



**Global Climate  
Action Partnership**

regional leadership, global change



**CLEAN ENERGY  
SOLUTIONS CENTER**

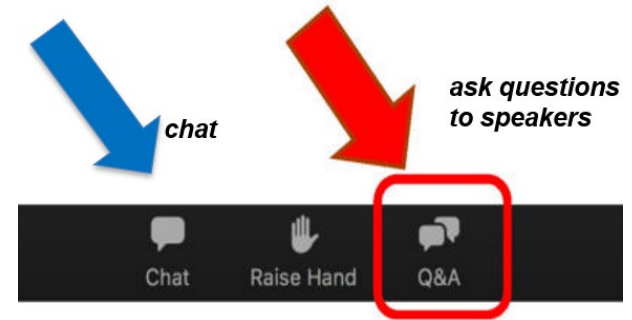
AN INITIATIVE OF THE CLEAN ENERGY MINISTERIAL

# Aligning NDCs and LTS: Transport

August 2024

# Housekeeping - Zoom

- This webinar is **being recorded** and will be shared with attendees.
- You will be **automatically muted** upon joining and throughout the webinar.
- Please use the **chat feature** to add comments and share input.
- Please use the **Q&A function** in your toolbar to ask questions.
- If you have **technical issues**, please use the chat feature to message Sophie Schrader or Holly Darrow.
- You can adjust your audio through the **audio settings**. If you are having issues, you can also dial-in and listen by phone. Dial-in information can be found in your registration email.
- You are encouraged to turn on live **closed-captions** in your preferred language. This feature can be found by clicking the “...” which shows more options.
- We will be launching a **survey** when the event ends. Your feedback is highly valuable to us!



# Agenda

- 1** GCAP and CESC Overview
- 2** Decarbonizing the Transport Sector to Meet Global Climate Targets
- 3** Quito Sustainable Mobility Project and Ecuador's NDC & LTS
- 4** High Ambition Transport Group Supporting NDC & LTS Planning and Ambition

# Speakers



Aaron Ng

U.S. Department of  
Energy



Dale Hall

The International  
Council on Clean  
Transportation (ICCT)



Carolina Chantrill

Asociación Sustentar



Paul Basantes Sánchez Sanjini Nanayakkara

The United Nations  
Office for Project  
Services (UNOPS)



Global Climate Action  
Partnership Asia  
Regional Lead



# GCAP Overview

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The Global Climate Action Partnership (GCAP) is a global network accelerating the transition to resilient and inclusive net-zero economies through innovative solutions and collaborative peer learning.



# Global Climate Action Partnership

regional leadership, global change



Launched  
in 2011



Over 4,500  
climate leaders



Peer learning,  
technical  
collaboration,  
and information  
exchange



Implementation  
of ambitious LTS  
and NDCs

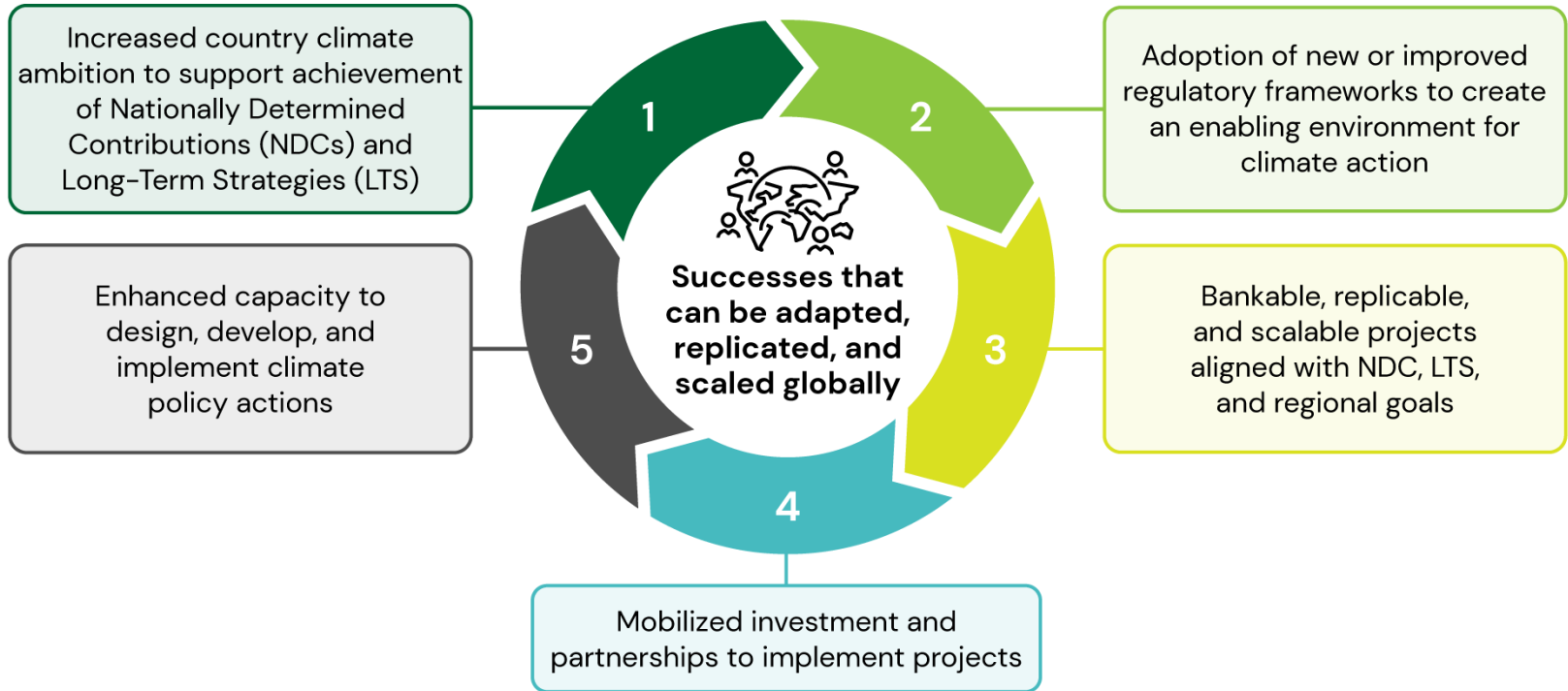


Country and  
demand-  
driven focus  
areas



Regional platforms  
in Africa, Asia,  
Latin America, and  
the Caribbean

# Mission and Impacts



Guided by a Steering Committee and Council of Leaders

### Thematic Areas



Energy



Transport



AFOLU



Finance

### Regional Platforms



**African Climate Action Partnership**

Partnering on climate action in Africa

- Sustainable Livestock Management
- Rice Methane
- Carbon Markets
- Clean Energy Mini-grids
- Soil Organic Carbon
- Long-Term Strategies



**ASIA LE DS PARTNERSHIP**

- Transport: EV batteries
- Energy: DER, Storage, Green Hydrogen
- Finance

PLATAFORMA REGIONAL

**LEDS LAC**

ESTRATEGIAS DE DESARROLLO RESILIENTE Y BAJO EN EMISIONES

- Electric Mobility
- Energy: Bioenergy, RE Storage, Renewable Energy for LAC (RELAC)
- MRV & Decarbonization Plans
- Private Sector Engagement
- Methane

# Overview of the Clean Energy Solutions Center

Clean Energy Solutions Center



# The Clean Energy Solutions Center

## OBJECTIVE

To accelerate the transition of clean energy markets and technologies.

## RATIONALE

Many developing governments lack capacity to design and adopt policies and programs that support the deployment of clean energy technologies.

## AMBITION/TARGET

Support governments in developing nations of the world in strengthening clean energy policies and finance measures

## ACTORS

### Leads:



### Operating Agent:



### Partners:

More than 40 partners, including UN-Energy, IRENA, IEA, IPEEC, REEEP, REN21, SE4All, IADB, ADB, AfDB, and other workstreams etc.

## ACTIONS

- **Deliver** dynamic services that enable *expert assistance, learning, and peer-to-peer sharing of experiences*. Services are offered at no-cost to users.
- **Foster** dialogue on emerging policy issues and innovation across the globe.
- **Serve** as a first-stop clearinghouse of clean energy policy resources, including policy best practices, data, and analysis tools.

## UPDATES

### Website:

[www.cleanenergyministerial.org/initiatives-campaigns/clean-energy-solutions-center](http://www.cleanenergyministerial.org/initiatives-campaigns/clean-energy-solutions-center)

### Factsheet:

[www.nrel.gov/docs/fy22osti/83658.pdf](http://www.nrel.gov/docs/fy22osti/83658.pdf)

**Requests:** Now accepting Ask an Expert requests!

# The Clean Energy Solutions Center



## Ask an Expert Service

- Ask an Expert is designed to help policymakers in developing countries and emerging economies identify and implement **clean energy policy** and finance solutions.
- The Ask an Expert service features a network of more than **50** experts from over **15** countries.
- Responded to **300+** requests submitted by **90+** governments and regional organizations from developing nations since inception



## Training and Capacity Building

- Delivered over **300** webinars training more than **20,000** public & private sector stakeholders.



## Resource Library

- Over **1,500** curated reports, policy briefs, journal articles, etc.



For additional information and questions, reach out to Jal Desai, NREL, [jal.desai@nrel.gov](mailto:jal.desai@nrel.gov)

# How do we decarbonize the transport sector to meet global climate targets?

Dale Hall

August 28, 2024

GCAP Webinar series

## About the ICCT and our mission

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- An independent nonprofit research organization since 2005
- Providing exceptional, objective, timely analysis to environmental regulators
- Empowering them to improve the environmental performance of transportation to benefit public health and mitigate climate change

## Our vision

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- We want global leaders to use our expert research to develop ambitious, coordinated policies to stop transportation pollution.
- We help create policy consistent with limiting warming to well below 2°C and pursuing efforts to limit warming to 1.5°C this century.



# Agenda for today

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- The big picture for decarbonizing transport
- Importance of ZEVs for decarbonizing road transport
- Where we stand in the ZEV transition
- Policies to accelerate the ZEV transition
- Solving the rest of the transport sector
  - Maritime
  - Aviation
  - Avoid and shift

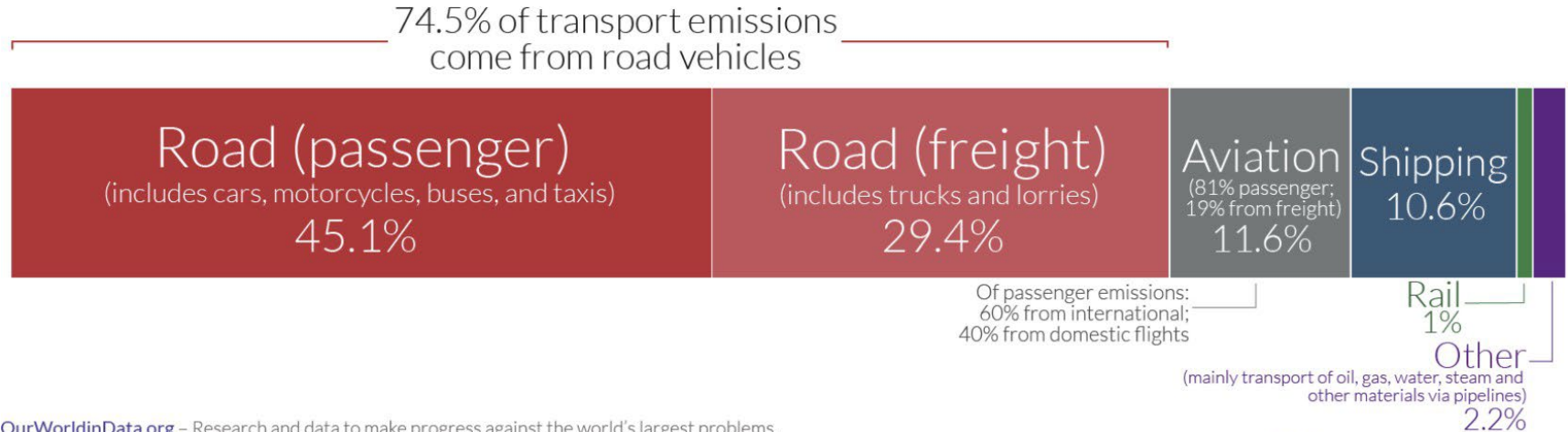
# Why do we need to decarbonize transport?

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- Transport accounts for roughly  $\frac{1}{4}$  of GHG emissions from energy globally
- Transport emissions continue to grow – tied with industry as the fastest-growing sectors from 1990–2022
- 91% of transport energy comes from oil
- Transport accounts for roughly 380,000 annual air pollution deaths

# What is the breakdown of transport sector emissions?

Light-duty vehicles represent the greatest fraction, but freight, aviation, and shipping are growing most quickly



OurWorldinData.org – Research and data to make progress against the world's largest problems.

Data Source: Our World in Data based on International Energy Agency (IEA) and the International Council on Clean Transportation (ICCT).

Licensed under CC-BY by the author Hannah Ritchie.

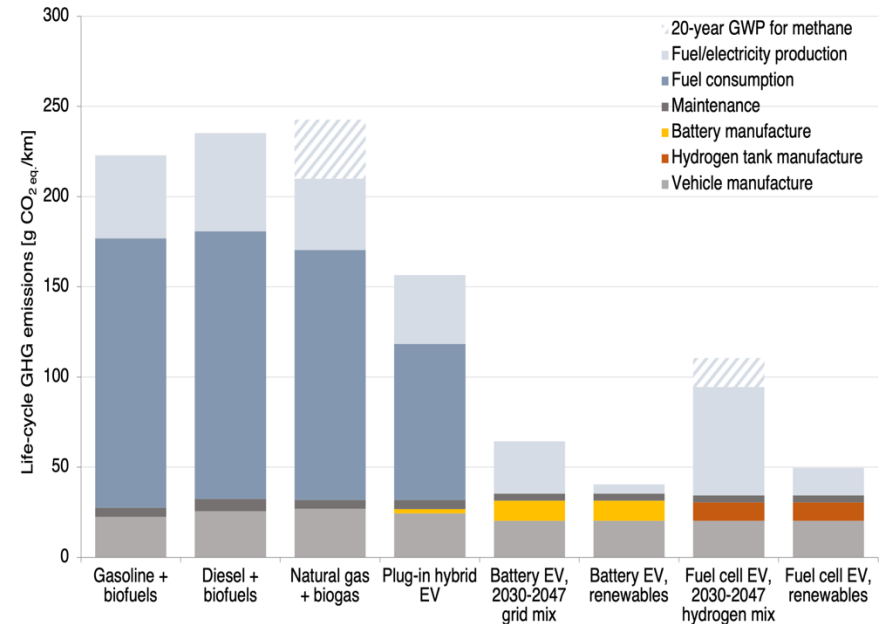
# Only battery-electric and hydrogen fuel cell vehicles have the potential to achieve near-zero GHG emissions

**There is no scalable pathway to decarbonize the internal combustion engine:**

- Current biofuels have relatively high GHG emissions and minor growth potential due to limited feedstock.
- Hybrid and plug-in hybrids achieve near-term gains but do not offer zero-emission potential.
- E-fuels offer near-zero carbon emissions, but cost parity to fossil fuels no sooner than 2050.

Even today, EVs have by far the lowest lifetime GHG emissions compared to all other technologies. As electric power becomes lower carbon, GHG emissions from electric vehicles will decline further.

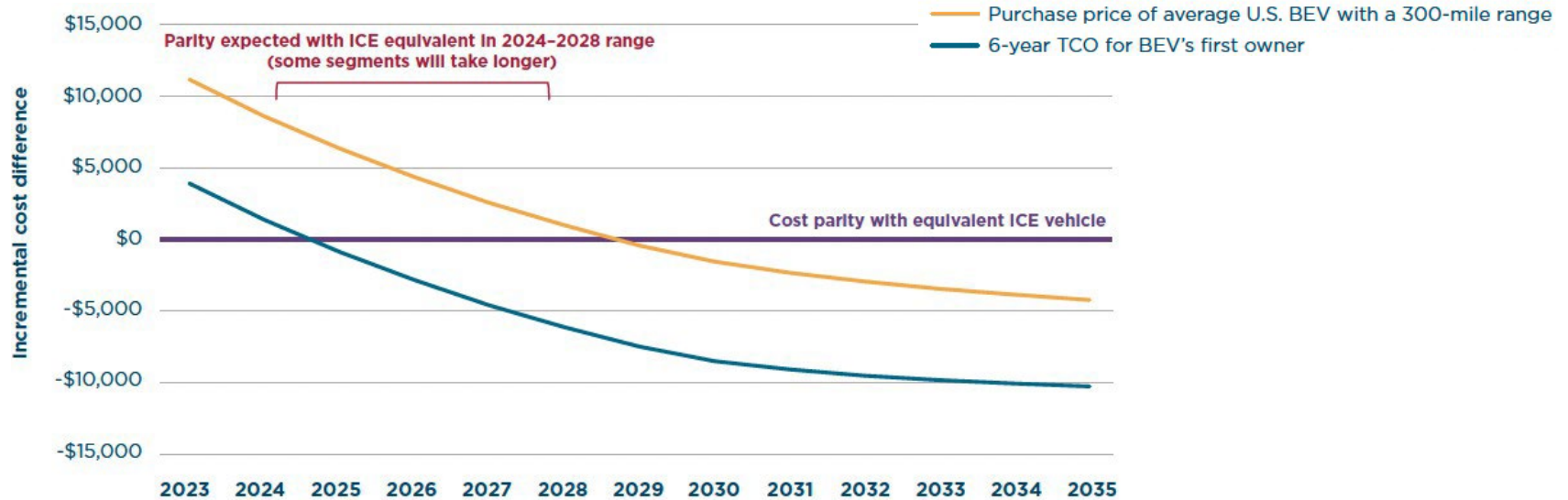
Lifecycle GHG emissions for typical passenger car sold in 2030



Source: <https://theicct.org/wp-content/uploads/2021/12/zevtc-decarbonizing-by-2050-Jul2021%E2%80%AF.pdf>

# EVs are becoming the cheapest option without incentives

Cheaper batteries, foreign competition helping to drive down costs of EVs in North America, Europe



Source: Tankou, A., Hall, D., and Slowik, P. (2024). *Adapting zero-emission vehicle incentives for a mainstream market*. ICCT. [www.theicct.org/publication/izeva-adapting-zev-incentives-for-a-mainstream-market-april24/](http://www.theicct.org/publication/izeva-adapting-zev-incentives-for-a-mainstream-market-april24/)



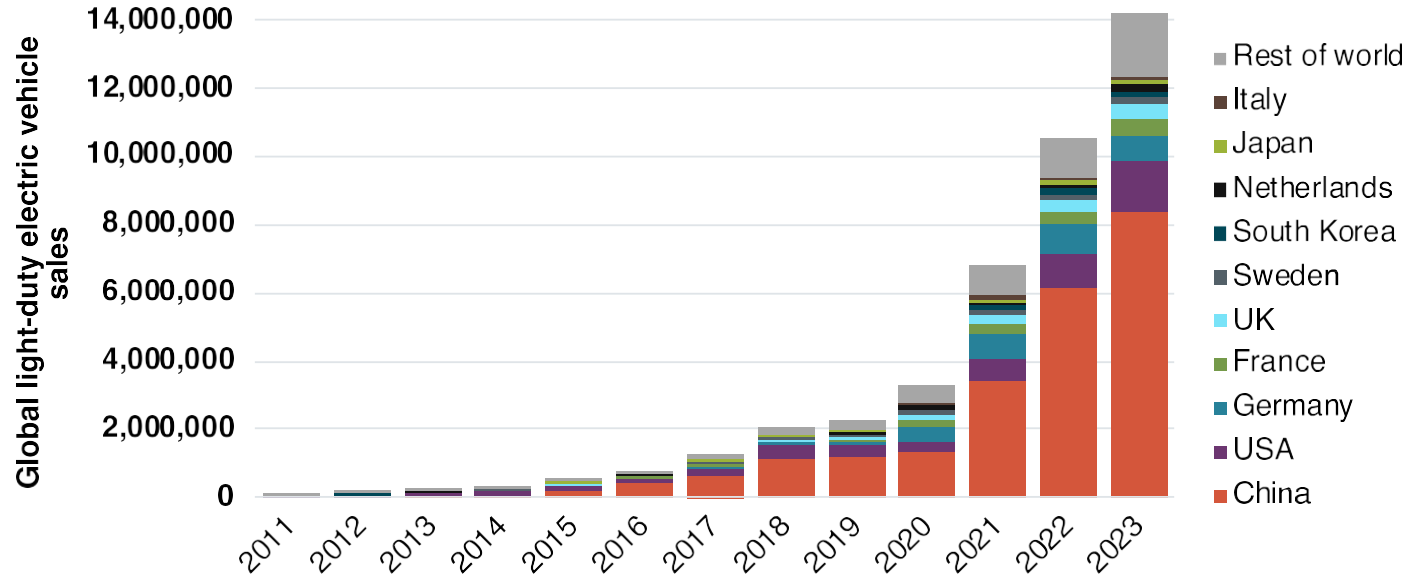
# Global ZEV sales would need to continue to accelerate dramatically to limit vehicle CO<sub>2</sub> emissions to within 2°

Global ZEV sales shares in new vehicle sales by scenario and vehicle type

|                  |               | 2023 | 2030 | 2035 | 2040 |
|------------------|---------------|------|------|------|------|
| Baseline<br>2024 | Cars and vans | 15%  | 28%  | 42%  | 43%  |
|                  | Buses         | 3%   | 16%  | 22%  | 27%  |
|                  | Trucks        | 1%   | 12%  | 17%  | 21%  |
| Ambitious        | Cars and vans | 15%  | 66%  | 89%  | 100% |
|                  | Buses         | 3%   | 71%  | 93%  | 100% |
|                  | Trucks        | 1%   | 40%  | 67%  | 98%  |

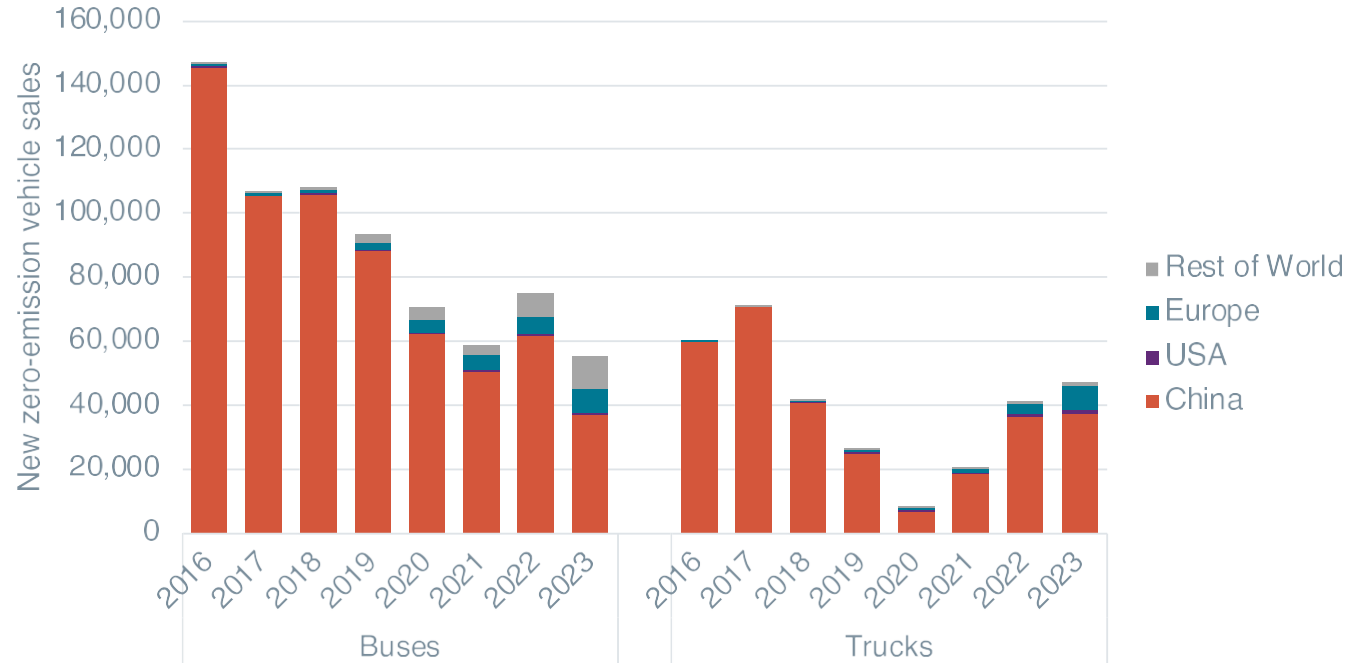
Source: ICCT, [Vision 2050: Update on the Global Zero-Emission Vehicle Transition in 2023](#), September 2023, plus updates to analysis done in April 2024

# 14.1 million global sales light-duty EV sales, more than 16% of all sales in 2023



Source: EV Volumes, ICCT, April 2023. | EV = BEV and PHEV

# China accounts for most global sales of electric trucks and buses, but other markets starting to take off



Source: EV Volumes, ICCT, April 2023

# Not just EU, US, and China: New markets becoming ZEV leaders



- **Chile:** About 2,500 electric buses in Santiago (largest electric bus fleet outside of China)



- **Jordan:** EVs represent 5–7% of total cars on the road (similar or higher than California)



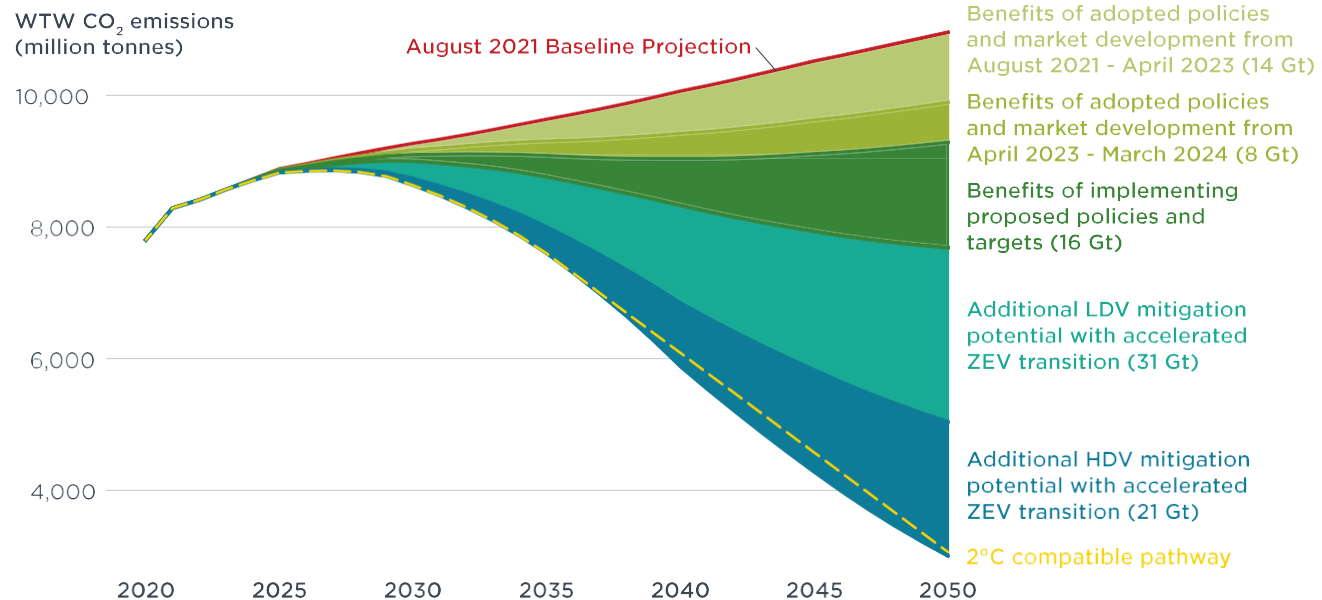
- **Thailand:** 12% of new cars electric, rapidly growing e-motorcycle market



- **Ethiopia:** Banned new fossil fuel vehicle imports, have seen 100,000 electric cars sold in the past year

# Newly adopted policies continue to close the gap with Paris-aligned trajectory

## Global WTW CO<sub>2</sub> emissions from road vehicles compared to a 2°C compatible emissions pathway



Source: ICCT, [Vision 2050: Update on the Global Zero-Emission Vehicle Transition in 2023](#), September 2023, plus updates to analysis done in April 2024



## 5 key policy areas for the ZEV Transition



**Phase-out targets:** Setting a vision and market signal to phase out combustion vehicles



**Binding regulations:** Ensuring model availability and supply



**Financial incentives:** Making ZEVs cost-effective today



**Charging infrastructure:** Maximizing ZEVs' convenience



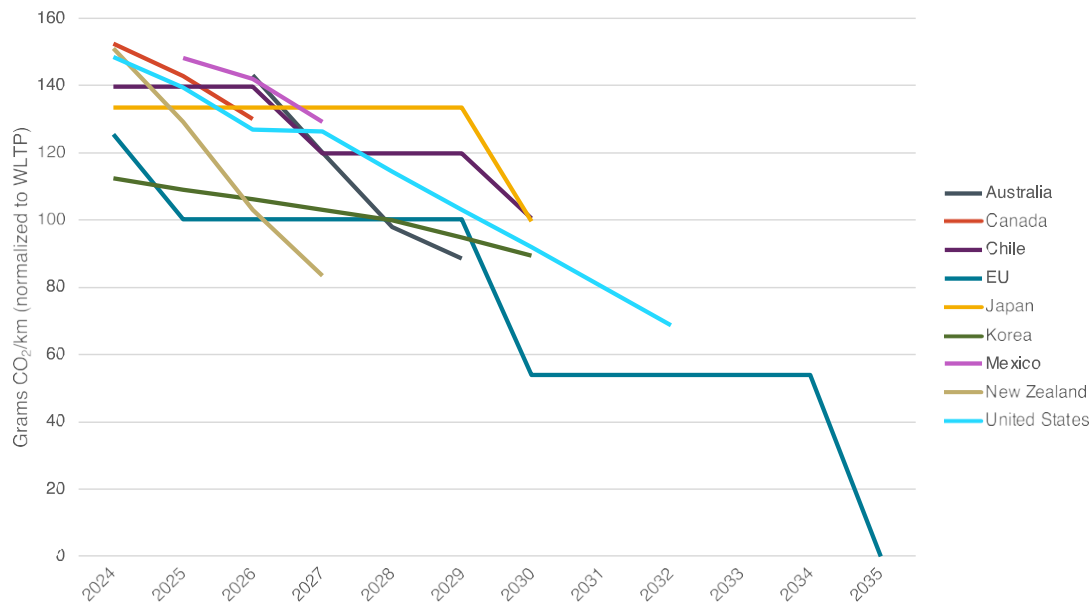
**Consumer awareness/Fleet purchase requirements:** Building understanding of ZEVs' benefits and creating demand

# ZEV sales commitments: Momentum toward 100% ZEV in 2035, but a long way to go

| Government     | 2023 ZEV sales | ZEV sales share goal          |      |      |      |      |      |      |      |      |      |      |      |
|----------------|----------------|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|
|                |                | 2024                          | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 |
| Australia      | 7.5%           | No ZEV sales share goal       |      |      |      |      |      |      |      |      |      |      |      |
| California     | 23%            | 100% EV in 2035               |      |      |      |      |      |      |      |      |      |      |      |
| Canada         | 7.1%           | 100% EV in 2035               |      |      |      |      |      |      |      |      |      |      |      |
| Chile          | 0.5%           | 100% EV in 2035               |      |      |      |      |      |      |      |      |      |      |      |
| China          | 23%            | 45% EV in 2027                |      |      |      |      |      |      |      |      |      |      |      |
| European Union | 15%            | 100% ZEV in 2035 <sup>2</sup> |      |      |      |      |      |      |      |      |      |      |      |
| India          | 1.8%           | 30% EV in 2030                |      |      |      |      |      |      |      |      |      |      |      |
| Italy          | 4.1%           | 100% ZEV in 2035 <sup>2</sup> |      |      |      |      |      |      |      |      |      |      |      |
| Japan          | 2.0%           | No ZEV sales share goal       |      |      |      |      |      |      |      |      |      |      |      |
| Mexico         | 1.1%           | 50% EV in 2030                |      |      |      |      |      |      |      |      |      |      |      |
| New Zealand    | 19%            | No ZEV sales share goal       |      |      |      |      |      |      |      |      |      |      |      |
| South Korea    | 11%            | 33% EV in 2030                |      |      |      |      |      |      |      |      |      |      |      |
| United Kingdom | 15%            | 100% ZEV in 2035              |      |      |      |      |      |      |      |      |      |      |      |
| United States  | 7.5%           | 50% EV in 2030                |      |      |      |      |      |      |      |      |      |      |      |

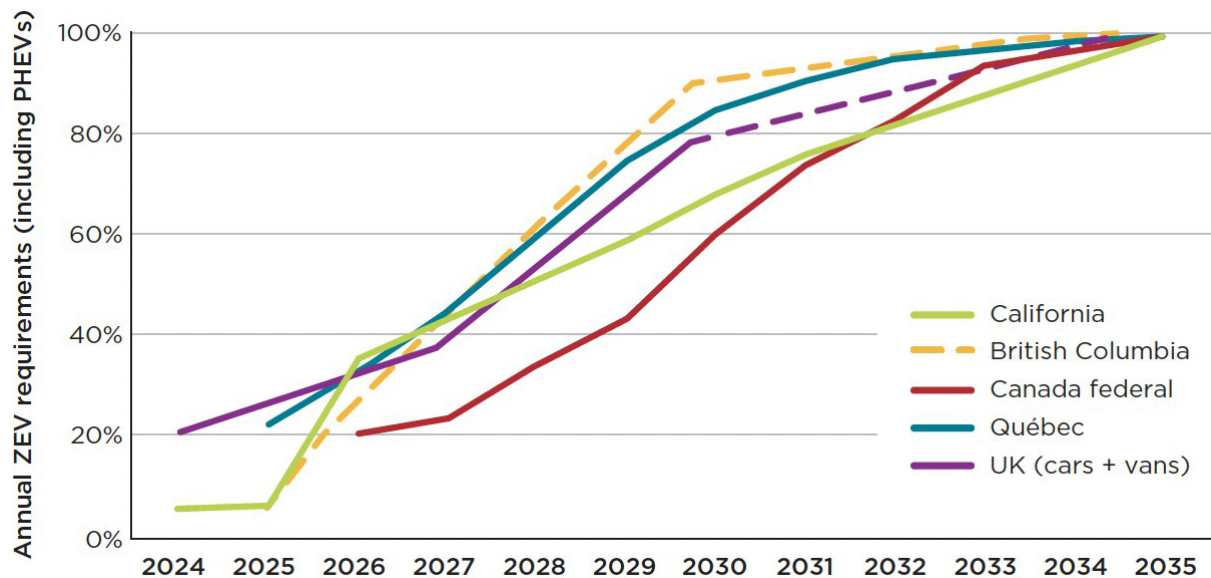
# Turning goals into reality: CO<sub>2</sub>/fuel efficiency standards

When considering all light-duty vehicles, the EU, New Zealand, and Korea have the strongest standards.



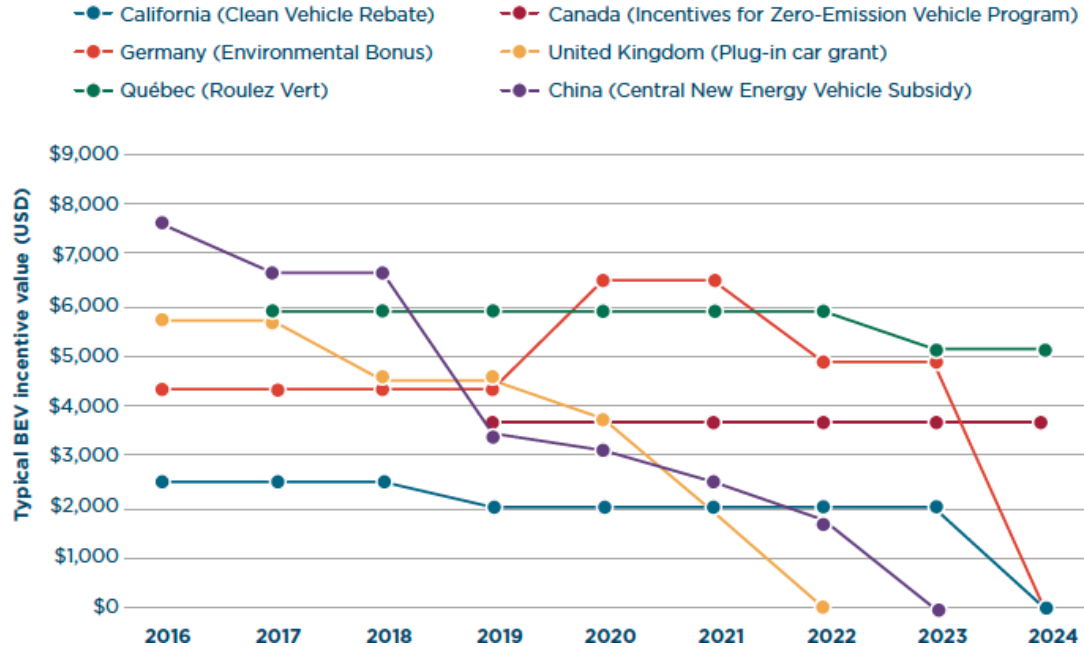
Only governments with standards out to 2025+ shown.

# Turning goals into reality: ZEV sales requirements



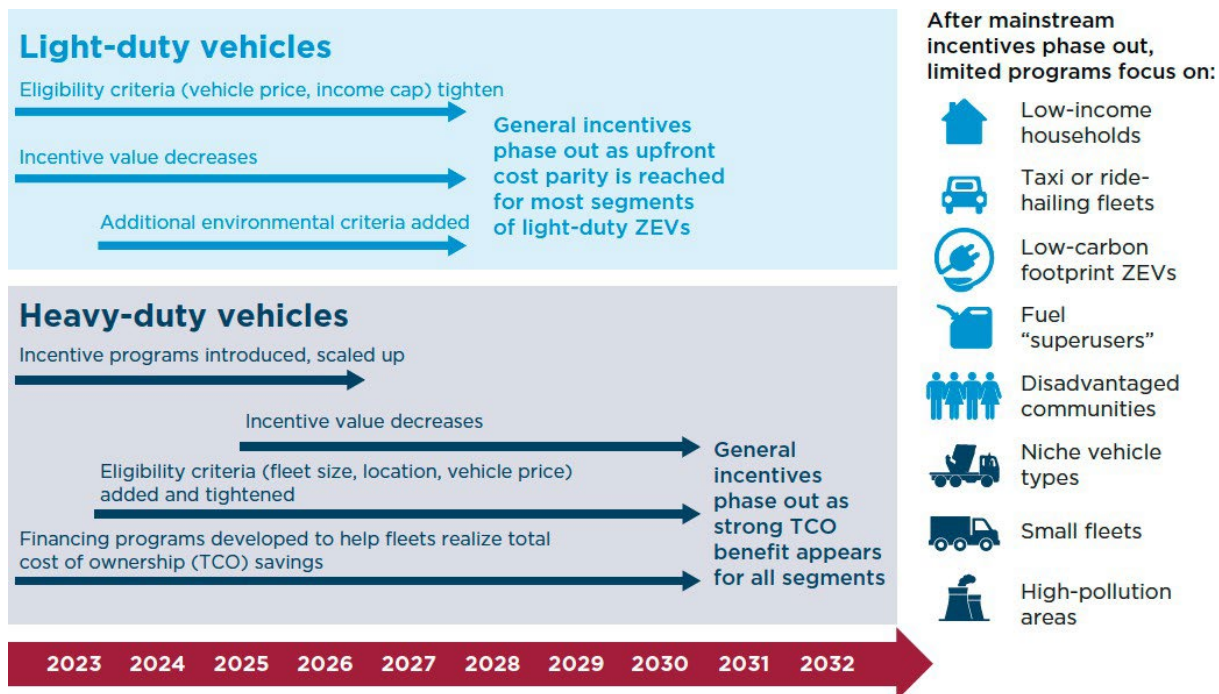
*Dashed lines indicate proposals, solid lines are adopted.*

# Mainstream light-duty incentive programs trending down as cost parity approaches



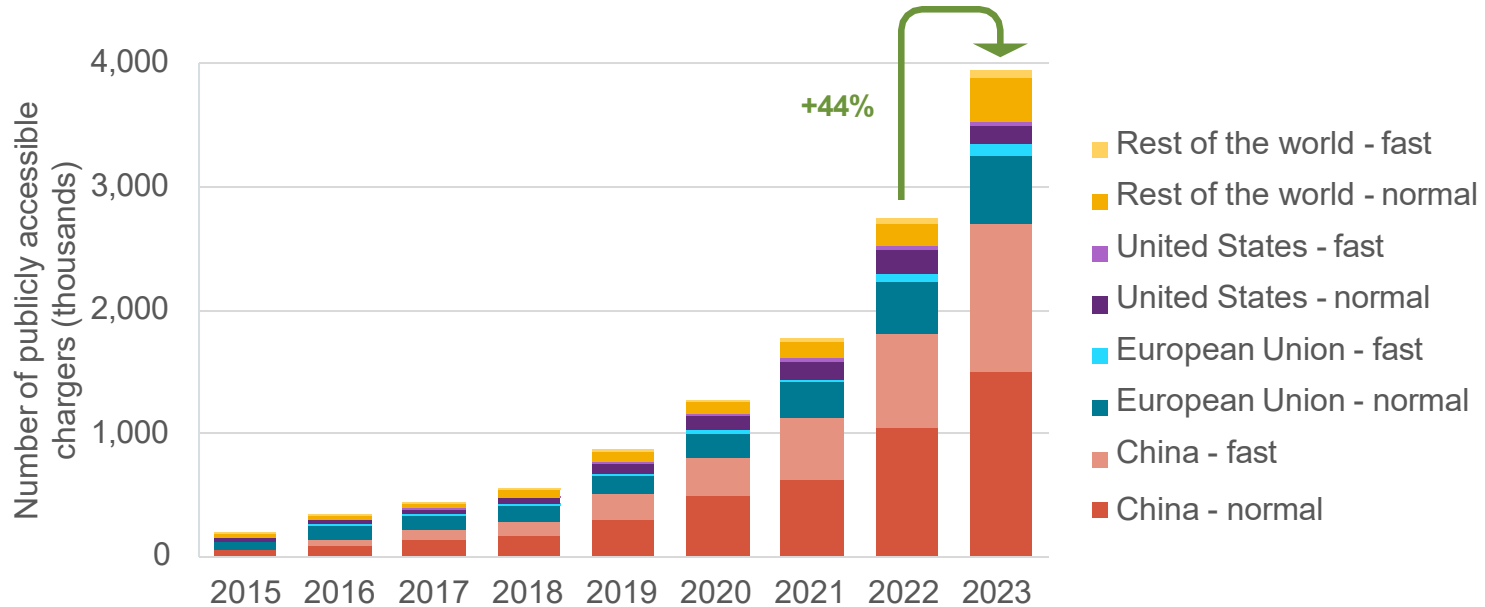
Source: Tankou, A., Hall, D., and Slowik, P. (2024). *Adapting zero-emission vehicle incentives for a mainstream market*. ICCT. [www.theicct.org/publication/izeva-adapting-zev-incentives-for-a-mainstream-market-april24/](http://www.theicct.org/publication/izeva-adapting-zev-incentives-for-a-mainstream-market-april24/)

# Incentive schemes increasingly target environmental & social goals



Source: Tankou, A., Hall, D., and Slowik, P. (2024). *Adapting zero-emission vehicle incentives for a mainstream market*. ICCT. [www.theicct.org/publication/izeva-adapting-zev-incentives-for-a-mainstream-market-april24/](http://www.theicct.org/publication/izeva-adapting-zev-incentives-for-a-mainstream-market-april24/)

# Charging infrastructure: Growing, but much more needed



*Approximately 30% sustained annual growth needed to meet ZEV targets*

# Awareness campaigns can boost enthusiasm of ZEVs beyond early adopters

- **Surveys:** Low understanding of ZEVs
- **Campaigns:** Video and print ads, cost/vehicle availability tools, events

Governments can support campaigns with NGOs, utilities, automakers, charging operators

| Program                       | Supporting govts.           | Other stakeholders  |
|-------------------------------|-----------------------------|---|
| Drive Change. Drive Electric. | 6 Northeast U.S. states     | Automakers  |
| Go Ultra Low                  | United Kingdom              | Automakers, charging operators, energy companies                |
| NEVs Entering the Countryside | China, 12 provinces, cities | Automakers, China Assoc. of Automobile Manufacturers            |
| Roulons Vert                  | Québec                      | Équiterre, electric utilities, drivers' associations            |
| Veloz                         | California                  | Automakers, electric utilities, charging operators, non-profits |

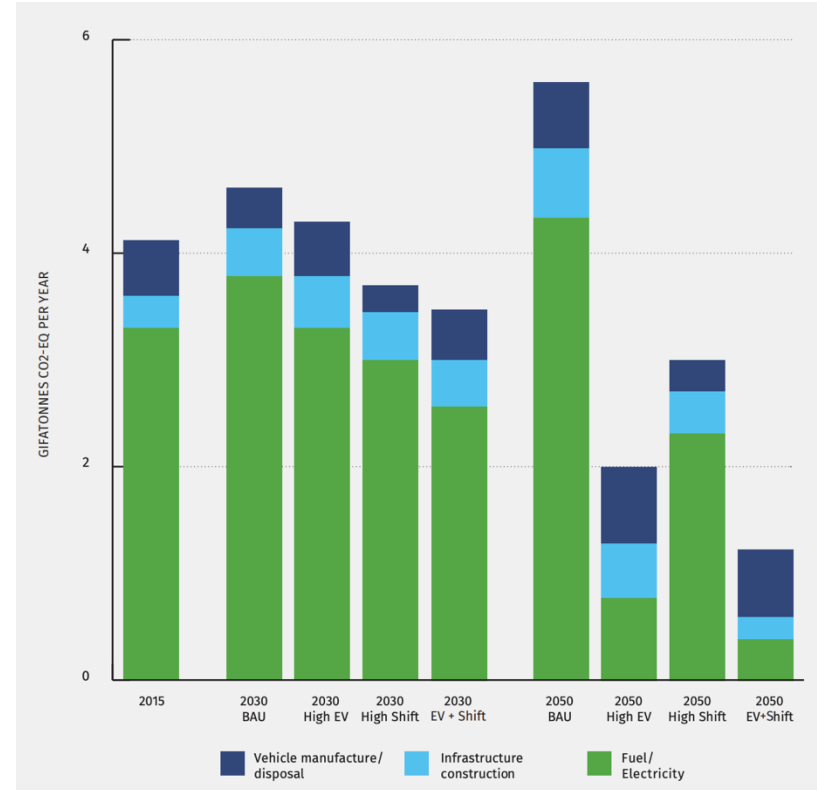


# Beyond ZEVs: A shift away from cars needed to bring transport closer to 1.5°

- Avoid-and-shift can bring 40% as much CO<sub>2</sub> reduction as aggressive ZEV deployment
  - 50% urban transport, 50% freight
- Local policies are key:
  - Reallocating street space
  - Denser housing near transit
  - Realistic parking and congestion pricing

Source: Fulton, L., Reich, D. T., Ahmad, M., Circella, & Mason, J. (2021). The Compact City Scenario – Electrified. Institute for Transportation and Development Policy. <https://www.itdp.org/publication/the-compact-city-scenario-electrified/>

Source: Teter, J., & Reich, D. T. (2024, February 21). Cutting CO<sub>2</sub> emissions through policies that promote alternatives to driving in cities. *ICCT Staff Blog*. <https://theicct.org/cutting-co2-emissions-through-policies-that-promote-alternatives-to-driving-in-cities-feb24/>



# Two aviation solutions: Burn less fuel, use cleaner fuels

## Reducing fuel burn

Operational efficiencies

Technical efficiencies

Demand management

## Changing the fuel

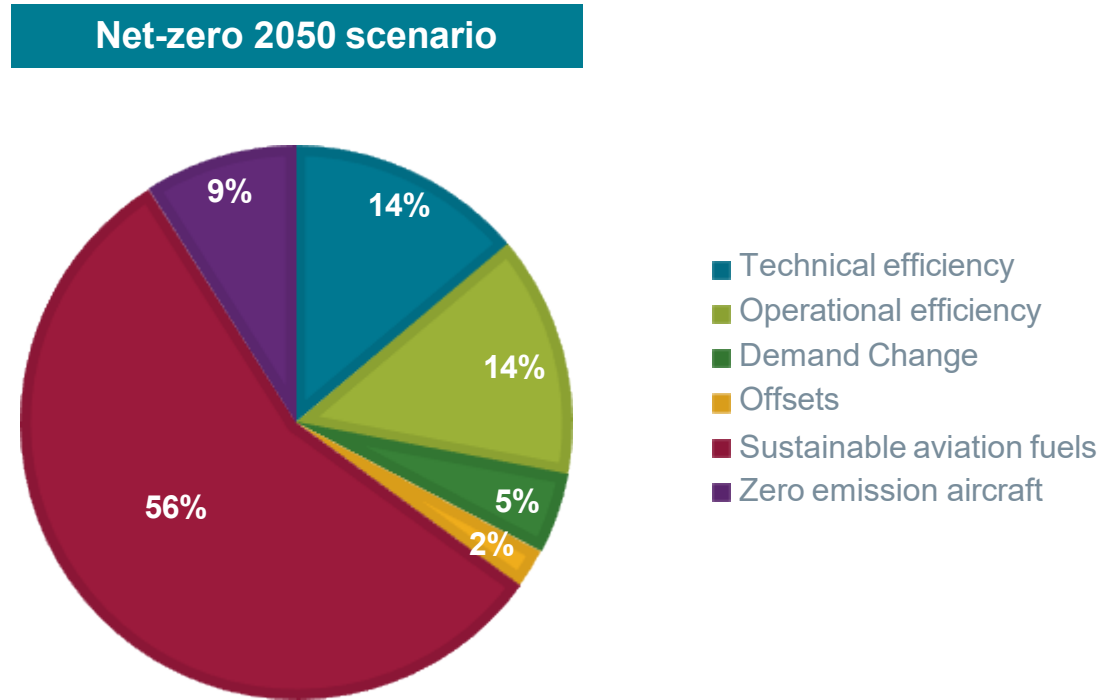
Electric aircraft

Hydrogen-powered aircraft

Sustainable aviation fuels

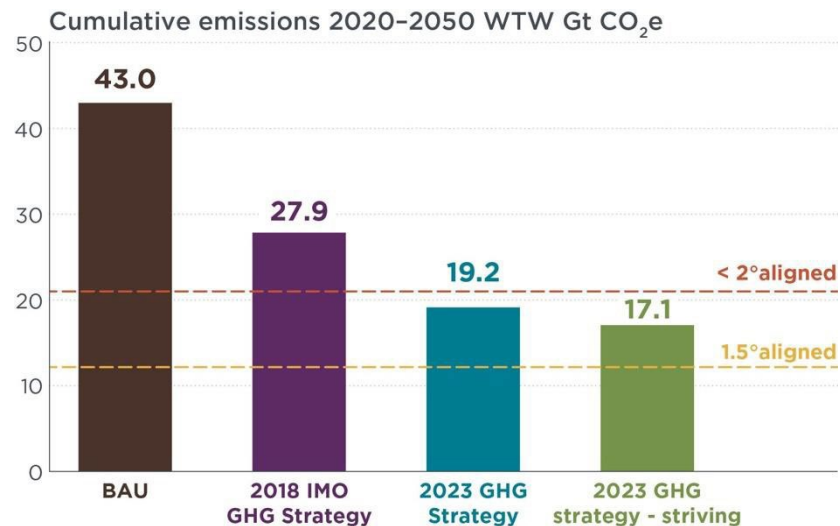
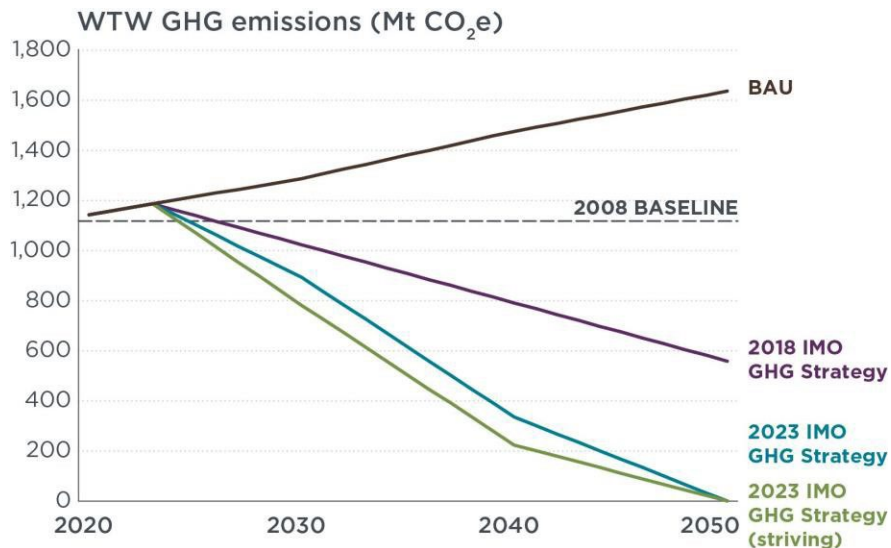
Source: Graver, B., Zheng, X. S., Rutherford, D., Mukhopadhyaya, J., & Pronk, E. (2022). *Vision 2050: Aligning Aviation with the Paris Agreement*. ICCT. <https://theicct.org/publication/global-aviation-vision-2050-align-aviation-paris-jun22/>.

# Aviation: SAFs lead the way, but a portfolio of solutions is critical



Graver, B., Zheng, X. S., Rutherford, D., Mukhopadhyaya, J., & Pronk, E. (2022). *Vision 2050: Aligning Aviation with the Paris Agreement*. International Council on Clean Transportation. <https://theicct.org/publication/global-aviation-vision-2050-align-aviation-paris-jun22/>.

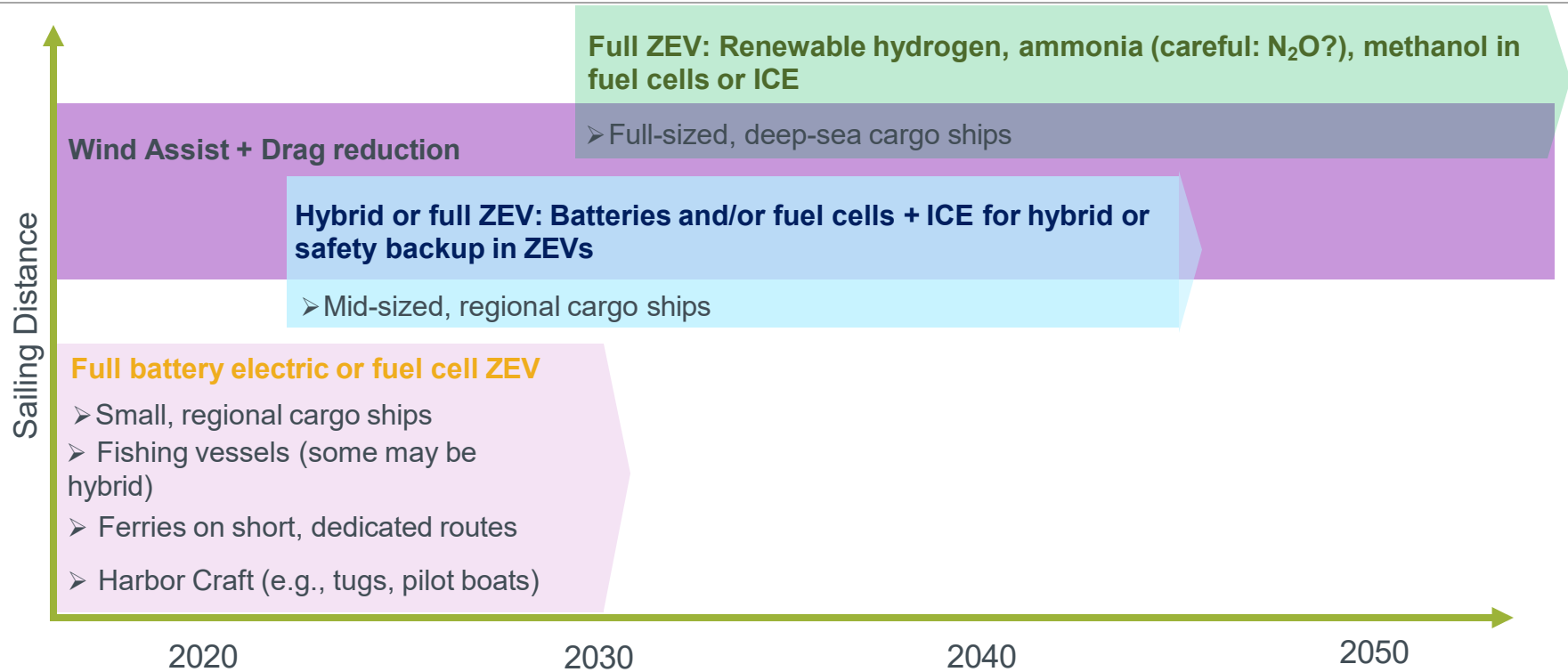
# Maritime: Global IMO targets aligned with below 2° (but not with 1.5°)



**Takeaway:** It's the area under the curve that matters; we must **reduce near-term emissions as quickly as possible**

Source: Comer, B., and Carvalho, F. (2023). *IMO's newly revised GHG Strategy: What it means for shipping and the Paris Agreement*. ICCT. <https://theicct.org/marine-imo-updated-ghg-strategy-jul23/>

# Maritime: A path towards Zero-Emission Vessels



**Biofuels play a limited role;  
LNG is worse than alternatives**

**Thank you!**  
Please send questions to: [d.hall@theicct.org](mailto:d.hall@theicct.org)



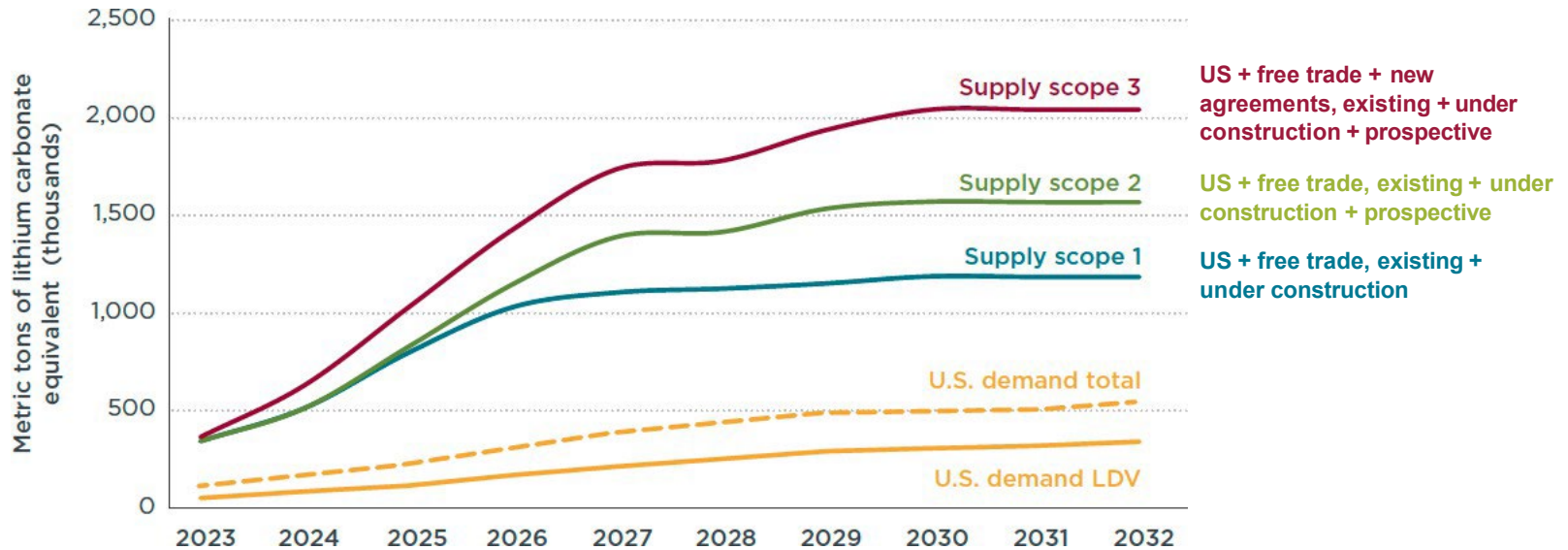
# Battery prices decline, spurred by minerals surplus, scale and new chemistries

- Lithium-ion battery pack costs fall 14% in 2023 to \$139/kWh
- Lower-cost LFP cathodes set to reach 50% market share in 2024
  - No cobalt or nickel — good for labor issues, bad for recycling?



Source: BloombergNEF, <https://about.bnef.com/blog/lithium-ion-battery-pack-prices-hit-record-low-of-139-kwh/>

# Lithium projects around the world rapidly coming online

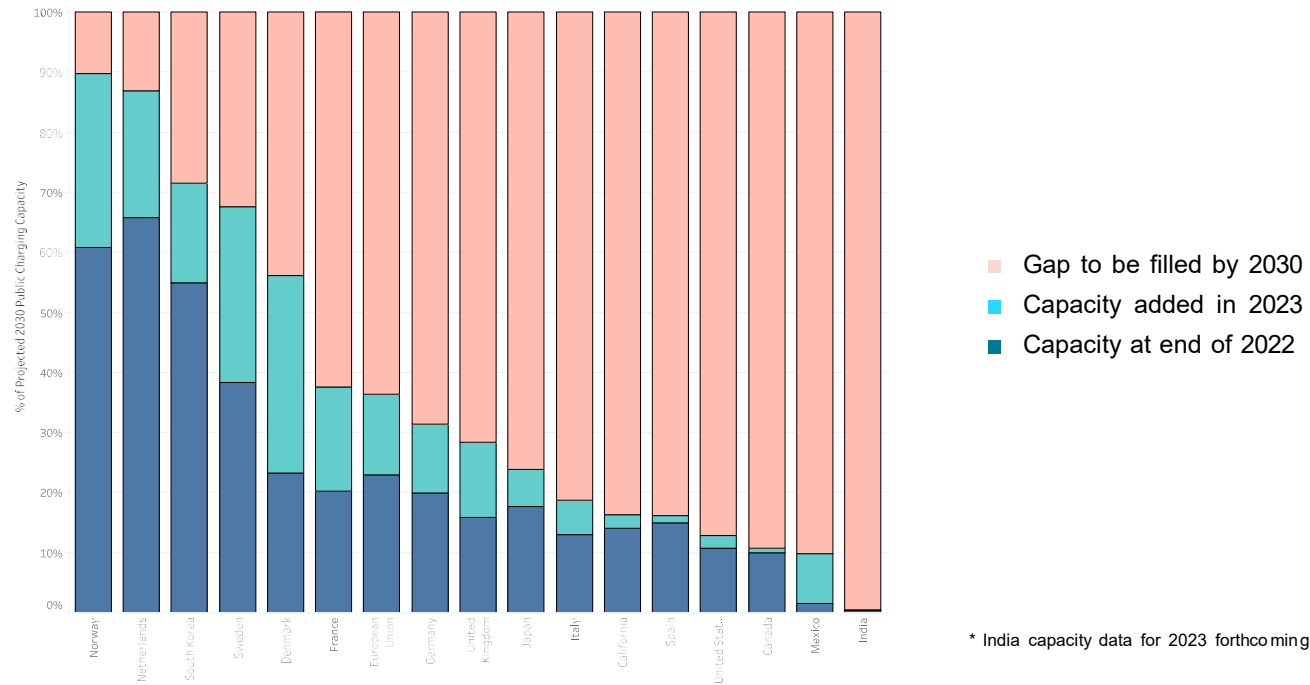


Shen, C., Slowik, P., & Beach, A. (2024). *Investigating the U.S. battery supply chain and its impact on electric vehicle costs through 2032*. ICCT. <https://theicct.org/publication/investigating-us-battery-supply-chain-impact-on-ev-costs-through-2032-feb24/>



# Public charging infrastructure is expanding, decreasing the gap to meet 2030 requirements

Charger installed capacity gap to meet 2030 EV charging requirements



Light- and Heavy-duty EV charging requirements based on ICCT ZEVTC EV Charging Study. Data from Eco-movement for Europe, PlugShare for North America, and government announcements for other parts of the world (up to mid or end of 2023, up to Q1 2024 for Japan).



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Action Partnership**

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AN INITIATIVE OF THE CLEAN ENERGY MINISTERIAL

# High Ambition Group Transport in LAC

**Carolina Chantrill**  
Director of Sustainable Mobility, at Sustentar



Grupo de Trabajo  
de Transporte



**2014**

Start

**+1700**

Members

**+50**

Countries



Electromobility

Communities  
of Practice



Sustainable Logistics



# High Ambition Group Transport in LAC

## OBJECTIVE

**Generate collective goals** around the transition in the transport sector,  
with a focus on **electromobility** and **public transport**.

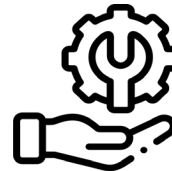
## BENEFITS

**Resources and  
tools**



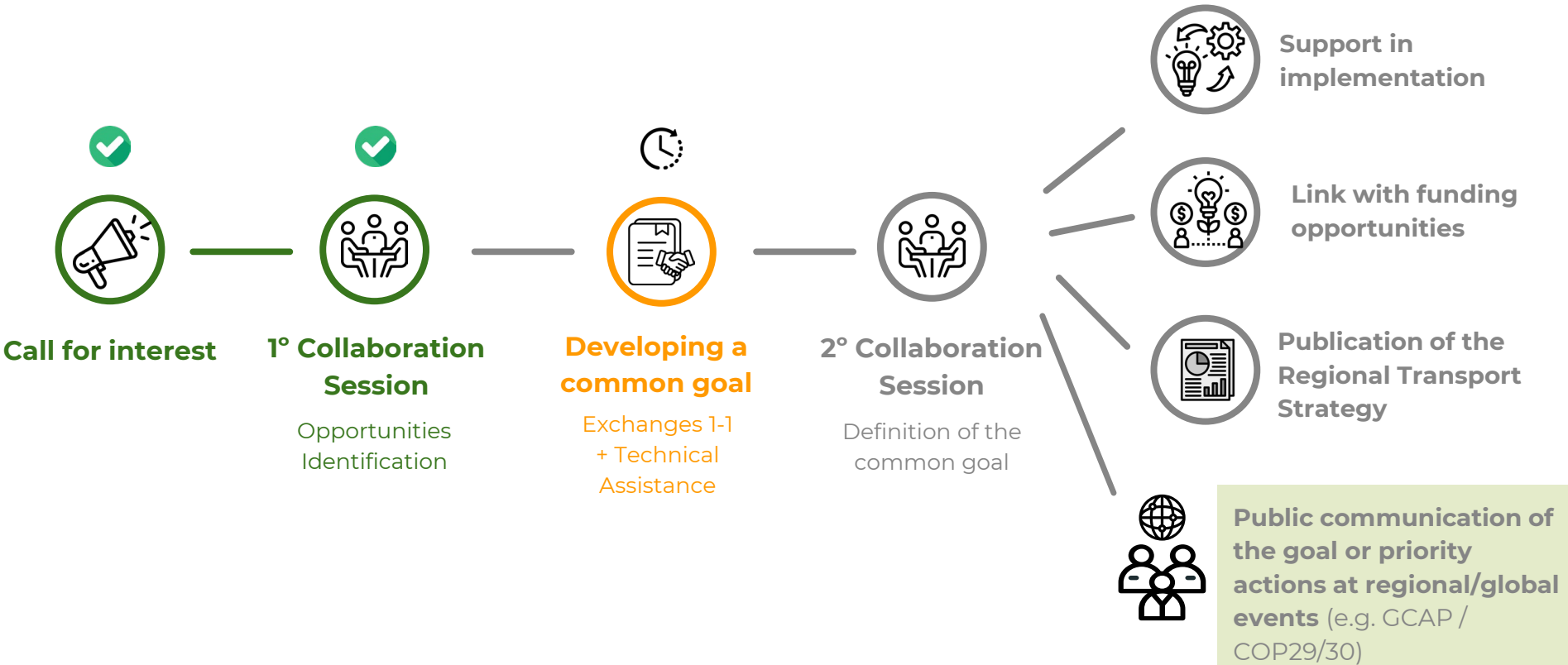
**Peer-learning and  
project cooperations**

**Opportunity to  
showcase initiatives at  
regional/global events**



**Technical Assistance**

# High Ambition Group Transport in LAC



# High Ambition Group Transport in LAC

## 1° Collaboration Session



Opportunities and  
needs Identified

### COORDINATION BETWEEN AUTHORITIES

Promote coordinated efforts between national and local authorities to increase ambition in the next round of NDCs, with a specific focus on public transport and electrification.

### GAP AND GOAL ASSESSMENT

Conduct an assessment of the existing gaps in decarbonization targets and adjust the NDCs to reflect this ambition.

### KNOWLEDGE EXCHANGE

Establish mechanisms for sharing lessons learned and working on common themes.

### TECHNICAL ASSISTANCE AND FINANCING

Prepare projects for financing and create programs for the expansion of fast charging stations.

### FINANCING STRATEGIES

Develop strategies to attract financing, including negotiations with investment banks and support in project structuring.

### ELECTRIC INFRASTRUCTURE

Develop electric infrastructure in cities to encourage the use of electric vehicles and create a competitive market, considering regional interoperability.

### COLLECTIVE INFORMATION GENERATION

Create a data network to collect and share relevant information on sustainable mobility.

# High Ambition Group Transport in LAC



**National  
Governments**



**Subnational  
Governments**



**Public Transport  
Operators**



**Global and  
Regional  
Organizations**



**Countries**

**Chile  
Peru  
Panama  
Colombia**




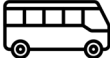











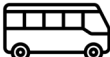






















**Ecuador  
El Salvador  
Mexico  
Costa Rica**

# NDCs Map in LAC

|| Absolut goal

% Relative goal

(\*) Subject to financing  
 DME: decarbonization of the energy matrix  
 EE: energy efficiency  
 MF: fleet migration  
 N/A: not applicable / lack of information

|  | Last NDC | Type of goal | Conditional goal*   | Electromobility commitments   | Prioritization  |
|--|----------|--------------|---|---|---|
| ARGENTINA   | 2021     |              |   |    |  EE  |
| PARAGUAY    | 2021     | %            |   |    | N/A   |
| COLOMBIA    | 2020     |              |   |    |   MF  |
| CHILE       | 2022     |              |   |  * |  MF, DME   |
| COSTA RICA  | 2020     |              |   |    |   MF, EE  |
| PERÚ        | 2020     |              |   |    | N/A   |
| URUGUAY     | 2022     |              |   |  * |    EE MF |
| VENEZUELA   | 2021     | % *          |   |  * |  MF  |
| ECUADOR    | 2019     | %            |  |   |  DME   |



# NDCs Map in LAC

## CONCLUSIONS

- There is **no established criteria** among countries to establish their commitments.
- **Greater commitment is needed in the region** to define specific energy transition goals for the sector..
- There is **progress in the region but it is not visible** due to a lack of information.
- In some countries, it is evident the **lack of coordination** between institutional sectors was evident.
- Countries prioritize the advancement of electromobility in public and private passenger transport, over freight transport. By prioritizing public transport, governments can promote inclusive, resilient and low-emission urban environments.
- **External financing is restrictive** for 3 of the 9 countries analyzed to be able to meet their most ambitious goals on the subject.

# High Ambition Group Transport in LAC

[www.globalclimateactionpartnership.org](http://www.globalclimateactionpartnership.org)



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**Global Climate  
Action Partnership**

regional leadership, global change



Proyecto

**“Movilidad Sostenible:  
Modernización del Sistema de  
Transporte Público  
Metropolitano de Pasajeros  
de Quito, a través de la  
dotación de trolebuses”**

29-Agosto de 2024

## >> Agenda

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1. Contexto
2. Plan Maestro Movilidad Urbana
3. Flota actual trolebús
4. Alcance del Proyecto
5. Nueva flota trolebuses
6. Contribución a las NDC de Ecuador
7. Ampliación del Proyecto: buses eléctricos
8. Transversalización del enfoque de GDI en la NDC



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# 1. Contexto

# >> Ubicación



## >> Desafíos movilidad actual

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1. Mejorar calidad del aire - reducción de emisiones contaminantes y dependencia del petróleo.
2. Ampliar zona de cobertura, expansión y mejora del transporte público
3. Integración de sistemas de transporte
4. Fomentar la actividad física (bicicleta y caminata)
5. Reducir congestión vehicular

### Marco legal:

- i. Constitución Política del Ecuador 2008
- ii. Ley Orgánica Tránsito y Transporte Terrestre y Seguridad Vial
- iii. Ordenanzas locales Gestión de Movilidad Tránsito y Transporte Uso del suelo y Planificación Urbana
- iv. Emisiones -> INEN 058



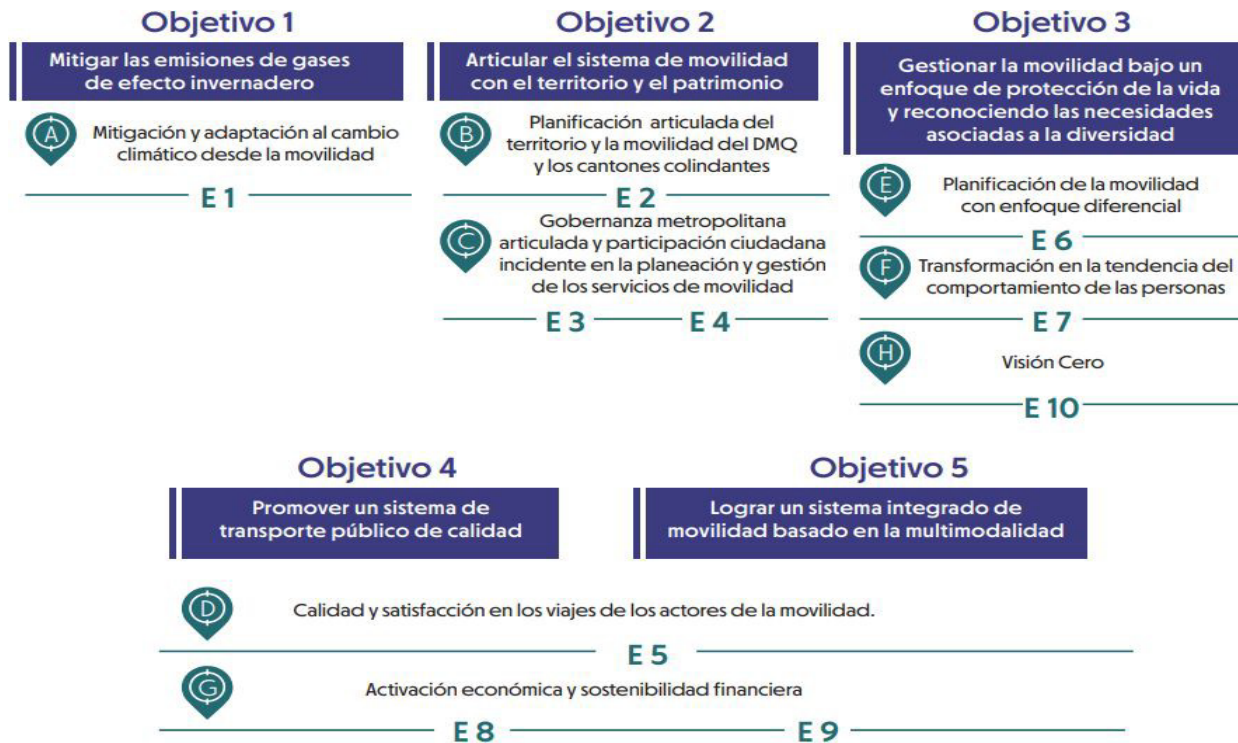


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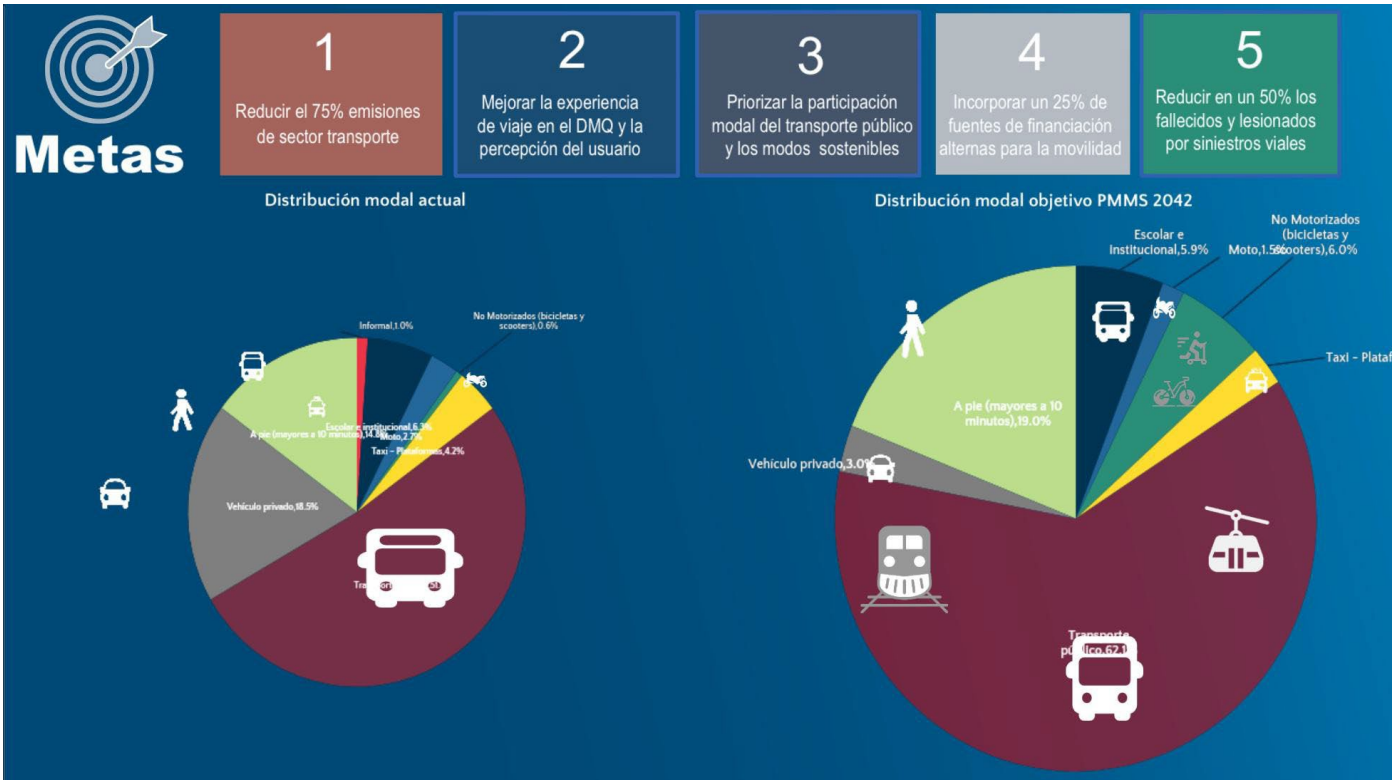
## **2. Plan Maestro Movilidad Sostenible**



# >> Plan Maestro Movilidad Sostenible



# >> Plan Maestro Movilidad Sostenible



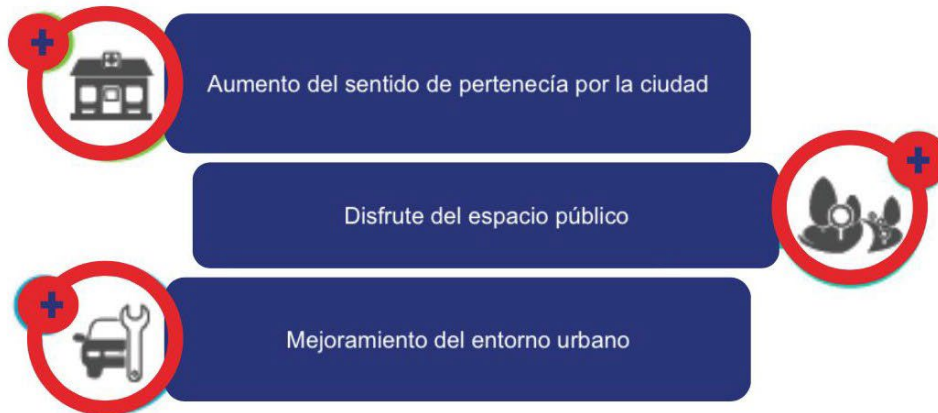
# >> Plan Maestro Movilidad Sostenible



# >> Plan Maestro Movilidad Sostenible



## Beneficios cualitativos del PMMS

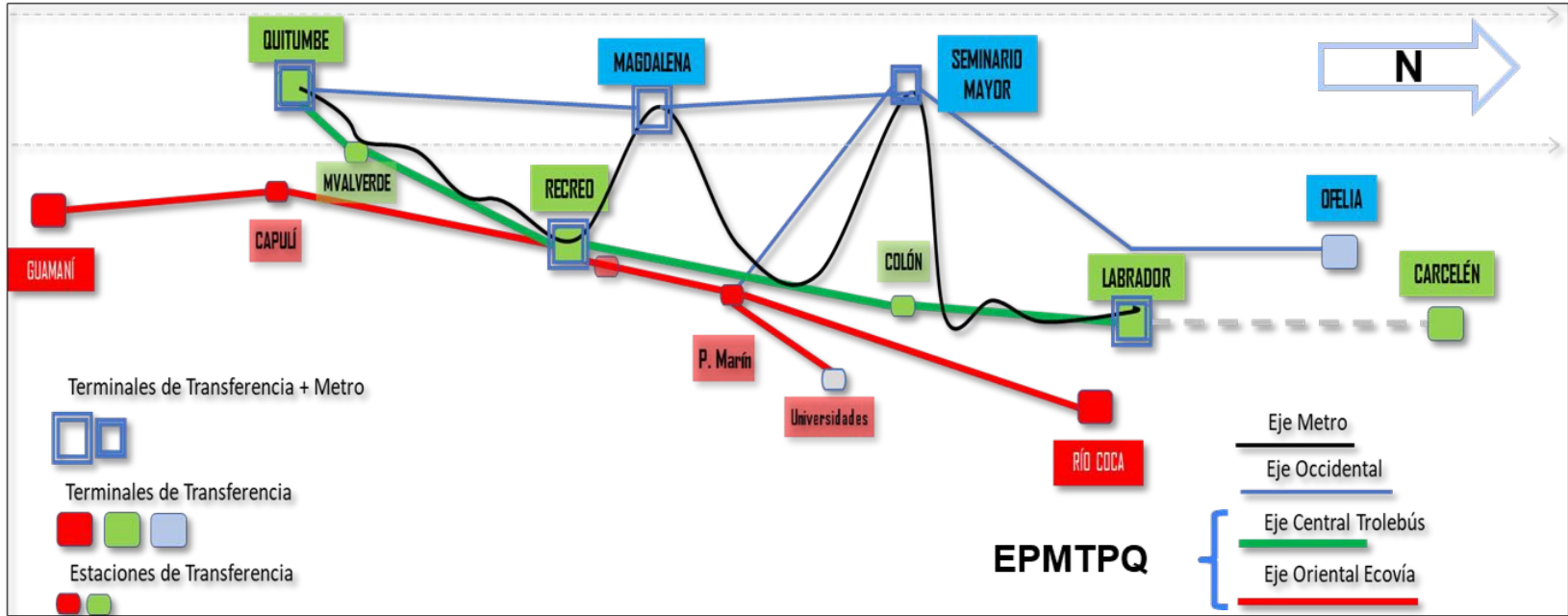




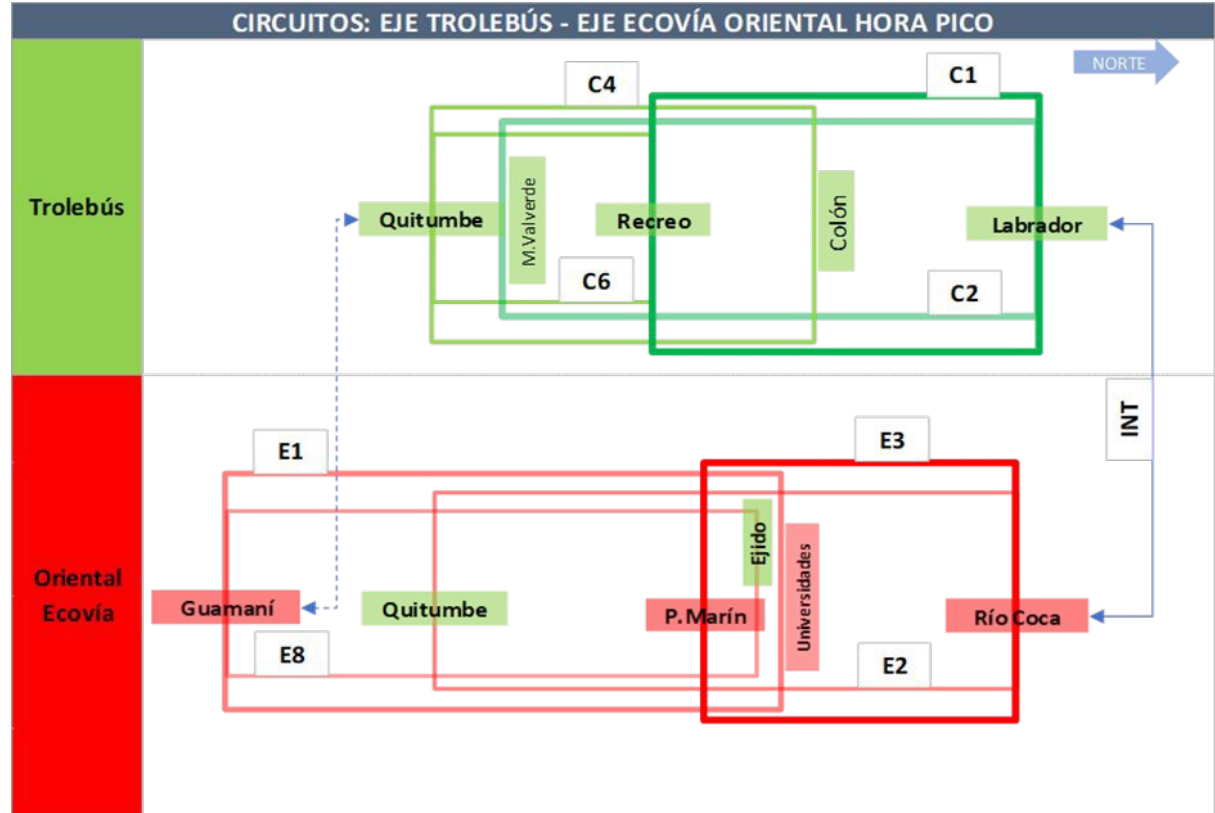
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### **3. Flota actual EPMTPQ**

# >> Corredores de transporte



# >> Operación actual





## >> Composición de la flota

- Trolebús articulado 18 m
  - Flota 1 -> 54 unidades
  - Flota 2 -> 59 unidades
  - Chasis MB 0405G
  - Motor combustion MB + caja ZF
  - Sistema de tracción eléctrico Kiepe Elektrik
  - Motor Bazu ABB tetrapolar 270 KVA
  - Sistema alimentación 750 VDC
- Flota Diésel
  - 200 unidades -> biarticulados. / articulados







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## 4. Alcance del Proyecto



Nombre del proyecto

---

**“Movilidad  
Sostenible:  
Modernización del  
Sistema de  
Transporte Público  
Metropolitano de  
Pasajeros de Quito a  
través de la dotación  
de trolebuses”**



Duración  
**18 meses**

---



Costo  
**USD 32 M**

---



**Actividades específicas:**

- Elaboración EETs y TDRs/documentos de licitación
- Adquisición de 60 trolebuses
- Optimización operaciones y flota a través de Estudio Operacional para las troncales trolebús y ecovía y sus alimentadores
- Transporte y trámites de Aduana/Recepción y entrega a la EPMT PQ
- Capacitación del personal
- Gerenciamiento del proyecto.

## >> Alcance



Actividad 1:  
**Adquisición de  
trolebuses**



Actividad 2:  
**Homologación  
de trolebuses**



Actividad 3:  
**Acreditación de  
taller "El Recreo"**



Actividad 4: **Capacitación  
de personal técnico,  
operadores y  
conductores**



Actividad 5:  
**Suministro de  
repuestos**

# >> Cronograma



Julio 2024  
**Aprobación  
diseño**



Agosto 2024  
**Fabricación  
prototipo**



Octubre 2024  
**Pruebas  
prototipo**



Diciembre 2024  
**Pruebas FAT**



Marzo 2025  
**Recepción flota**

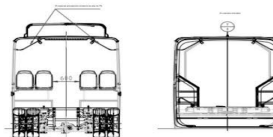
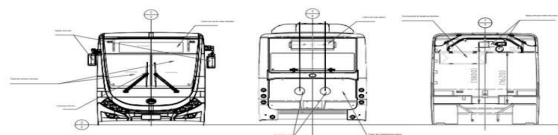
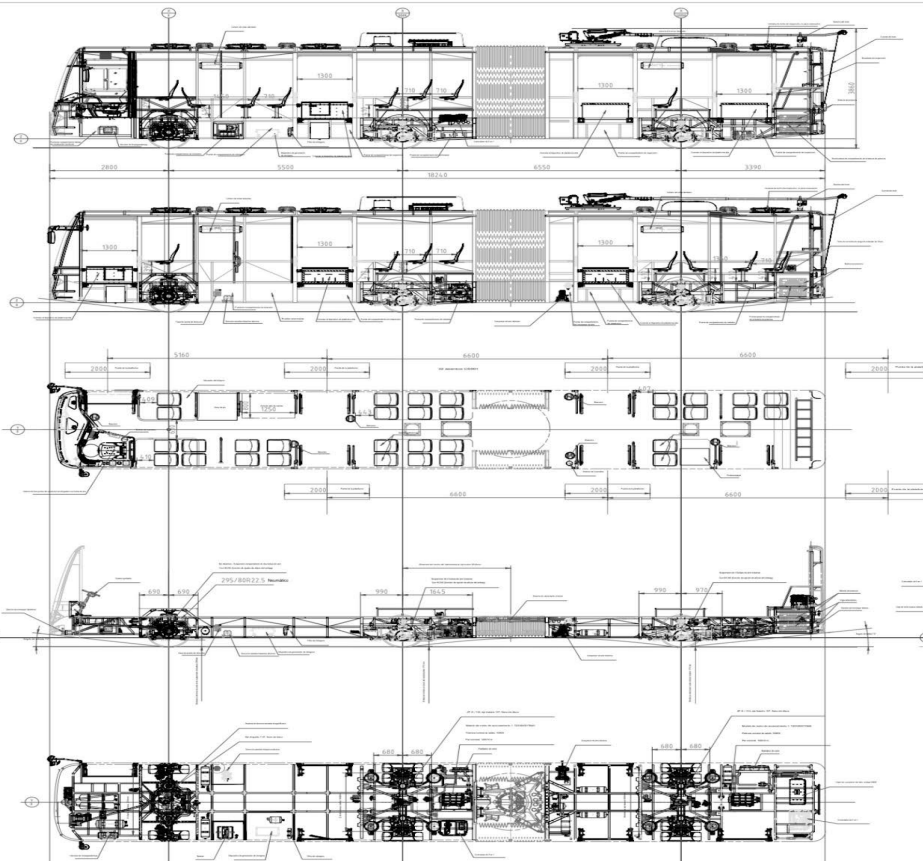


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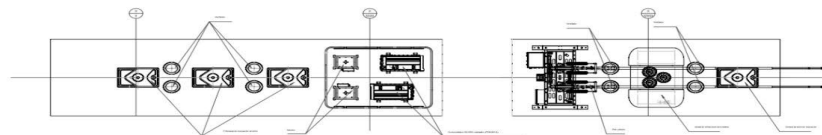
## 5. Nueva flota trolebuses



# Disposición y Diseño Exterior



Vista superior hacia abajo

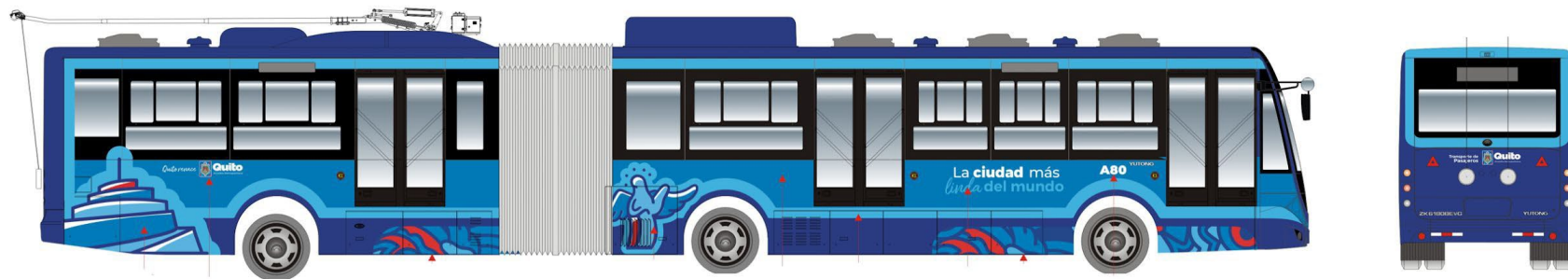
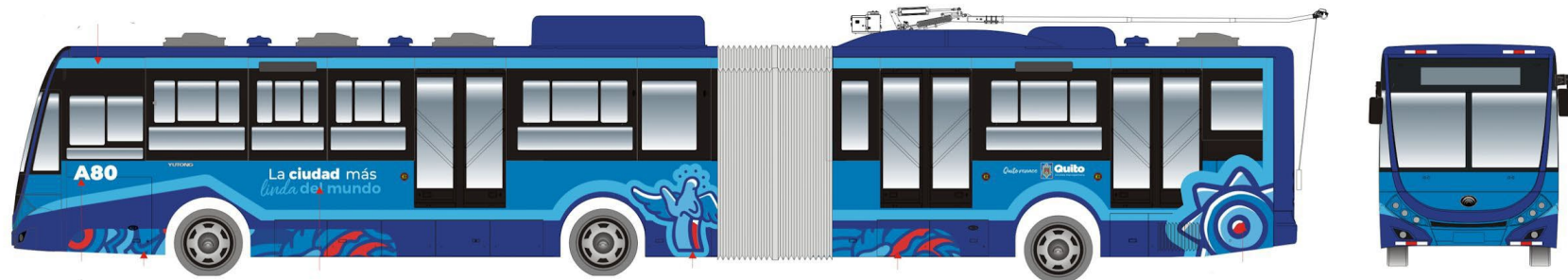


## Datos generales:

- Trolebús articulado 18 m
- Sistema de propulsión eléctrico
- Batería de tracción para operación degradada
- 32 asientos para pasajeros + 1 espacio para persona movilidad reducida
- Capacidad ->160 pasajeros



# Disposición y Diseño Exterior

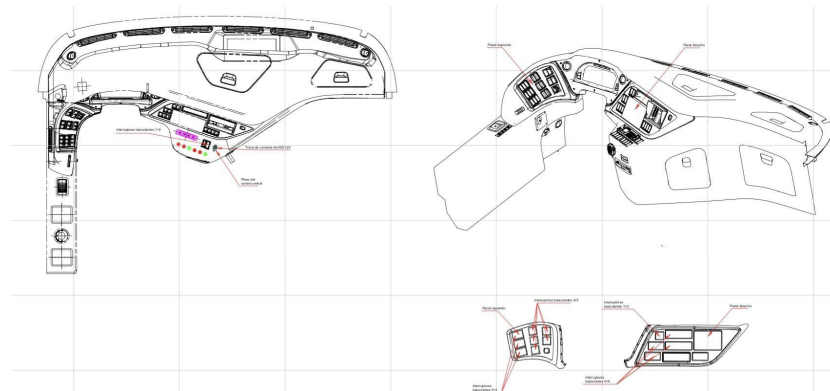






# Capacitación

- Teórica + Práctica
  - Generalidades y manejo del trolebús
  - Preparación del trolebús.
  - Explicación de todas las señales e indicadores del tablero
  - Explicación de todos los mandos en el habitáculo del conductor
  - Detalle de la operación segura del autobús
  - Actividades de alistamiento diario del trolebús (check list)
  - Manejo correcto del tren motriz
  - Operación del sistema de regeneración
  - Manejo seguro y eco conducción del autobús
  - Correcto procedimiento ante incidencias y fallo de ruta.
  - Temas adicionales inherentes a la conducción y operación del trolebús.





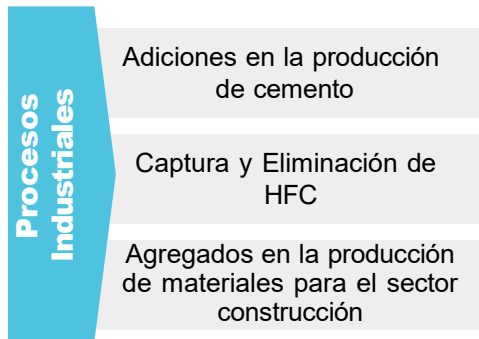
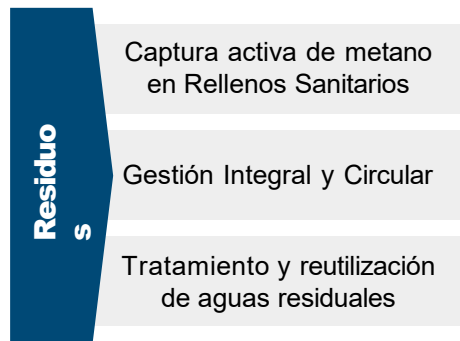
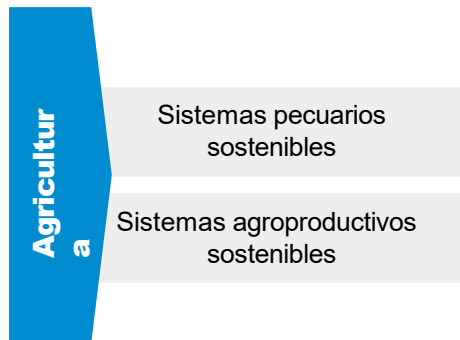


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## 6. Contribución a las NDC Ecuador



# Contribución NDC Ecuador - En proceso formulación NDC 2026 – 2035



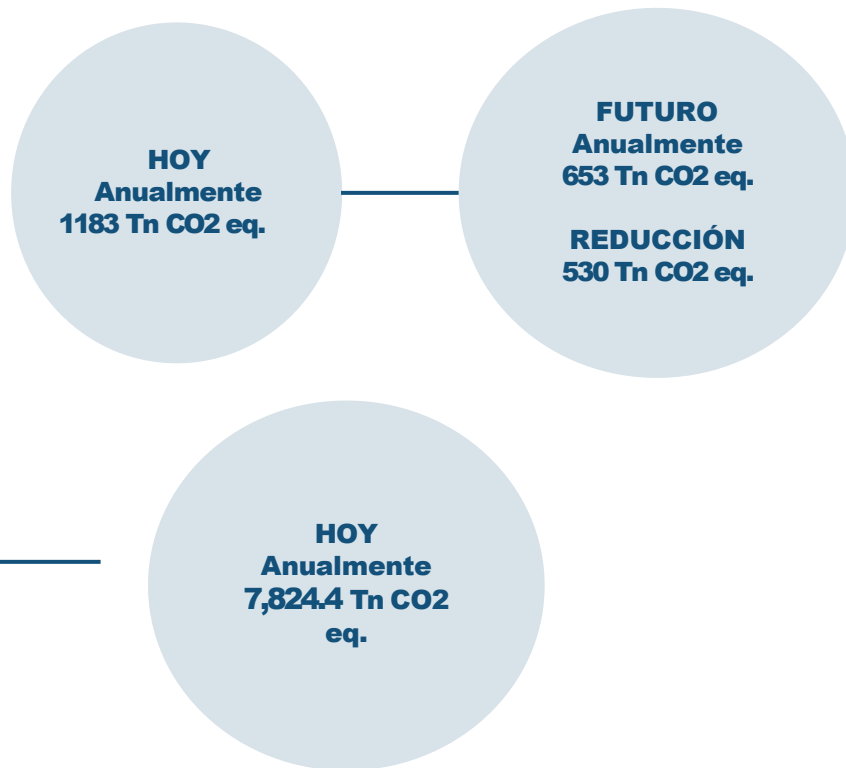


## 6. Contribución NDC Ecuador



| Tipo bus        | Km. año      | Km (40 % a eléctrico) | Km (60% a diésel) |
|-----------------|--------------|-----------------------|-------------------|
| <b>Trolebús</b> | 1.285.200,00 | 514.080,00            | 771.120,00        |
| Kwh al año      |              | <b>1.224.000,00</b>   |                   |
| Galones año     |              |                       | <b>110.002,85</b> |

| Articulados a diésel en Eje Trolebús                    |  |                   |
|---|--|-------------------|
| Km año  |  | 3.837.204,00      |
| Galones año   |  | <b>929.105,08</b> |
| <b>Galones de diésel que se consume en eje trolebús</b> |  |                   |





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## **7. Ampliación del proyecto: buses eléctricos**



## 7. Características de infraestructura rutas alimentadoras



| # | Ruta                | Ruta (km) | % <sup>(1)</sup> | Flota | Vueltas día | km/día bus | Intervalo pico (min) | Ciclo pico (min) | Hora Inicio | Hora Final |
|---|---------------------|-----------|------------------|-------|-------------|------------|----------------------|------------------|-------------|------------|
| 1 | Cisne-Zabala        | 34.61     | 7.7              | 10    | 70          | 242.27     | 12                   | 110              | 05:10       | 21:40      |
| 2 | Llano Grande        | 30.70     | 10.1             | 10    | 60          | 184.20     | 13                   | 101              | 05:10       | 21:40      |
| 3 | Comité del Pueblo   | 14.45     | 14.8             | 12    | 140         | 168.58     | 7                    | 58               | 05:15       | 21:40      |
| 4 | Cotacollao          | 13.46     | 10.1             | 10    | 137         | 184.40     | 7                    | 52               | 05:15       | 22:40      |
| 5 | Kennedy             | 9.71      | 12.2             | 4     | 72          | 174.78     | 13                   | 45               | 05:15       | 22:40      |
| 6 | Laureles            | 9.65      | 12.4             | 3     | 61          | 194.61     | 15                   | 45               | 05:15       | 22:40      |
| 7 | Rumiñahui           | 11.21     | 13.1             | 6     | 107         | 199.91     | 8                    | 43               | 05:15       | 22:40      |
| 8 | Inter-terminales CL | 14.68     | 11.0             | 10    | 122         | 179.10     | 7                    | 52               | 05:10       | 21:35      |

<sup>(1)</sup> pendiente máxima

90 pax Capacidad de los buses 12 m

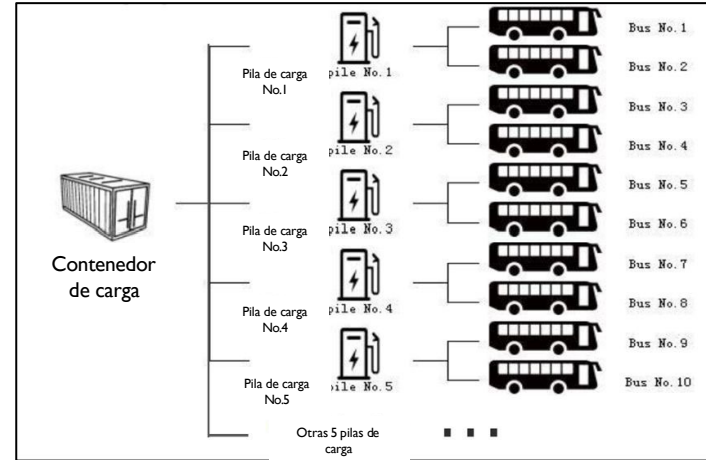
Fuente: EPMT PQ, 2024

Estación El Labrador del Corredor Trolebús:

- Llegan los servicios de alimentación de 8 rutas alimentadoras con 65 buses de 12 metros, demanda 29,400 pax/día-hábil.
- Los servicios troncales del Circuito 1 y 2 de Trolebús.
- Conexión con la Estación El Labrador del Metro de Quito.



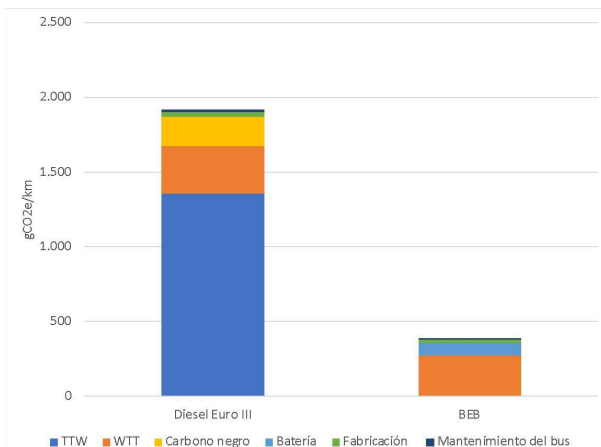
# 7. Características técnicas buses eléctricos y sistema de carga



# 7. Impacto GEI y contaminantes locales



## Emisiones GEI



## Contaminantes locales

| Parámetro         | gramos por km | kg por año | kg vida útil bus |
|-------------------|---------------|------------|------------------|
| PM <sub>2.5</sub> | 0.31          | 20         | 323              |
| NO <sub>x</sub>   | 17.9          | 1,165      | 18,640           |
| SO <sub>2</sub>   | 0.21          | 14         | 222              |

- Los buses eléctricos no emiten gases de combustión.
- En comparación con los autobuses diésel, los autobuses eléctricos reducen en un 50% las emisiones de ruido.
- Al año, cada bus eléctrico ahorra 90 toneladas de CO<sub>2</sub> y a lo largo de su vida útil de 16 años 1,450tCO<sub>2</sub>.





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## 7. Transversalización n del enfoque de GDI en la NDC



# > Transversalización del enfoque de género en la Segunda NDC



## MOMENTO 1:

### Definición de las líneas de acción, medidas

- Encuestas: 72 M, 80 H
- Preguntas sobre propuestas de acciones para la Segunda NDC considerando género
- Diagnóstico Primera NDC sobre género
- Taller Puyo con enfoque de género



## MOMENTO 2:

### Iniciativas y escenarios con enfoque de género

- Formulario inicial y final con preguntas sobre género
- Desarrollo de metodología
- Criterios mínimos sobre género para inclusión del enfoque en las iniciativas
- Alineación al Plan de Acción de Género y Cambio Climático
- Iniciativas con enfoque de género seleccionadas



## MOMENTO 2:

### Plan de Implementación

- Talleres en territorio para identificar necesidades para enfoque de género en la Segunda NDC
- Definición de la meta de género en la Segunda NDC.
- Elaboración del Plan de implementación de la Segunda NDC con enfoque de género



## MOMENTO 2:

### Alianzas y Compromisos

- Acuerdo con los proponentes para cumplir las metas de la Segunda NDC (incluye el enfoque de género)



# >> El enfoque de Género e Inclusión en el transporte público

## Principios fundamentales



- Derecho a la movilidad y a la a la **accesibilidad** de los medios de transporte de todas las personas




- Derecho a la **seguridad**, incluso frente a la **violencia de género**



- **Equidad** en los servicios de transporte público.

## Desafíos y oportunidades en Quito y para la EPMTQP

-  Cerca del **60 %** de mujeres fueron víctimas de **acoso y/o abuso sexual** en el transporte municipal de Quito (2023)
- Bajos niveles de finalización del **proceso de reporte** de acoso sexual.
- Bajos niveles de **retención de mujeres en roles de conducción de vehículos públicos.**
- Identificadas **necesidades de formación** del personal operativo de primera línea en dar respuesta a las víctimas de acoso sexual.

# >> El Plan de Género, Diversidad e Inclusión del proyecto Movilidad Sostenible

## Área temática 1: Trolebuses inclusivos y libres de acoso

**1.1 Evaluación de la eficacia del mecanismo de reporte de acoso sexual** (SMS #6367).

**1.2 Formación en materia de acoso sexual** dirigida al personal de la EPMT PQ.

**1.3 Adquisiciones inclusivas** y transformadoras del género.

## Área temática 2: Igualdad de oportunidades en la EPMT PQ

**2.1 Diagnóstico social y de género** relativo al empleo de mujeres en roles de conducción de trolebuses.

**2.2** Apoyo técnico en el **diseño de una una estrategia orientada a fomentar la igualdad de oportunidades** en puestos operativos de la EPMT PQ.

**2.3** Conceptualización de un **concurso con premios** para promover la igualdad de género en el mundo del trabajo y la empresa.

## >> 1.3 Adquisiciones inclusivas





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**FIN**  
**Muchas gracias**

[elisabetv@unops.org](mailto:elisabetv@unops.org)



# Thank you!

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