercedes Benz for 1,000 electric trucks to be used in its European operations, the collaborative partnership of Heidelberg and Volvo Trucks to deploy electric trucks across their Northern European operations, and Agility's pre-order of 1,000 Hyliion electric trucks to lower its carbon footprint and deliver cost savings.[22] Agility, Holcim, Mercedes, and Volvo Trucks are all founding members of the First Movers Coalition.

While the transition to electric trucks offers significant environmental and economic benefits, high upfront costs and limited charging infrastructure present challenges to widespread adoption in emerging markets and developing economies. However, a wave of innovative pilot projects demonstrates the potential to overcome these challenges and pave the way for a cleaner future for freight transport.

Highlighting the power of collaboration, India's burgeoning electric truck market is witnessing the launch of a pilot project spearheaded by EV100+ members JSW Steel, IKEA, and Flipkart.[23] The project advances the adoption of electric trucks in routes with a high concentration of fleet vehicles, underscoring the vast potential for growth and innovation within the commercial vehicle segment in emerging economies. Zeronox and the Jospong Group of Companies are showcasing the viability of retrofitting existing diesel fleets with electric powertrains aimed at achieving substantial cost savings and emission reductions in the process.[24]

The ZEVWISE initiative is another example of a collaborative effort to decarbonize the freight industry. Spearheaded by CALSTART's Drive to Zero program and the government of the Netherlands, ZEVWISE acts as a catalyst, fostering international cooperation to establish green freight corridors and accelerate the adoption of ZEVs worldwide.

Collaborative and innovative partnerships advance the adoption of electric heavy-duty vehicles and pave the way for cleaner freight transport.

ZEVWISE: A global catalyst for green freight corridors

Green freight corridors, characterized by dedicated freight routes equipped with robust charging and refueling infrastructure, supportive policies, and innovative financing mechanisms, are crucial to decarbonizing freight transportation.[25] Deploying these corridors requires addressing several challenges, including insufficient infrastructure, economic barriers, and a lack of harmonized regulations, incentives, and standards across jurisdictions. The ZEVWISE initiative aims to develop at least ten green corridors by 2026, leveraging the power of public-private partnerships to overcome these barriers that have hindered ZEV adoption in the freight sector.

The FIFA Corridor, spanning from Canada through the United States to Mexico, is a compelling example of advancing green freight solutions.[26] In a joint effort, the U.S. Department of Transportation, in collaboration with the Canadian and Mexican governments, plans to leverage this vital trade route to establish North America's first tri-national EV charging corridor by 2026, coinciding with the Federation Internationale de Football Association (FIFA) World Cup. ZEVWISE employs sophisticated mapping and data analytics to strategically pinpoint optimal locations for charging and refueling infrastructure along the corridor, ensuring alignment with existing freight flows and logistical hubs. The initiative also actively facilitates public-private partnerships to develop and operate financially viable charging networks. Beyond infrastructure, they work with governments to streamline regulations, incentivize EV adoption, and harmonize standards, cultivating a policy environment that attracts long-term investment in green freight corridors.

The success of the FIFA Corridor will serve as a replicable model for green freight corridors worldwide. The initiative is already actively involved in developing corridors in other regions, including the African Continental Free Trade Area and South Asia. By facilitating the sharing of best practices, fostering knowledge exchange, and promoting technology transfer, ZEVWISE aims to accelerate the global transition to zero-emission freight.

The ZEVWISE initiative, spearheaded by CALSTART's Drive to Zero program and the government of the Netherlands, acts as a catalyst to foster international cooperation dedicated to decarbonizing the global freight industry. By establishing collaborative frameworks, embracing data-driven planning, and actively shaping supportive policy environments, ZEVWISE is creating a replicable model for the development of green freight corridors globally. The successful implementation of these corridors holds the potential to significantly reduce the greenhouse gas emissions from freight transport and unlock significant economic opportunities, ultimately paving the way for a sustainable future for all.

Accelerating towards a zero-emission future

Driven by a convergence of government action, industry innovation, and collaborating initiatives, the global transition to ZEVs is accelerating. Stories from across the transportation value chain, and from a range of stakeholders, highlight the significant strides made since COP28 and demonstrate a clear shift towards a future where ZEVs dominate our roads.

Government policies are playing a crucial role in creating favorable conditions for ZEV adoption. Ambitious ZEV targets, robust regulations and standards, financial incentives, and strategic investments in charging infrastructure are shaping a market increasingly conducive to electric vehicles. Emerging economies are becoming key drivers of this transition, showcasing the transformative potential of supportive policies and domestic manufacturing.

Automakers are responding to this evolving landscape with unprecedented investments in electric vehicle development and production. Leading manufacturers are not only expanding their electric model lineups, but are also actively phasing out internal combustion engine production, signaling a definitive shift towards an electric future.[27]

The electrification of medium- and heavy-duty vehicles is gaining significant traction. Truck manufacturers, fleet owners, and operators are increasingly embracing electric trucks, driven by their environmental benefits and long-term economic advantages.[28] Innovative business models like equipment-as-a-service (EaaS) are addressing upfront cost barriers, making electric trucks a more accessible option for businesses of all sizes.

The Paris Agreement hinges on global commitment to decarbonization, and the transportation sector plays a critical role in achieving this objective. An accelerated transition to ZEVs presents an unparalleled opportunity to create a cleaner and healthier world. Continued collaboration and accelerated action are essential to realizing this vision.

The Paris Agreement hinges on global commitment to decarbonization and the transportation sector plays a critical role in creating a healthier world.

At COP28, Breakthrough Agenda governments called on the leading initiatives highlighted in this report to continue working toward setting common and coordinated targets and to send a global collective market signal in support of a ZEV transition aligned with Paris Agreement goals. They nominated the Accelerating to Zero Coalition to coordinate across the initiatives and to review and communicate progress at COP29.

ABOUT THE BREAKTHROUGH AGENDA

The Breakthrough Agenda, launched at COP26, convenes initiatives and countries to strengthen international collaboration by providing a framework to prioritize, coordinate, and enhance collaborative action across seven high emitting sectors: power, road transport, steel, hydrogen, agriculture, buildings, and cement, and concrete. It is currently endorsed by 59 countries and more than 150 international initiatives working at both the governmental and non-state actor levels. Countries participating in the Road Transport Breakthrough have collectively set a goal of making ZEVs the new normal: accessible, affordable, and sustainable in all regions by 2030.

The Breakthrough Agenda's annual cycle is informed by annual independent expert reports. The 2024 reports have been written by the International Energy Agency (IEA), UN High Level Climate Champions, and CGIAR. The reports provide an assessment of progress made in each Breakthrough sector and recommends opportunities to strengthen international collaboration to accelerate progress towards the Breakthrough goals.

The latest Breakthrough Agenda reports, released in October 2024, identified the alignment of the pace of the ZEV transition across all vehicle segments as critical for strengthening international collaboration. This implies agreement across governments on a Paris-aligned timeline by which all sales of new road vehicles should be zero-emission. These timelines would be backed by interim targets and implementation plans by 2030 and 2035, while the industry commits to the same timeline for vehicle production. Such alignment would help achieve a faster shift in investment globally throughout the industry, accelerating reductions in the cost of ZEVs.

Learn more: www.breakthroughagenda.org

Endnotes

[1] International Energy Agency, "Transport Tracking Transport Emissions Data," 2024, https://www.iea.org/energy-system/transport. Note: IEA accounts for CO_2 emissions from fossil fuel combustion.

[2] International Energy Agency, "Global CO_2 Emissions from Transport by Sub-sector in the Net Zero Scenario, 2000-2030," accessed August 25, 2024, https://www.iea.org/data-and-statistics/charts/global-co2-emissions-from-transport-by-sub-sector-in-the-net-zero-scenario-2000-2030-2.

[3] Regulations Amending the Passenger Automobile and Light Truck Greenhouse Gas Emission, Regulations: SOR/2023-275," Canada Gazette, II, Vol. 157, 26, December 15, 2023, https://www.gazette.gc.ca/rp-pr/p2/2023/2023-12-20/html/sor-dors275-eng.html.

[4] Arijit Sen and Josh Miller, Vision 2050: Update on the Global Zero-Emission Vehicle Transition in 2023 (International Council on Clean Transportation, 2023), https://theicct.org/wp-content/uploads/2023/09/Global-ZEV-update_final.pdf.

[5] UK Department for Transport, "Zero Emission Vehicle (ZEV) Mandate Consultation: Summary of Responses and Joint Government Response," accessed August 26, 2024, https://www.gov.uk/government/consultations/a-zero-emission-vehicle-zev-mandate-and-co2-emissions-regulation-for-new-cars-and-vans-in-the-uk/outcome/zero-emission-vehicle-zev-mandate-consultation-summary-of-responses-and-joint-government-response.

[6] U.S. Environmental Protection Agency, "Regulations for Greenhouse Gas Emissions from Passenger Cars and Trucks," accessed August 26, 2024, https://www.epa.gov/regulations-emissions-vehicles-and-engines/regulations-greenhouse-gas-emissions-passenger-cars-and#:~:text=The%20final%20rule%20builds%20upon,model%20years%202023%20through%202026%2C.

[7] European Commission, "Revised CO_2 Emission Standards for Heavy-Duty Vehicles [press release]," May 13, 2024, https://ec.europa.eu/commission/presscorner/detail/en/qanda_24_2527.

[8] This is based on the ICCT's modeling update on the global zero-emission vehicle transition in 2024.The update incorporates adopted and proposed policies and international commitments through August 2024, while also updating expectations of ZEV uptake based on recent market developments and projected dates of total cost of ownership and purchase price parity. The analysis utilizes version 2.6 of ICCT's Roadmap model, which includes revised activity projections based on recent trends, particularly for major markets like China and India, and updated historical data through 2023. This edition also considers baseline and mitigation scenarios for 2- and 3-wheelers in addition to cars, vans, buses, and trucks. Arijit Sen and Josh Miller, Vision 2050: Update on the Global Zero-Emission Vehicle Transition in 2024 (International Council on Clean Transportation, In press).

[9] Prior research has found that a well-below 2 °C trajectory for road transport is achievable by combining such an accelerated global ZEV transition with complementary measures, including avoid-and-shift policies, maximizing the efficiency of any new internal combustion vehicles, accelerating fleet renewal, and decarbonizing the electricity and hydrogen used in zero-emission vehicles. Arijit Sen, Josh Miller, Gabriel Alvarez, and Patricia Ferrini Rodrigues, Vision 2050: Strategies to align global road transport with well below 2 °C (International Council on Clean Transportation, 2023), https://theicct.org/publication/vision-2050-strategies-to-reduce-gap-for-global-road-transport-nov23/.

[10] EV Volumes, Light-duty vehicle sales [dataset], accessed January 24, 2023. https://ev-volumes.com/.

[11] The Energy Market Regulatory Agency, "Electric Vehicle and Charging Infrastructure Projections," April 4, 2024, https://www.epdk.gov.tr/Detay/Icerik/4-14379/elektrikli-arac-ve-sarj-altyapisi-projeksiyonu-.

[12] Carla Westerheide, "Turkey Plans to Invest Billions in EV and Battery Production," Electrive, July 29, 2024, https://www.electrive.com/2024/07/29/turkey-plans-to-invest-billions-in-ev-and-battery-production/.

[13] Carla Westerheide, "BYD Plans to Build EVs in Turkey from 2026," Electrive, July 9, 2024, https://www.electrive.com/2024/07/09/byd-plans-to-build-evs-in-turkey-from-2026/.

[14] BN Americas, "Paraguay's National Electric Mobility Strategy-ENME is Now Underway [press release]," March 30, 2023, https://www.bnamericas.com/en/news/paraguays-national-electric-mobility-strategy-enme-is-now-underway.

[15] Government of France, "Déploiement Des Bornes De Recharge: En Route Pour 2030! [Deployment of Charging Stations: On the way to 2030!]," October 27, 2023, https://www.info.gouv.fr/upload/media/content/0001/07/f74b604a7c975bf6f83c6d28656df3a96ee485b1.pdf.

[16] Government of New Zealand, Charging Our Future: National Electric Vehicle Charging Strategy for Aotearoa New Zealand 2023–2035, October, 2023, https://www.transport.govt.nz/assets/Uploads/EV-Charging-Strategy.pdf.

[17] BYD, "BYD Concludes 2023 With Record 3 Million Annual Sales, Leading Global New Market," accessed August 26, 2024, https://en.byd.com/news/byd-concludes-2023-with-record-3-million-annual-sales-leading-global-nev-market/#:~:text=Leap%20in%20Export%20and%20Globalization,a%20multitude%20of%20product%20recognitions.

[18] "China's BYD Starts Construction on Manufacturing Complex in Brazil," Reuters, March 5, 2024, https://www.reuters.com/business/autos-transportation/chinas-byd-starts-construction-manufacturing-complex-brazil-2024-03-06/.

[19] "China's BYD Opens EV Factory in Thailand, First in Asia," Reuters, July 4, 2024, https://www.reuters.com/business/autos-transportation/chinas-byd-opens-ev-factory-thailand-first-southeast-asia-2024-07-04/.

[20] BYD, "BYD and Shell Partner on Charging for 100,000 Electric Vehicle Customers," April 13, 2024, https://www.byd.com/eu/news-list/BYD_and_Shell_Partner_on_Charging_for_100,000_Electric_Vehicle_Customers.html.

[21] BYD, "BYD and Raizen Power Form a Strategic Partnership to Boost Sustainable Electric Mobility in Brazil," February 4, 2024, https://www.byd.com/us/news-list/BYD-Raizen-Power-Form-Strategic-Partnership-Boost-Sustainable-Electric-Mobility-Brazil.html.

[22] First Movers Coalition, "First Movers Coalition Impact Brief," January 2024, https://www3.weforum.org/docs/WEF_First_Movers_Coalition_Impact_Brief_2024.pdf.

[23] Climate Group, "JSW Steel, IKEA and Flipkart to Pilot Electric Trucks As Part of Climate Group'sEV100+ Initiative [press release]," September 9, 2023, https://www.theclimategroup.org/our-work/press/jsw-steel-ikea-and-flipkart-pilot-electric-trucks-part-climate-groups-ev100.

[24] Zeronox, "Fleet Electrification: Jospong Group Case Study," February 2023, https://www.zeronox.com/wp-content/uploads/2023/02/Zeronox-Jospong-Case-Study-February-2023.pdf.

[25] Global Commercial Vehicle Drive to Zero, "Ten Road Corridors: Blueprint, Beacon, and Catalyst," May 24, 2024, https://globaldrivetozero.org/publication/zevwise-ze-freight-corridors-fact-sheet/.

[26] CALSTART, "CALSTART's Drive to Zero and the Netherlands Announce Latest Global MOU Signatory Nations at the International Transport Forum; ZEVWISE Global Green Corridors Initiative Launched [press release]," May 2024, https://calstart.org/global-mou-signatories-green-corridor-plan-announced-itf-2024/.

[27] Chang Shen, Ilma Fadhil, Zifei Yang, and Stephanie Searle, The Global Automaker Rating 2023: Who is Leading the Transition to Electric Vehicles? (International Council on Clean Transportation, 2023), https://theicct.org/global-automaker-rating-2023/.

[28] Hussein Basma, Claire Buysse, Yuanrong Zhou, and Felipe Rodriguez, Total Cost of Ownership of Alternative Powertrain Technologies for Class 8 and Long-Haul Trucks in the United States (International Council on Clean Transportation, 2023), https://theicct.org/publication/tco-alt-powertrain-long-haul-trucks-us-apr23/.

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