EV and EV Charging Infrastructure Forecasts

Speaker:

Efra Farah Usmani

Lead Analyst– E-Mobility

Efra.usmani@ptr.inc

Prepared For:

Asia Pacific EV Charging infrastructure 2023

PTR Inc.

The three pillars of PTR: Transparency, Diligence, and Digestibility

Founded in 2016

Owned and operated by researchers, analysts, and power engineers

Objective:

To understand the recent and upcoming changes to our electric infrastructure while identifying and communicating the best technologies and associated business models applied by industry leaders.

COVERAGE

Power Grid

New Energy

Specialized Power Grid & New Energy Market Research

Covering all aspects of transmission & distribution grid and emerging new energy topics

Transformers
(Dist., Power)

Substation Automation
(Dist. vs Cent.)

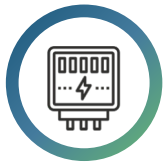
EV Charging Infrastructure
(Public, Private, Passenger/Comm.)

Switchgear
(HV, MV)

Port Electrification
(Shore-to-Ship, Microgrid)

Energy Storage Value Chain
(Utility Scale, C&I)

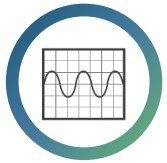
Flexible AC Trans. Systems
(SVCs, STATCOMs)



Smart Meters
(Power Quality, AMI)

Hydrogen in Power Sector
(Tech., Demand, Value Chain)

HVDC Market Analysis
(VSC, LCC, Cables)



Power Factor Correction
(Active, Passive)

AI in Power Grid
(Projects, Corp. Strategy, Policy)

Synchronous Condensers
(4-Pole, 6-Pole,...)

Grid Communication
(Private LTE, 5G)

Impact of EVs on Power Grid
(Quantitative, Trafo., Switchgear)

Industrial Motors & Drives
(MV/LV - Custom)

Comm. & Off-Highway Vehicles
(BEVs, PHEVs, ICEs)

Agenda

Vehicle Electrification Trends
- Vehicle Electrification Trends- Light-Duty Vehicles
- Vehicle Electrification Trends- Trucks and Buses
- Electrification Landscape

Global EV Chargers Market Overview
- Global EVSE Market Forecast
- Global Public EV Charger Market
- Global Private EV Charger Market

APAC EV Chargers Market Trends
- Regional EVSE Market- APAC
- EVSE Country Market - APAC

EVSE Policies and Incentives
- Global EVSE Policies & Incentives

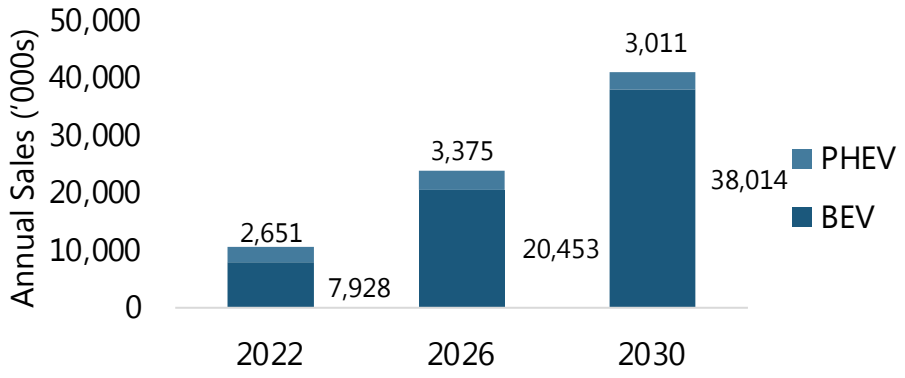
Competitive Landscape
- Key Competitive Analysis Trends

Vehicle Electrification Trends

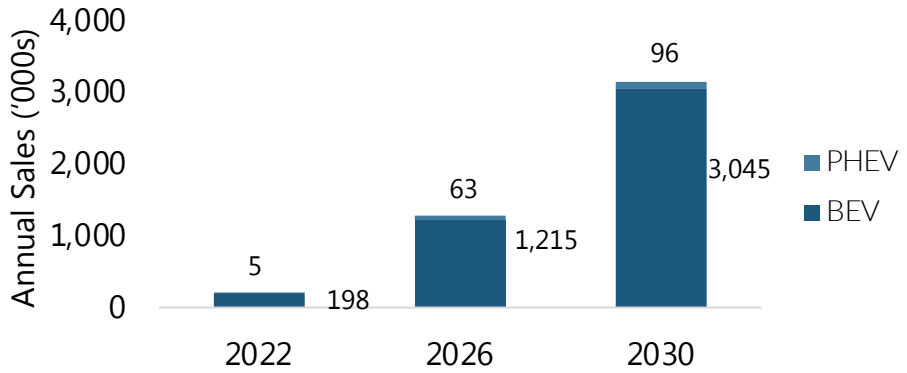
Electrification Landscape – Light-Duty Vehicles

BEV passenger car and light commercial vehicle sales are rising globally, with greater sales in the APAC region.

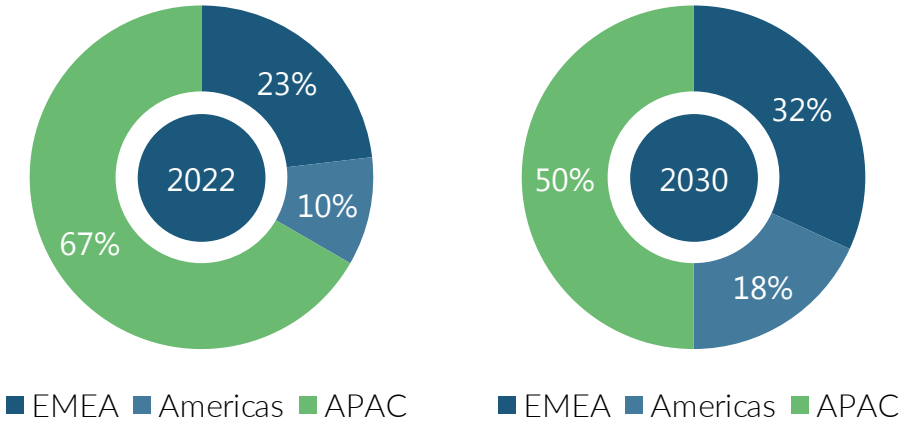
Annual Passenger EV Sales



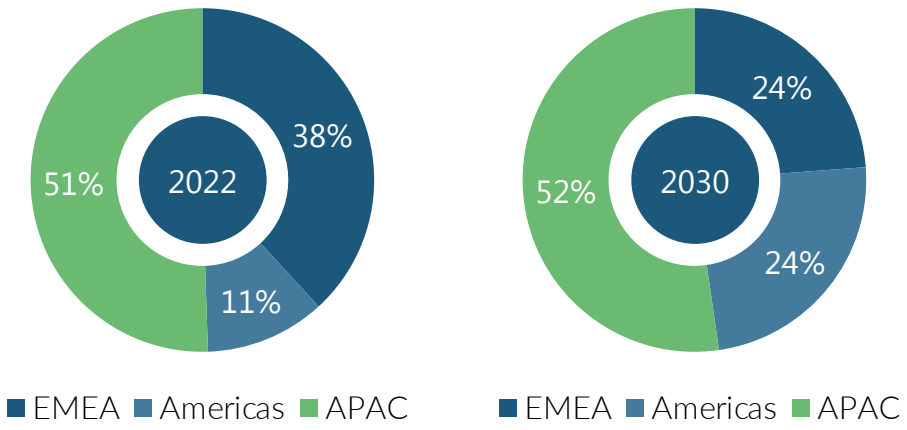
Annual Electric LCV Sales



Regional Distribution (Passenger EV)



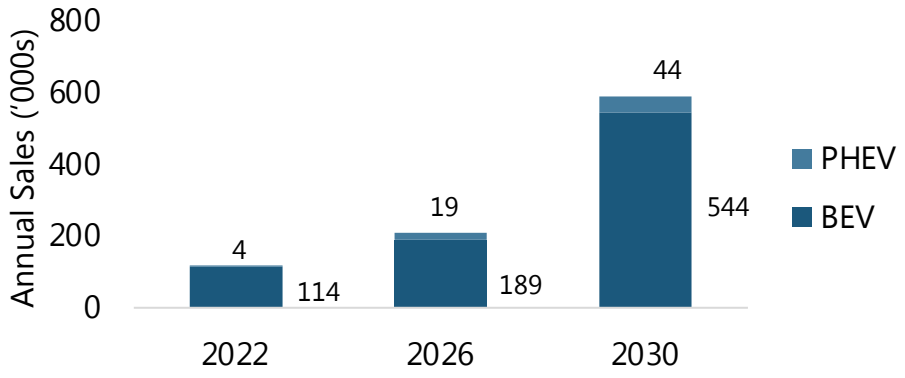
Regional Distribution (Electric LCV)



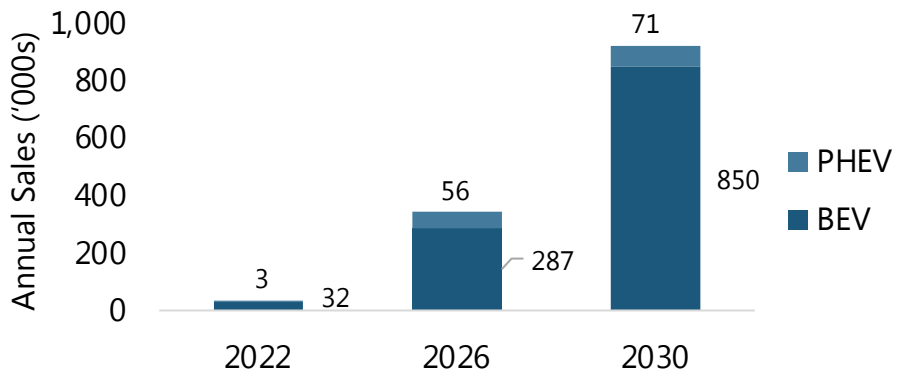
Electrification Landscape – Trucks & Buses

Compared to PHEVs, BEV truck and bus sales are increasing globally, with greater sales in the APAC region.

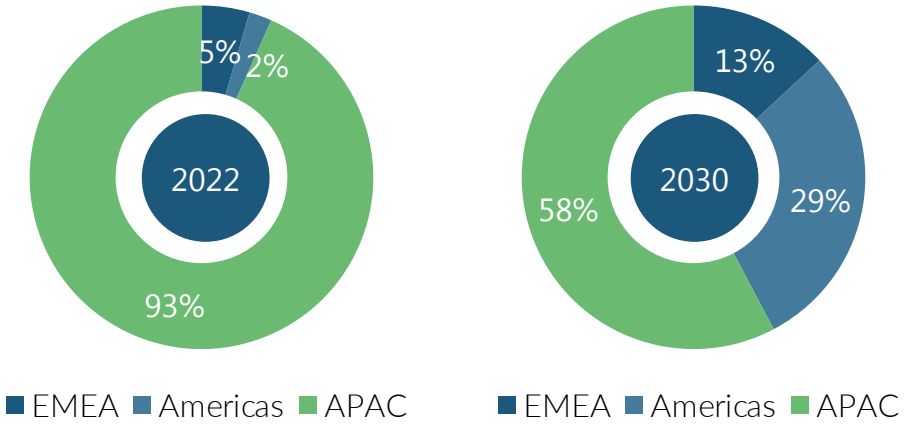
Annual Electric Bus Sales



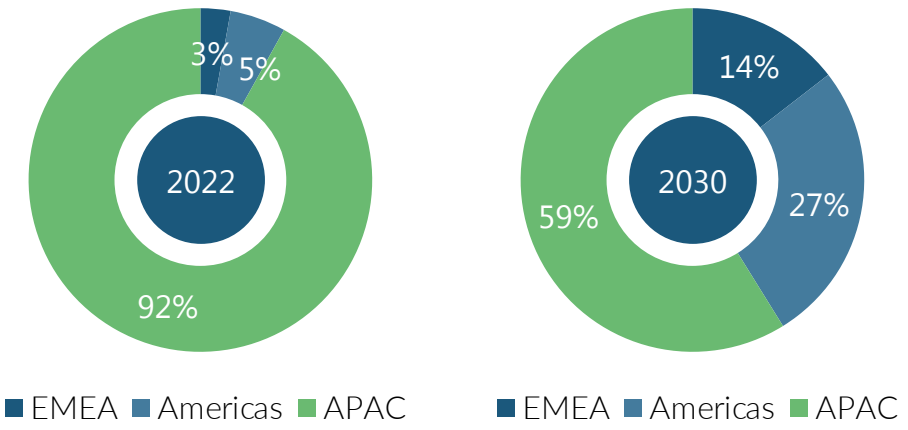
Annual Electric Truck Sales



Regional Distribution (Electric Bus)

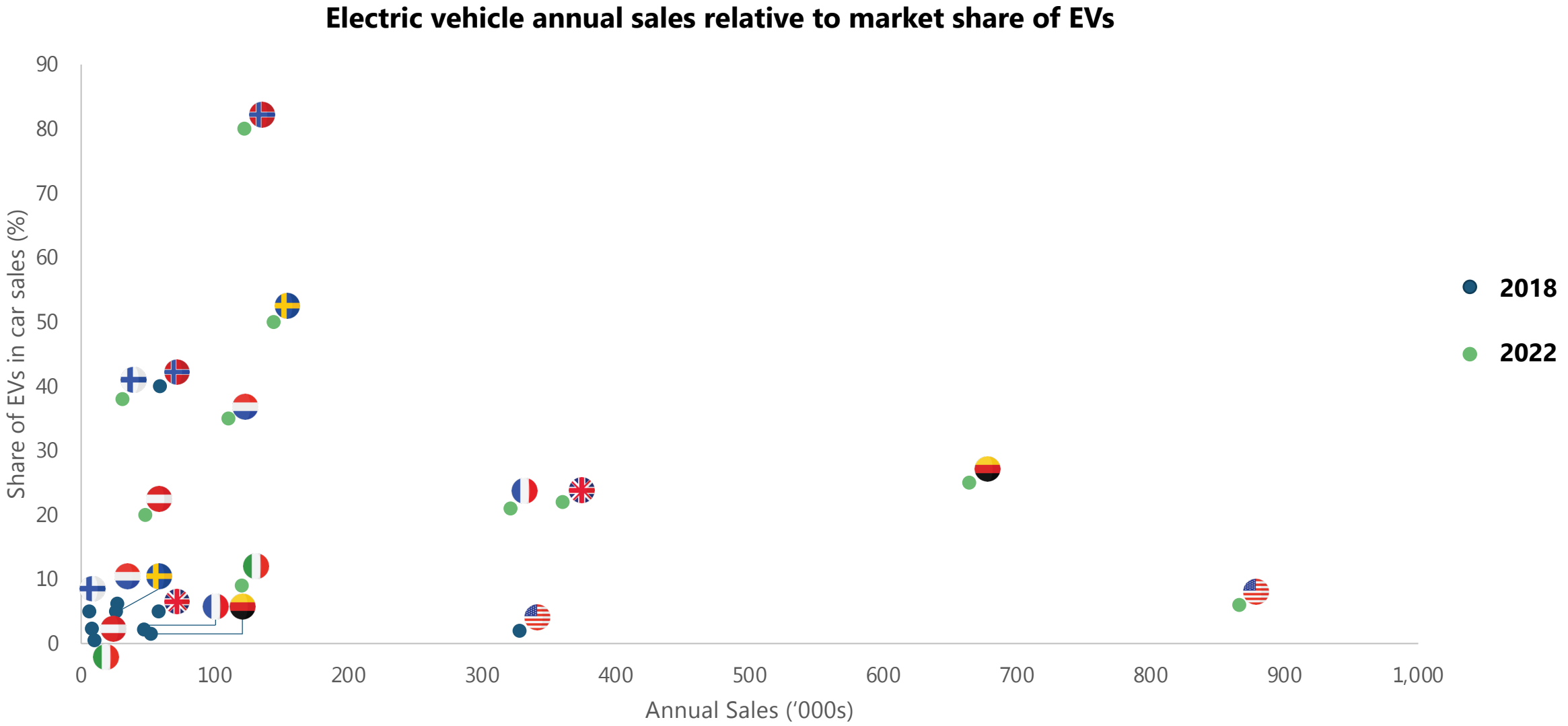


Regional Distribution (Electric Truck)



Electrification Landscape

Norway, Sweden, Finland had the highest market share for electric vehicles in 2022



Global EV Chargers Market Overview

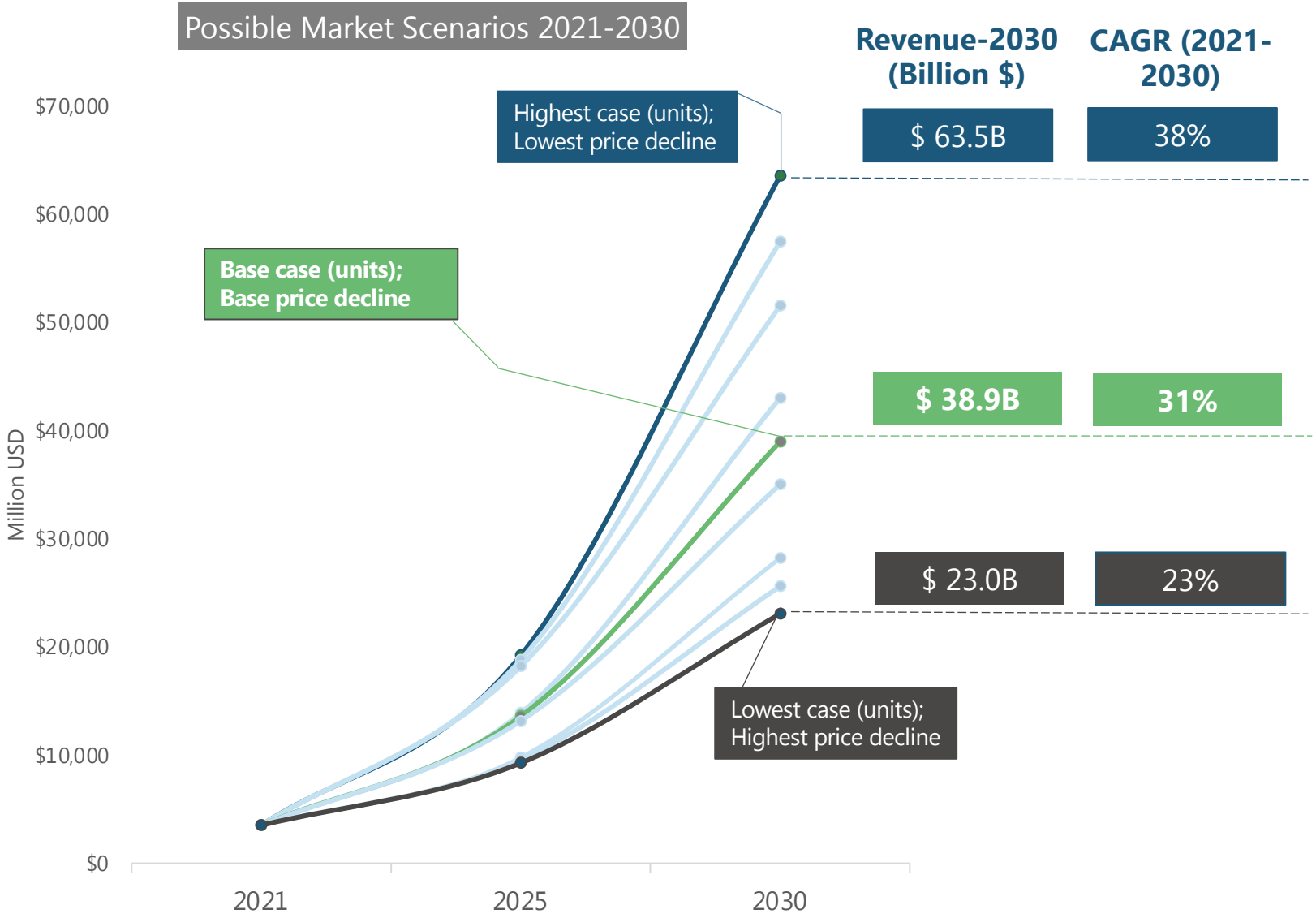
Global EVSE Market Forecast

***Volatile forecasts**; Implementation of the plans and future price decline can significantly impact the market revenue in the forecast (Global)*

Rate of penetration of EVs in the market

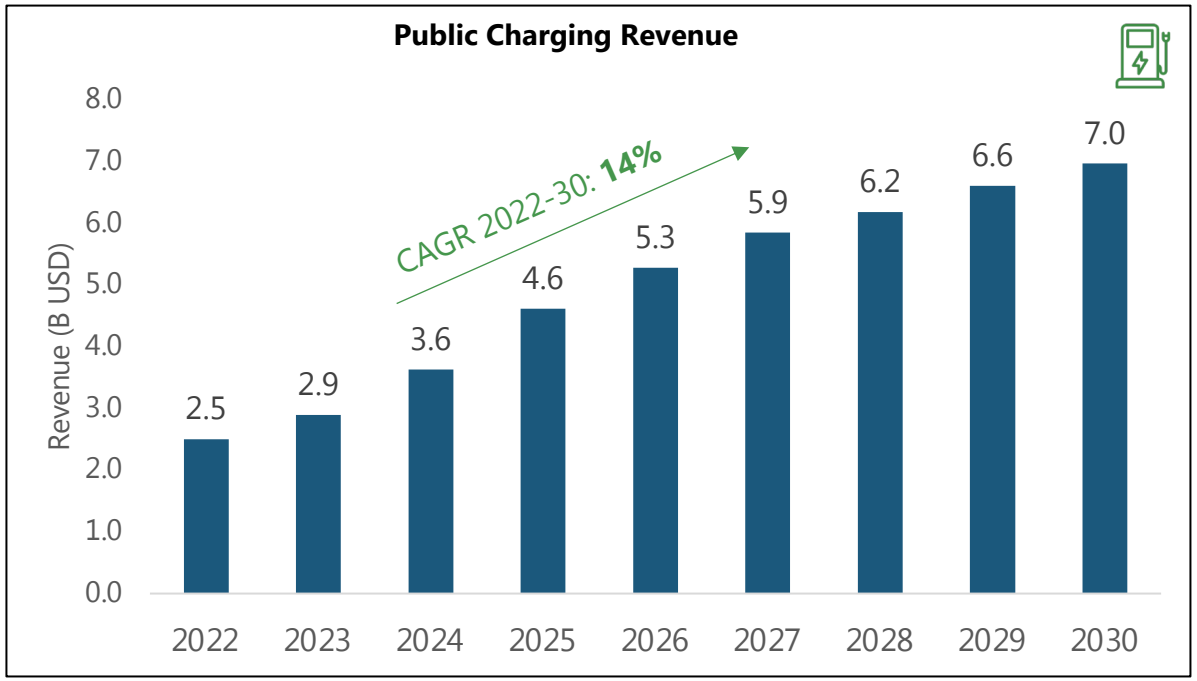
Implementation of government plans and incentives for charging infrastructure

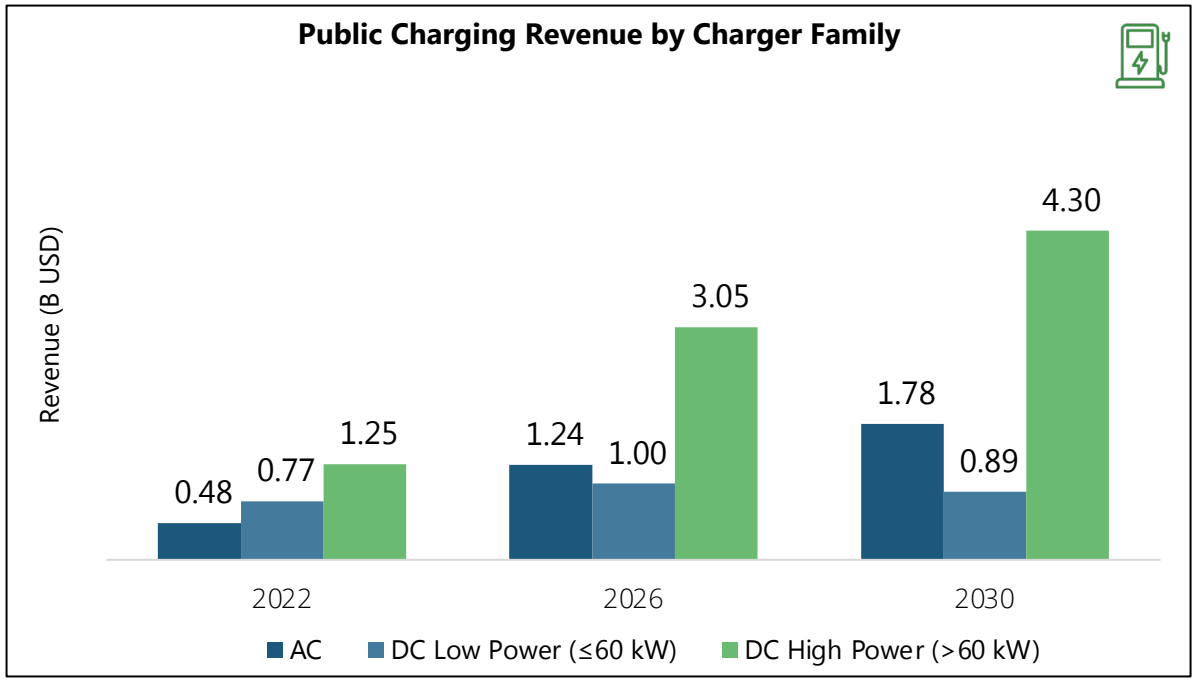
Price decline of EV chargers



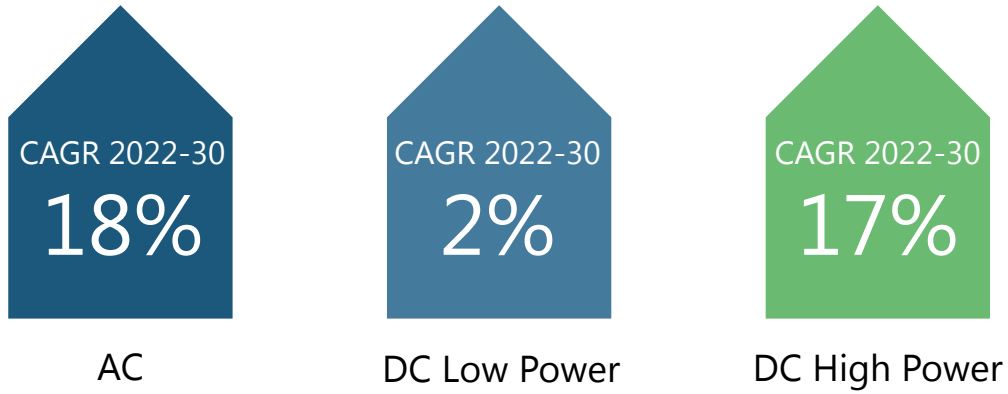
Global Public EV Charger Market

*DC high power charging (>60kW) is expected to grow rapidly in **public** charging infrastructure in comparison to DC low Power*



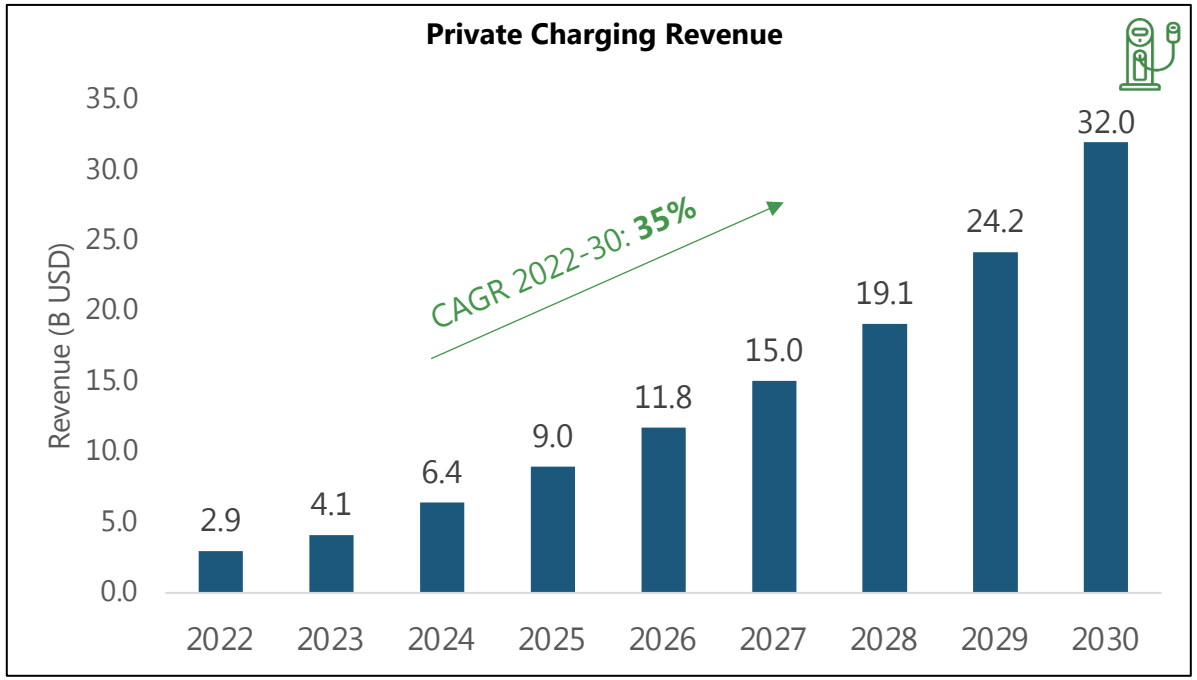


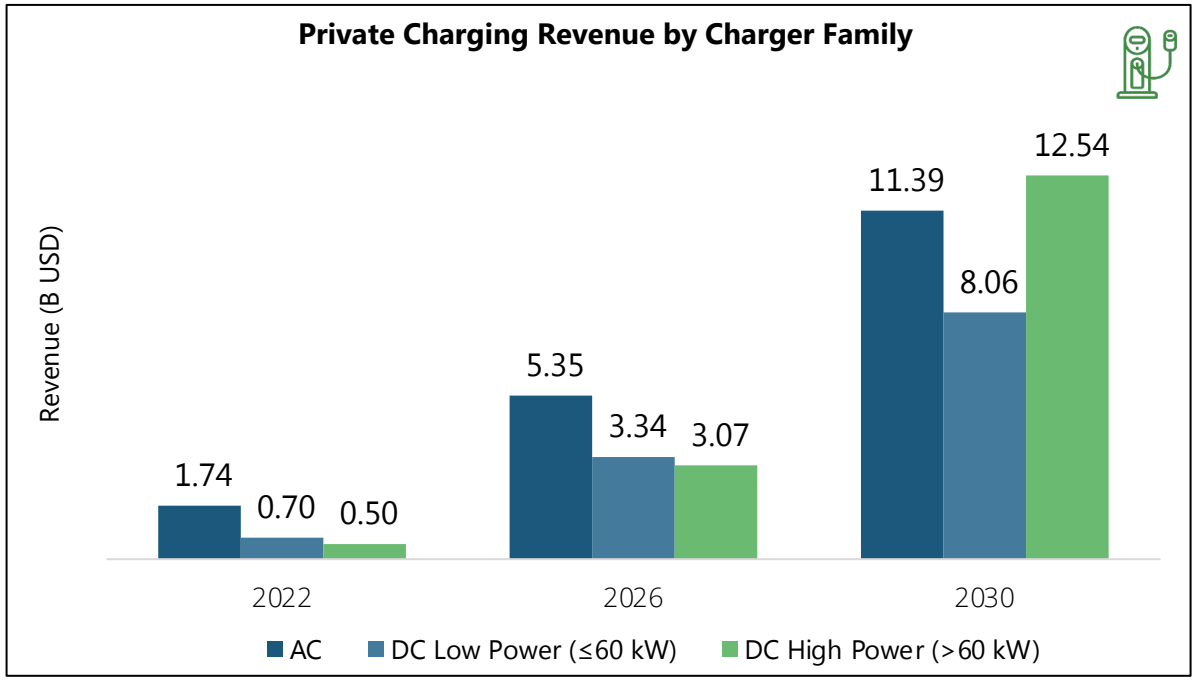
- Limited growth of public low-power DC chargers in coming years
- Destination and en-route applications to spearhead growth of public high-power DC chargers



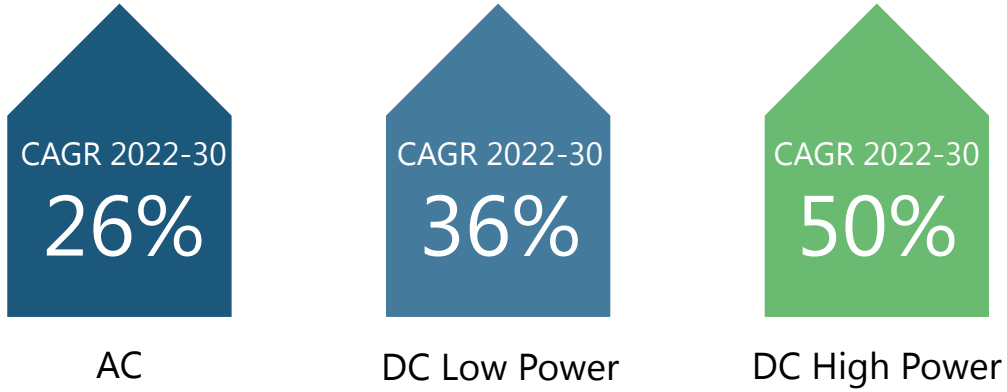
Global Private EV Charger Market

While AC chargers remain the dominant type in EV charging, DC charging will gain more popularity in fleet applications.





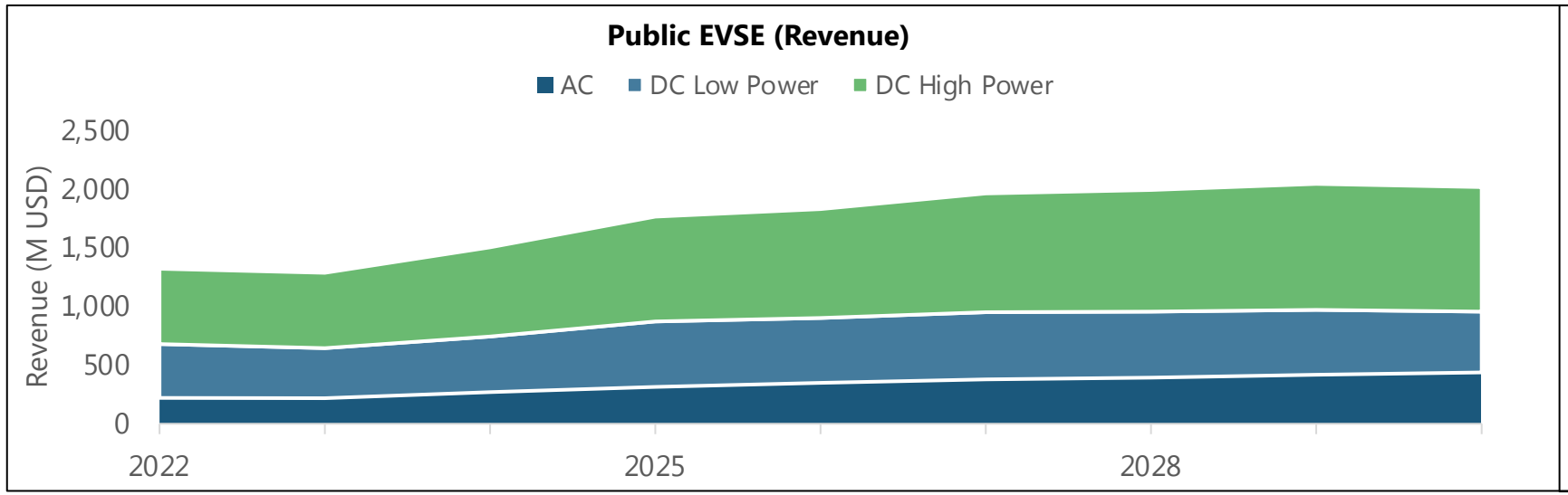
- AC chargers' leading market share will lead in residential and workplace installations.
- In private sector, DC charging to grow exponentially driven by fleet electrification.

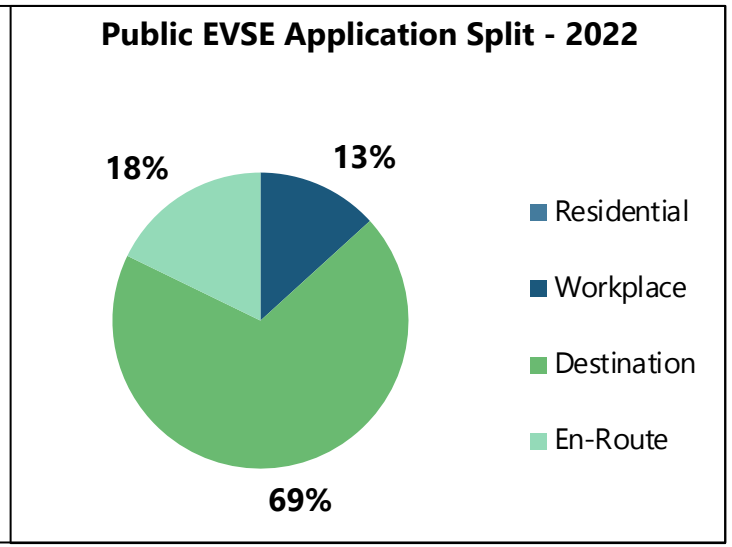


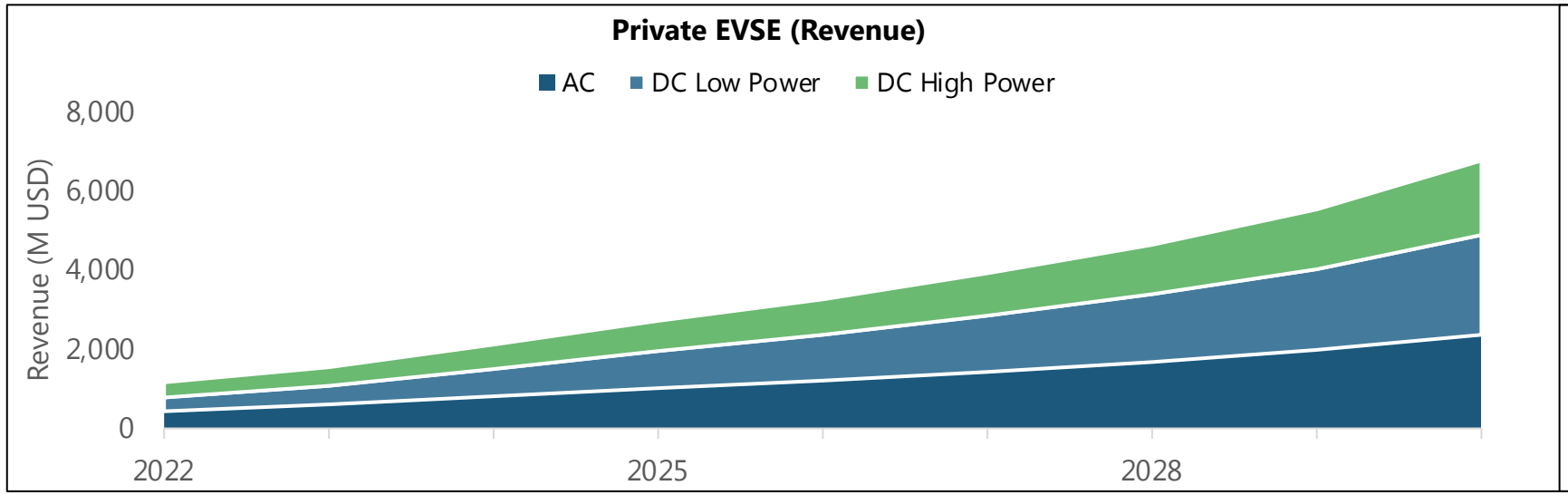
APAC EV Chargers Market Trends

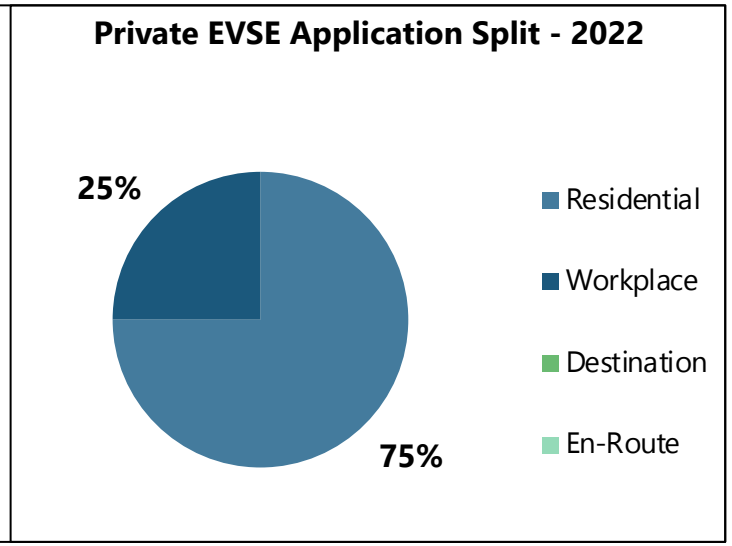
Regional EVSE Market - APAC

APAC region accounts for a significant share in the global EVSE market primarily because of China and South Korea spearheading the growth





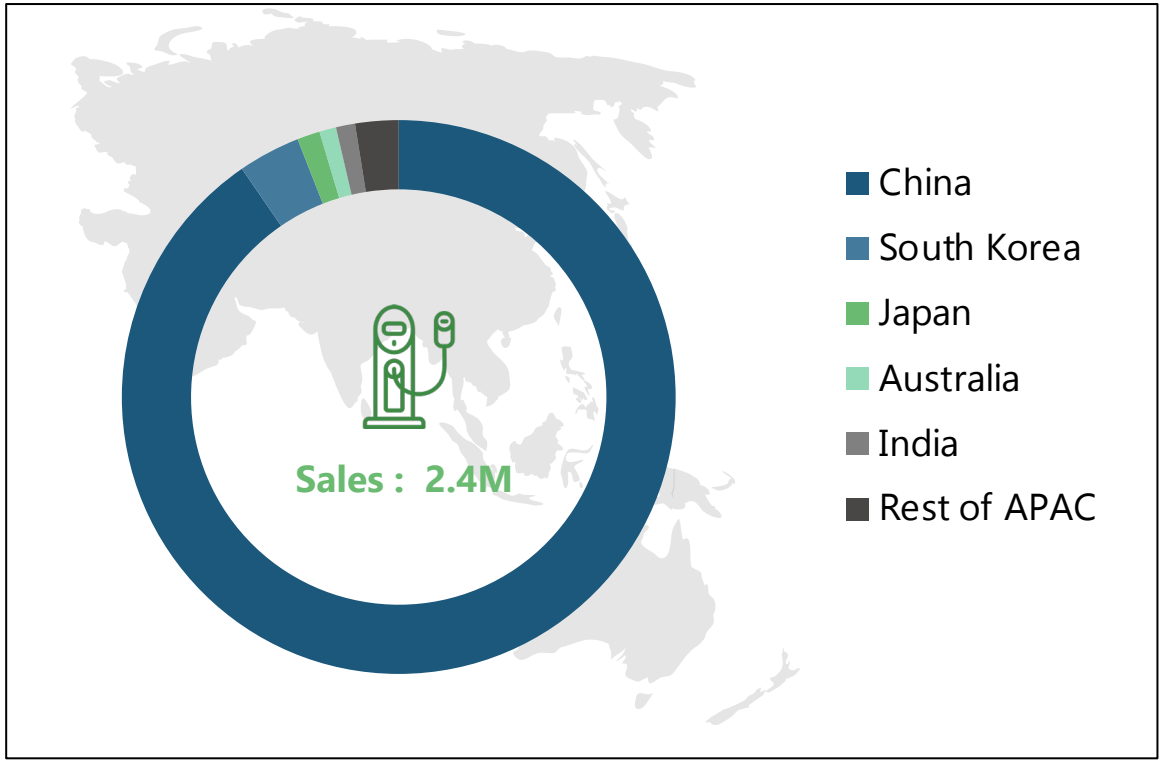




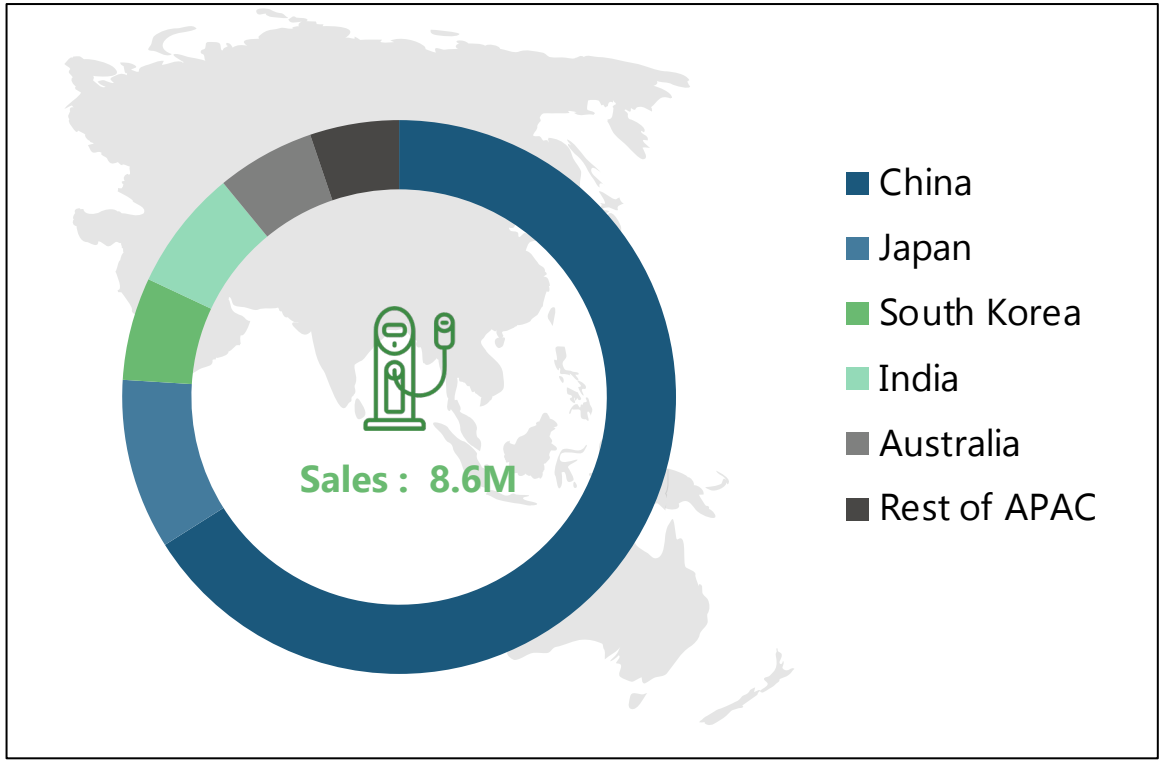
EVSE Country Markets - APAC

China right now dominates the APAC EVSE market, however by 2030, other APAC countries will increase their market share

Charging Points Annual Market - 2022



Charging Points Annual Market - 2030



EVSE Policies and Incentives

Global EVSE Policies & Incentives

EV charging market is currently an incentive driven market

Canada:
- **$680 million** '**ZEVIP**' funding up to 50% of EVSE project costs.
- Provincial EVSE rebates, incentives and investment plans.

United Kingdom
- **£1.9 billion** in charging infrastructure and consumer incentives

Germany
- Govt. approved to spend **6.3 billion euros** in next three years to scale up EV charging stations
- The **Deutschlandnetz** was approved by EU commission to subsidize **8500** HPC stations by spending **1.8 billion** euros

EU Green Deal
- Installing high-power charging stations every 60 km on highways.
- Directive for new buildings to have chargers installed.

China
- China has"**14th Five-Year Plan**" for every province that promote the electrification of public and private vehicles.
- **New Energy Automobile Industry Development Plan (2021-2035):** This policy aims at vigorously promoting the construction of charging and improve the service level of charging infrastructure.

USA
- **Bipartisan Infrastructure Law ($7.5 B)**
- EVSE rebates, incentives and investment plans at state level and from regional utilities.

France
- **$ 113 million** funding for fast-charging stations.
- The ADVENIR Program
- Tax exemptions & reductions for residential, workplace and public chargers.

South Korea
BEV will be subsidized by the state government with **8 million won (approx. 6,600 dollars.**

India
- The Government of India has been supporting the EV industry through schemes such as FAME1 and FAME2 with a major focus on charging infrastructure with **INR 10 Billion** has been allocated for the charging infrastructure.

Italy:
Subsidies for the purchase and installation of EV chargers

Japan
All new cars sold in Japan will be clean energy vehicles by **2035**, according to the **government of Japan (GOJ).**

Australia
The Future Fuels Fund is a **$71.9 million** cash pile announced in the 2020-21 federal budget, Recently, The Federal Government has announced a further **$178 million** for the Future Fuels Fund.

- Leading markets
- Emerging markets
- Undeveloped markets

Competitive Landscape

Competitive Landscape (1/2)

Evolving business models; M&As slowly moving E-mobility market towards consolidation

Consolidation

- EVSE start ups and small companies are acquired by energy utilities, large manufacturers and oil giants to strengthen their business
- Smaller companies, specially maintaining public charging networks are not able to sustain because of low utilization of chargers and cost associated

360-degree service

- Companies providing **E-Mobility service** are moving towards providing a **360-degree service**. They manufacture chargers, manage and operate charging stations, design management software and function as an electric mobility service provider as well. Below are some examples:
  - **Eaton** has acquired **green motion** which provides all the above services
  - **ABB** has partnered with **ChargeLab** which will allow them to offer integrated hardware and software services
  - **ABB** is also planning to carve out its EV charging business into a separate legal entity
  - **Chargepoint** acquired Austrian e-Mobility software provider **has.to.be** to accelerate e-mobility developments across Europe.

Competitive Landscape (2/2)

EVSE companies going public, entering new markets and expanding their product portfolio

Companies going public

- To meet the huge market need of chargers, sizable investments are required, hence private EVSE companies are going public through the route of "Initial Public Offering" IPO or through merger with Special Purpose Acquisition Company (SPAC) deals.
- In E-Mobility spectrum, SPAC deal has shown to be preferred over IPO route by OEMs for going public. This is because companies then get imposed with less regulations of the Securities & Exchange Commission (SEC) as well as time frame required is less.
- **Chargepoint**, **Wallbox**, and **Tritium** are the companies that have opted for the SPAC route to go public while **ABB** and some small companies intend to go public via the IPO route. FASTNED and Blink charging have already gone public in 2014 and 2018, respectively, through IPO.

Globalization

- EVSE OEMs are making strategic international expansion plans to scale their footprint to a global level and provide their companies a significant infrastructure share in new regions.
- This expansion is being done through new partnerships, mergers and acquisitions and allows the companies to capitalize on new markets immediately and provides opportunities to strategically increase their global assets
    - **ABB** acquired a majority stake in the Chinese EVSE OEM, **Chargedot** and Indian EV charging digital platform provider, **Numocity**.
    - Multiple Chinese companies including Star Charge, Atess Power Technology and En+ have started acting as a supplier to various European and Americas EVSE OEMs.
    - **U.S** based CPO, **Blink Charging** recently acquired European EV charging operator **Blue Corner** which immediately added **7,000** charging points in **Western Europe** to their network.

PTR's EVSE Market Research

Analysis of EV & EV Chargers market around the globe

EVSE Market Sizing- 28 Countries, 5 Regions

- Installed and Annual Market forecast in Capacity, Application and Owner's views from 2020-2030 (Units, Revenue)
- Public Policies and Plans
- Charger Pricing
- Incentives and Grants
- Market Shares, Top Suppliers
- Presentation of data in PowerBI platform

EVSE Software Service Market Sizing

- Installed and Annual Market forecast from 2020-2030 (Units, Revenue)

EVSE Market Competitive Analysis Report

- Mergers & Acquisitions (M&A)
- Company Profiles of 15 leading EVSE OEMs

PTR Sonar EVSE

- Weekly updates on key market happenings
- Proprietary desktop/mobile app

Your Contacts at PTR

Michael Sheppard
Chief Executive Officer
T. +49 (0)89 12252370
mike.sheppard@ptr.inc

Hassan Zaheer
Chief Commercial Officer
T. +49 (0)89 12250950
hassan.@ptr.inc

Saqib Saeed
Chief Research Officer
T. +49 (0)89 12252374
saqib.saeed@ptr.inc