POWER DRIVE SOUTH AMERICA

EXHIBITION & CONFERENCE
AUGUST 27–29, 2024
SAO PAULO, BRAZIL

WEBINAR

Charging Infrastructure for Electric Vehicles in Brazil – Challenges and Prospects

ABOUT THE ORGANIZER OF THE WEBINAR

The smarter E South America

LATAM’s innovation hub for the new energy world

By uniting four parallel exhibitions, The smarter E South America is LATAM’s largest platform for the new energy and mobility world. Following the vision of a renewable, decentralized and digital energy world and a sustainable mobility future, The smarter E South America takes a comprehensive approach by presenting cross-sector solutions and technologies. It creates opportunities to address all key areas across sectors and industries. Focusing on the interplay of power generation, storage, energy management and e-mobility, The smarter E South America brings together international stakeholders of the energy and mobility future from across the world’s most influential markets.

CONTENT

Charging Infrastructure for Electric Vehicles in Brazil – Challenges and Prospects

Content of Webinar

The presence of electric vehicles is already a reality on the Brazilian automotive scene. According to the Brazilian Association of Electric Vehicles, in 2023, 93.9 thousand units were registered, representing a growth of 91% compared to 2022. This expansion is accompanied by a diversification of brands and models on the market.

This underscores the importance of accessible charging infrastructure. Only a part of the demand can be met by private charging at homes, condominiums, and businesses. Public charging stations are essential to provide the same level of convenience and accessibility as conventional vehicle refueling.

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Time for Questions

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Thank you for your Attention!

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2024

Charging Infrastructure for Electric Vehicles

Challenges and Prospects in Brazil

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v1

EV Sales in Brazil

- **271,727 light electric vehicles** have been registered in Brazil, since 2012

- **92,951 thousand units** only considering 2023, representing a **growth of 91%** compared to new registrations in 2022

Source: Brazilian Association of Electric Vehicles (ABVE).

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Mobility Evolution

Comparative of YoY growth in registration of new cars in Brazil

Adaptado de: Anuário da Indústria Automobilística Brasileira 2023, Anfavea

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EV Growth

In the **first four months of 2024**, **51,296** light electric vehicles were **registered**, an **increase of 162%** compared to the same period last year (19,579).

Source: Brazilian Association of Electric Vehicles (ABVE).

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EV Market Share

- In April, 2024, the light electric vehicle **market share** was **7.3%.**

- **Projections** for 2024 indicate a **market share** of **10%** and more than **150,000 units sold**.

Source: Brazilian Association of Electric Vehicles (ABVE).

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WHAT MOST INFLUENCE EV ADOPTION IN BRAZIL?

1: **Initial cost (38%),**
2: **Lack of charging stations (36%),** and
3: **Inadequate charging infrastructure (30%).**

Source: EY

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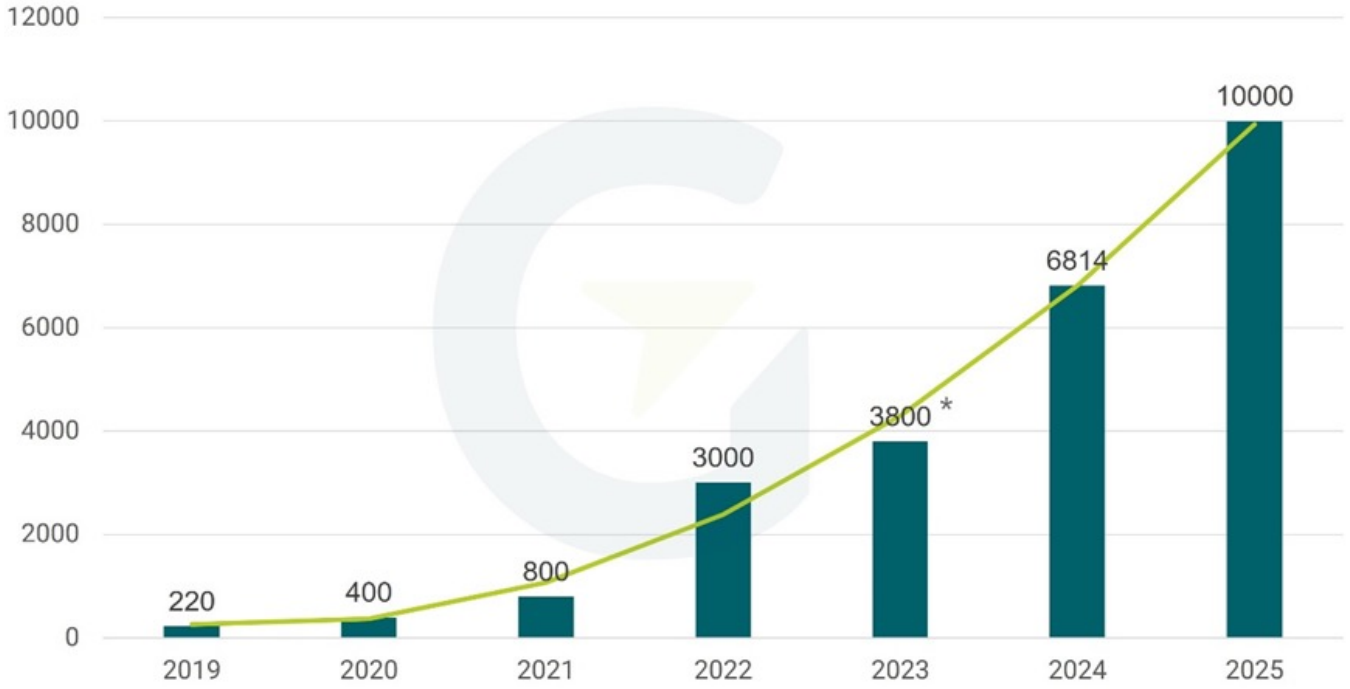
EV Charging Stations (CS) - Brazil



* Data up to August 2023

Source: PNME, 2023 (Adapted)

4.230 CS in operation in public and semi-public spaces - Up to the beginning of 2024 (1)

(1): According to Bright Consulting

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PV Installer Market Research

Strategic Study 2024

DISTRIBUTED GENERATION

Brazilian Solar PV Market

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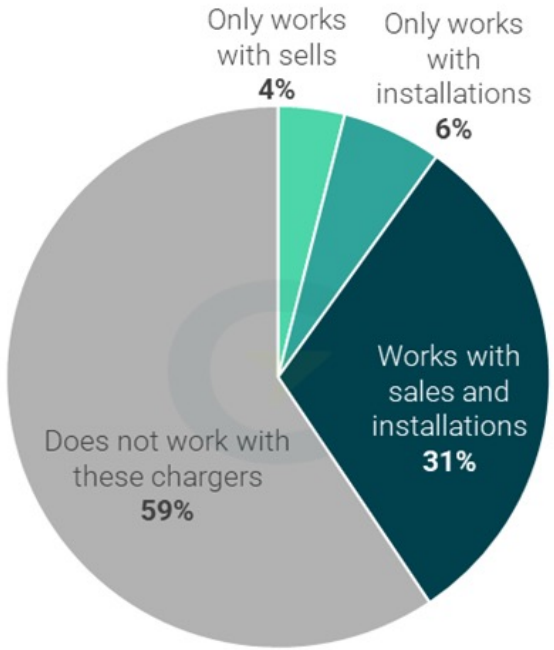
- Carried out with **3,704** Brazilian **PV integration companies**
- January, 2024.

Do you Sell or Install EV Charging Stations (CS)?



Source: Greener, 2024.

- **41%** of PV integrators in Brazil **sell and/or install CS**
- **11%** **Already sold at least one** vehicle charger, while **15% installed at least one**.

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EV PURCHASE INTENTION

According to a survey by EY Brazil, **”57%** of Brazilian people expressed an **intention to purchase an EV”**, slightly surpassing the global average of 55%.

Source: EY

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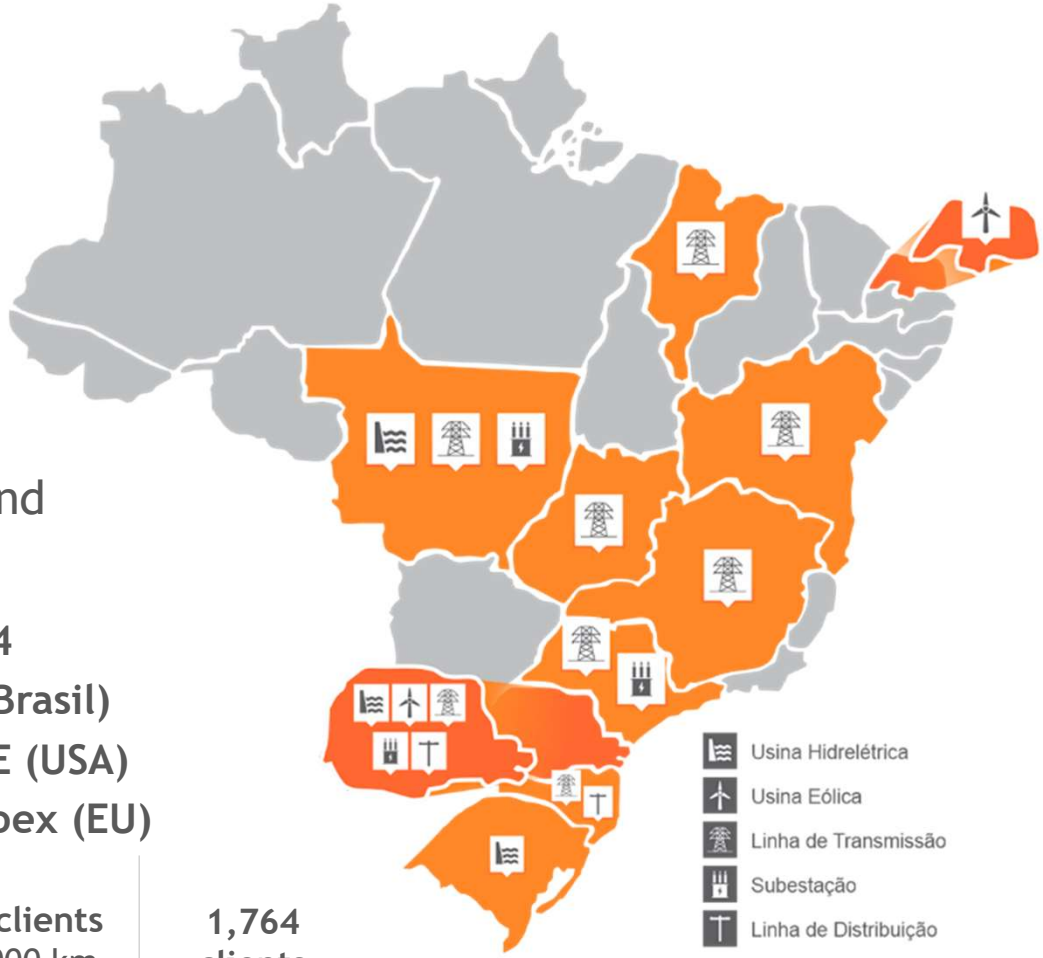


Founded in 1954

25 years in B3 (Brasil)

22 years in NYSE (USA)

17 years in Latibex (EU)

54 Power Plants 6,4 GW Instaled Power	**3,300 km Power Lines** 500 and 230 kV	**5 mi clients** 200,000 km distribution lines	**1,764 clients** 2,3 GWh contracts

EVs are in Copel's history

1981 2008 2018

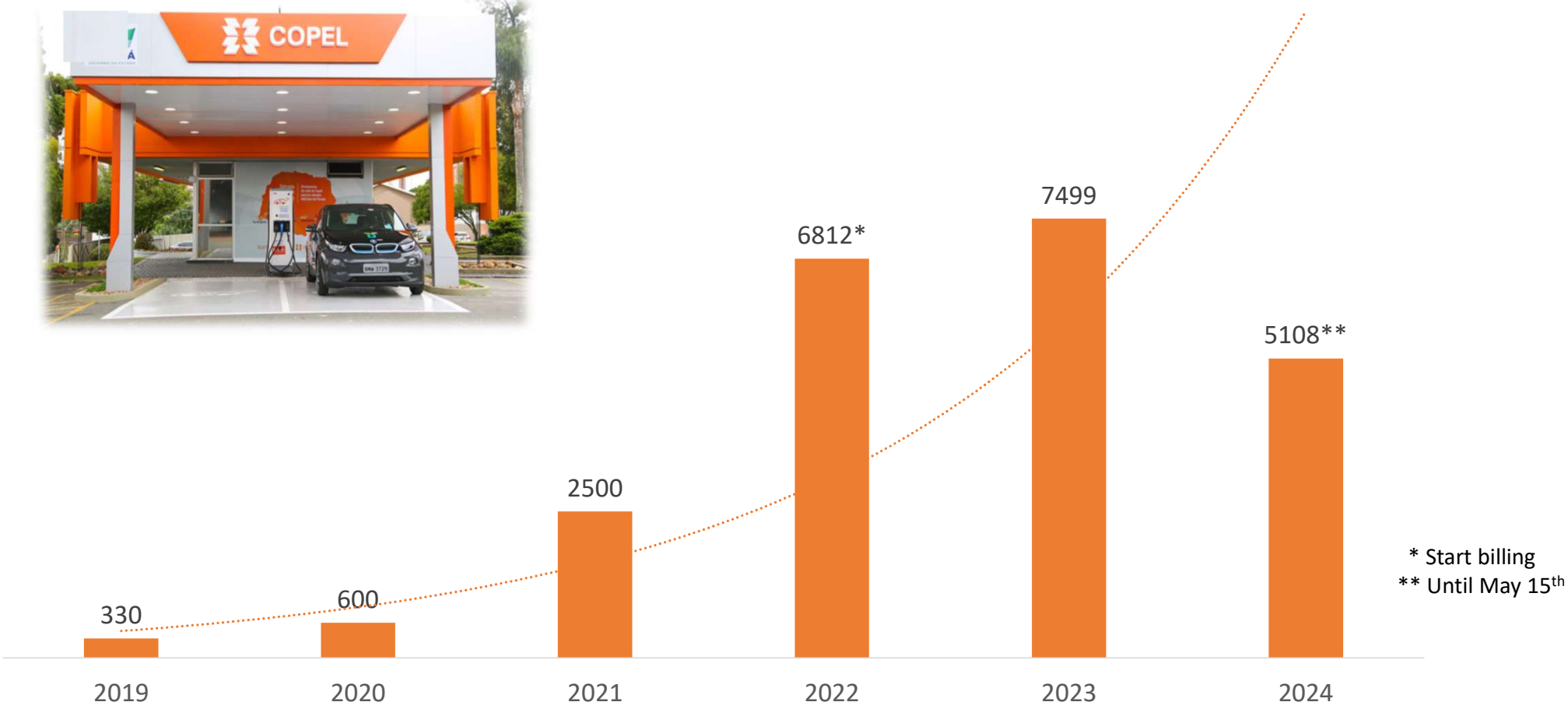
Deployed in Dez. 2018

12 Charging Stations

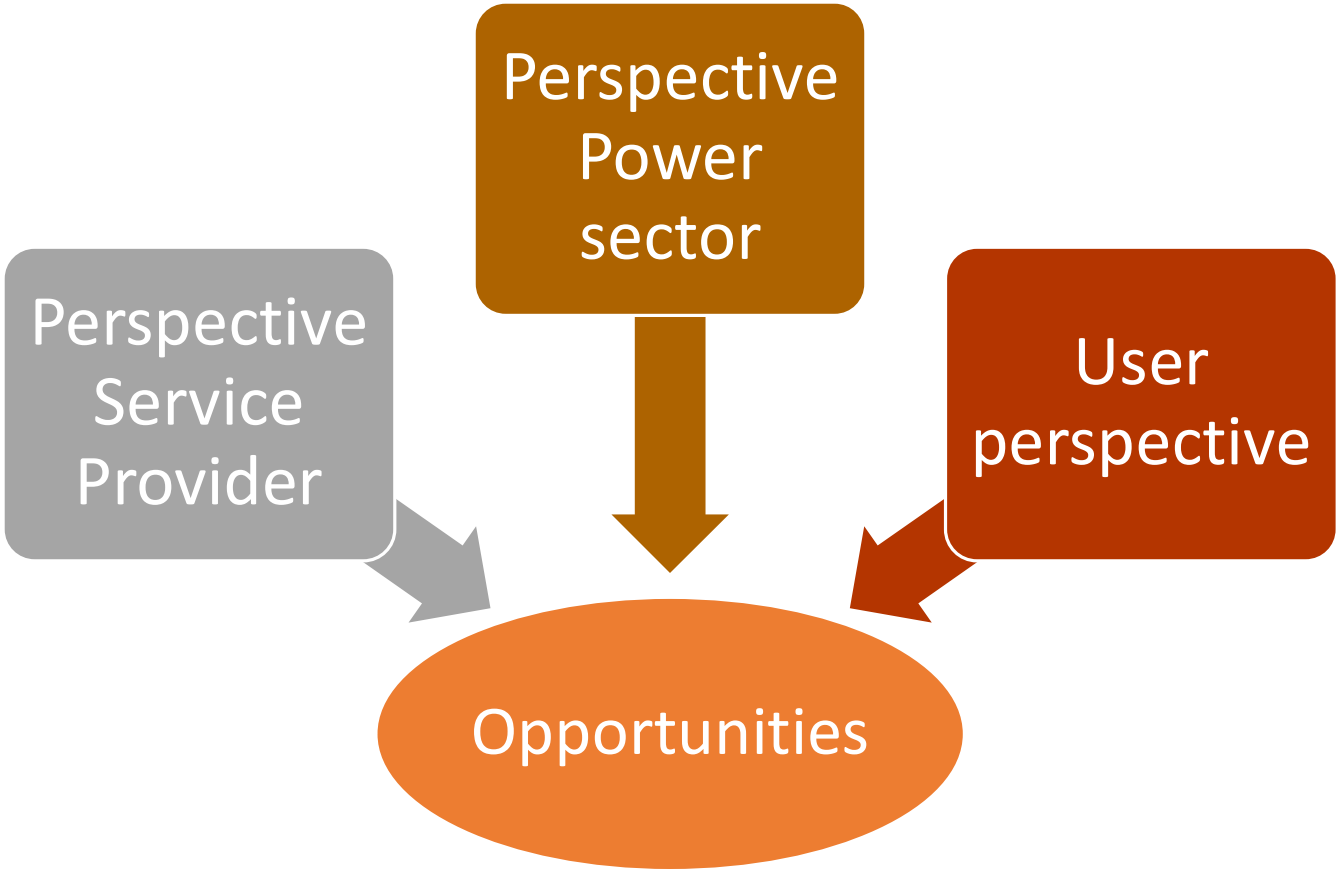
735 km (457 mi) route

R$ 5,5 M. (U$ 1,07 M)

Charge histogram: Eletrovia Copel



Challenges in EV charging infrastructure



Perspective Service Provider

- More chargers are needed: Huge void gaps to cover;
- Chargers failure: Technology needs maturity;
- Apps to enable the charge: Be more user-friendly;
- Communication: Needed to enable apps and chargers to talk;
- Users: Not used to handle with EVs and chargers;

Source: plugshare.com

Perspective Power sector

- Greater integration with distributed energy resources: Especially PV and battery;
- Power flow control: Need for coordinated management of energy and demand;
- Demand increment: Preparation to handle with mobility demand;
- Adequacy of technical standards: Review of policies and norms to easy the implementation of recharge systems and improve network;

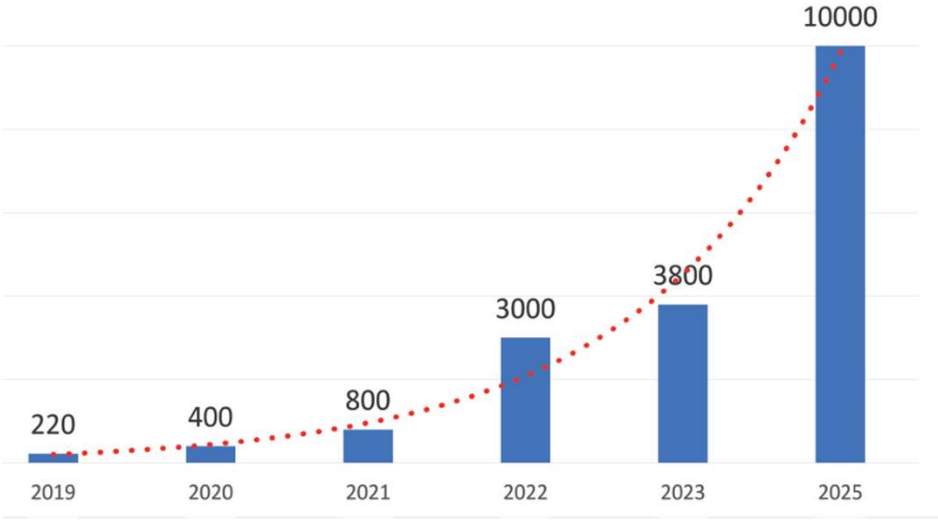
Source: copel.com

Source: tesla.com

User perspective

- Home charging: Essential, however, a big problem in condominiums;
- Charge Insecurity: Lack of infrastructure keeps new users away;
- Lack of EV knowledge: How charging works, energy and financial impacts;

Estimate of public and semi-public charging stations



Source: Adapted from PNME 2023

Opportunities

- Evs, light and heavy vehicles are coming…;
- Home charging: simple and smart solutions for home and condominiums;
- Expand charging network: Especially between cities;
- APP improvement: Interface more user-friendly;
- Energy flow control: Do not exceed contracted demand;
- EV chargers combined with Distributed Energy resources: perfect marriage between green energy and Mobility;

Sales in emerging markets are increasing, albeit from a low base, led by Southeast Asia and Brazil…

Nearly one in five cars sold in 2023 was electric…
Electric car sales neared 14 million in 2023, 95% of which were in China (60%), Europe (25%) and the United States (10%).

Source: https://www.iea.org/reports/global-ev-outlook-2024/trends-in-electric-cars