

EV Forecasts: 2022 Summary of Global EV Market

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In this presentation:

- 2021 & 2022 Sales Review
 - Global Sales review
 - Country rankings
 - OEM & Model rankings
 - The shift from ICE to EV

- Outlook
 - EV launches
 - 2027 Market Forecasts
 - Longer term expectations

EV VOLUMES

Global Market Intelligence for the EV Industry

Data Center

- Sales and Share Tracking
- Battery Deliveries Tracking
- Charging Infrastructure
- Future Vehicles Rollouts
- Vehicle Specs
- Sales Forecasts



Consulting

- Long-term Forecasts
- Industry Analysis
- Reports
- Special Datasets
- Guidance Calls

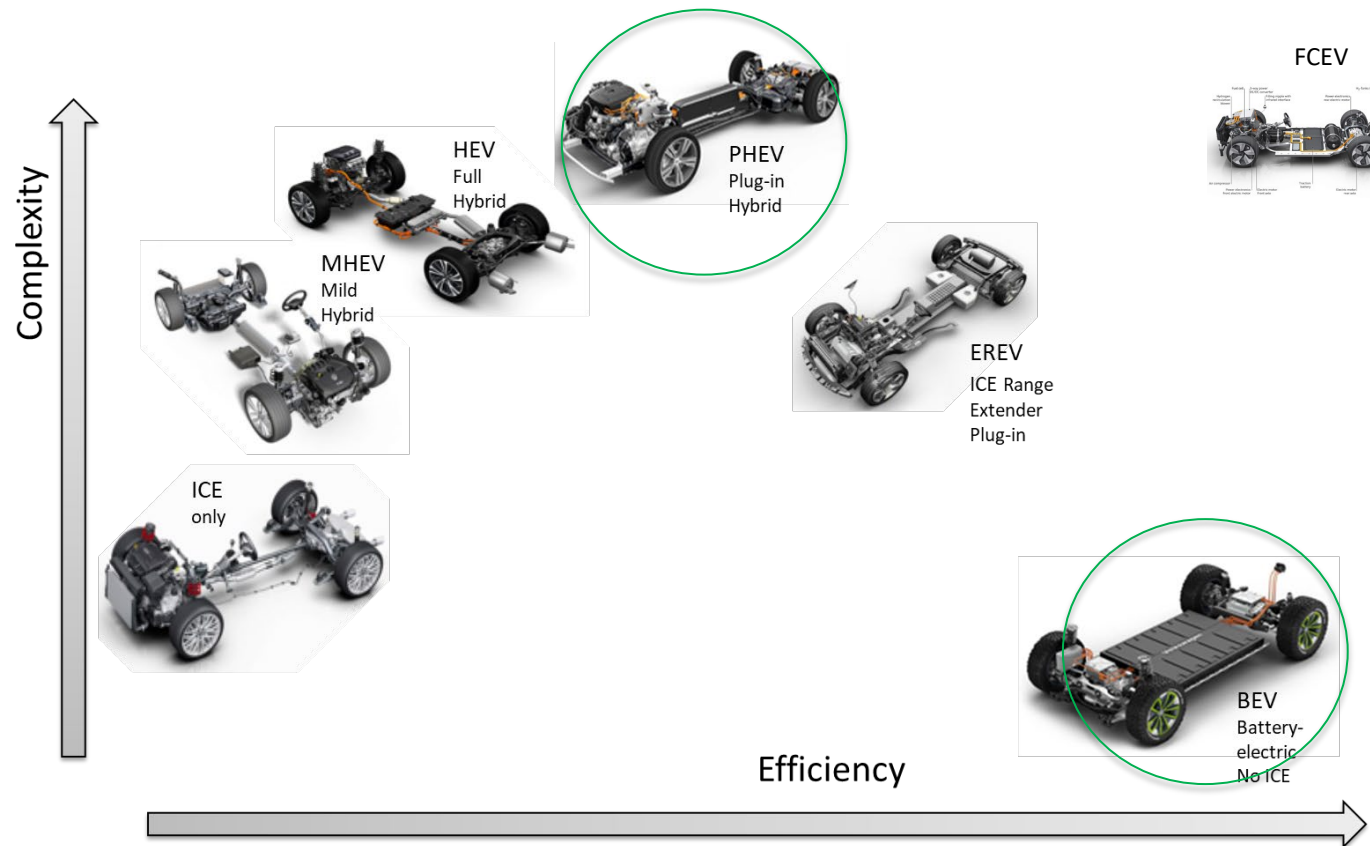


Publications

- Website Articles
- Interviews
- Conferences
- Papers
- Academy & NGO support

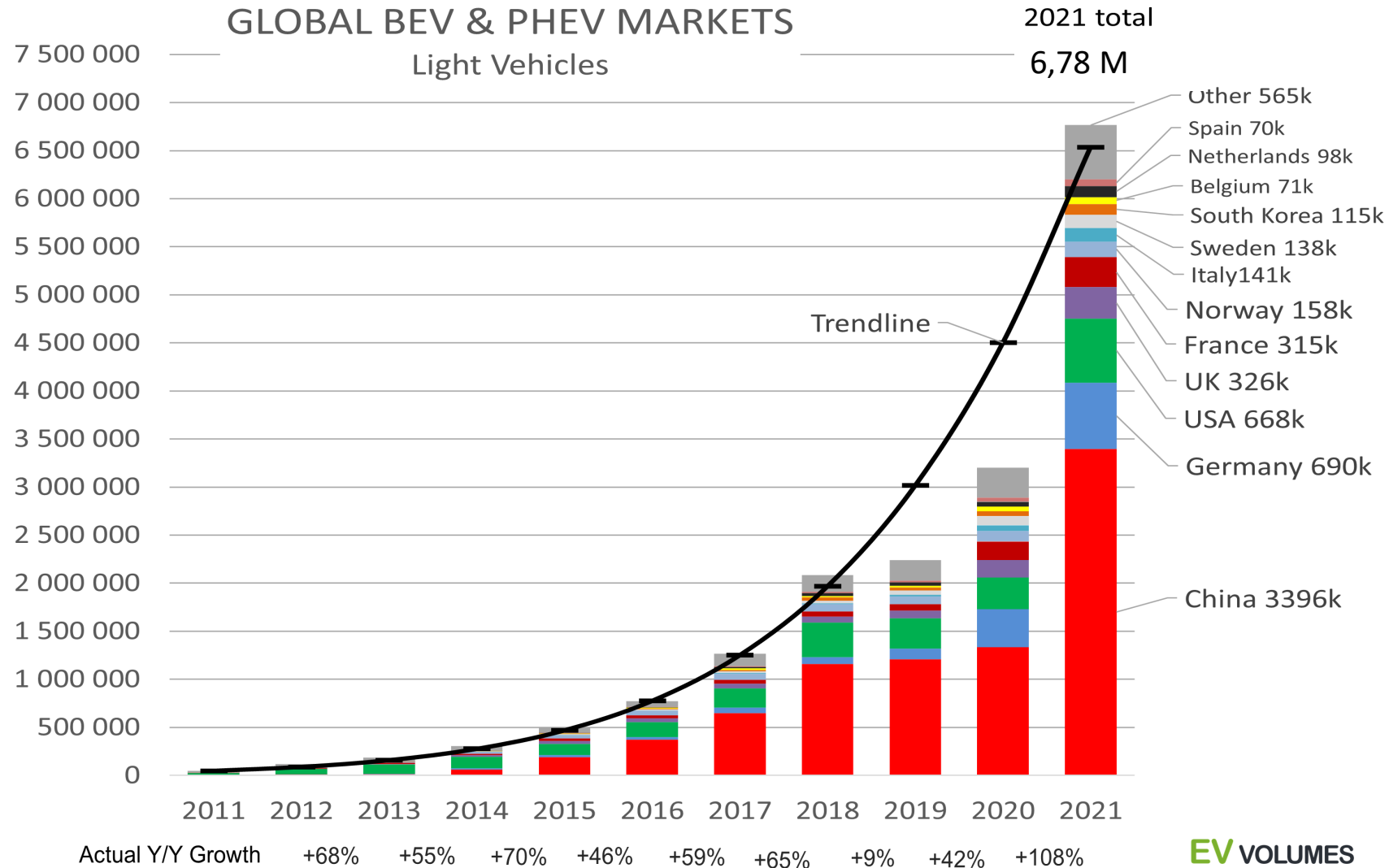


xEV Map for Reference



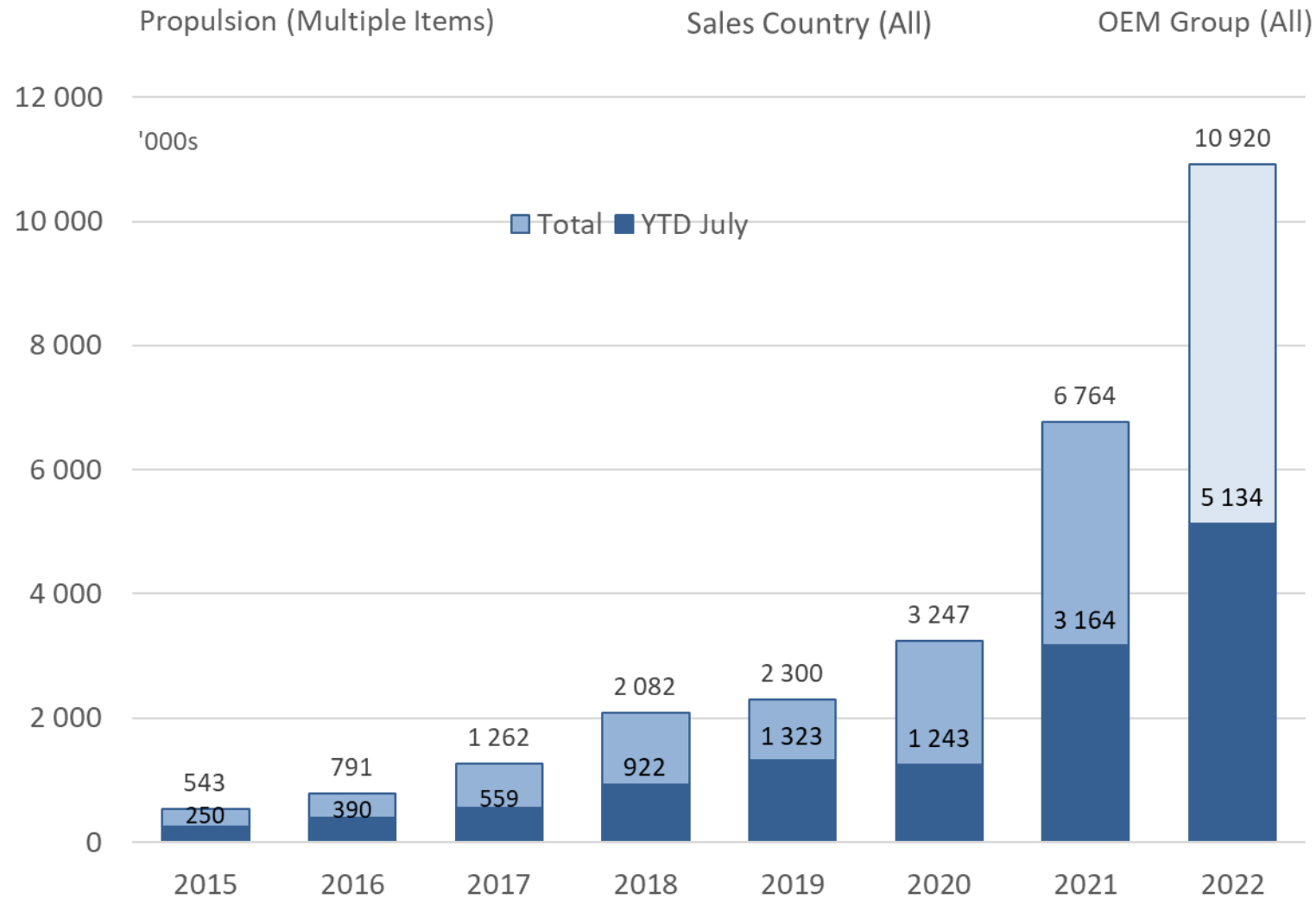
Be careful regarding OEM and Government statements about electrification; the targets may include HEV and MHEV

Historical Annual Country BEV & PHEV Sales





PEV VOLUMES YTD AND FULL YEAR - YTD SAAR FOR 2022



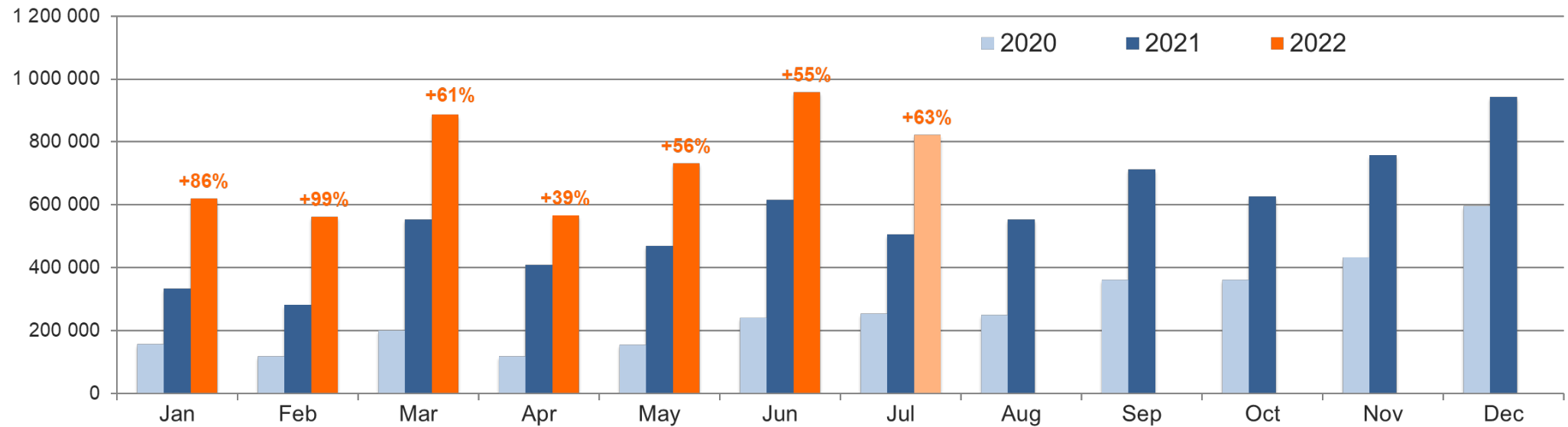
Global Monthly BEV & PHEV Sales last 3 years



GLOBAL
MONTHLY
PLUG-IN
VEHICLE SALES
&
Y-O-Y GROWTH

Light
Vehicles

EV VOLUMES



Electric Vehicles Prove to be Resilient to Current Auto Crisis

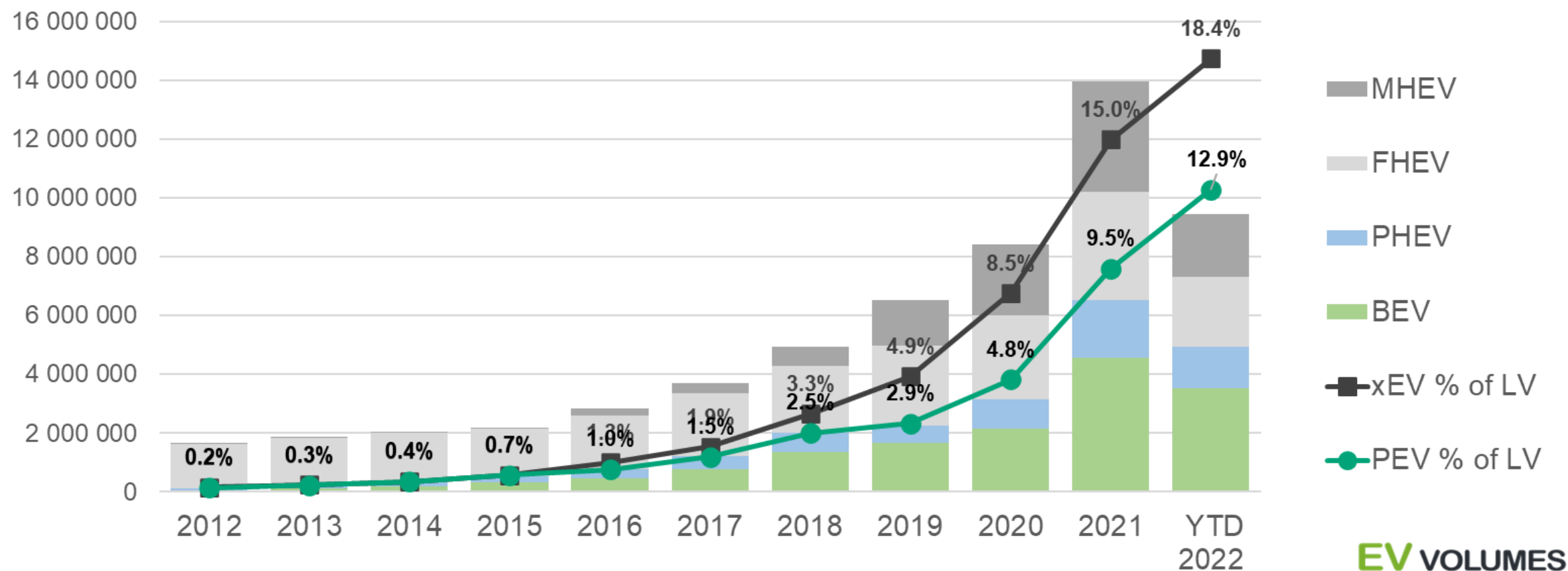


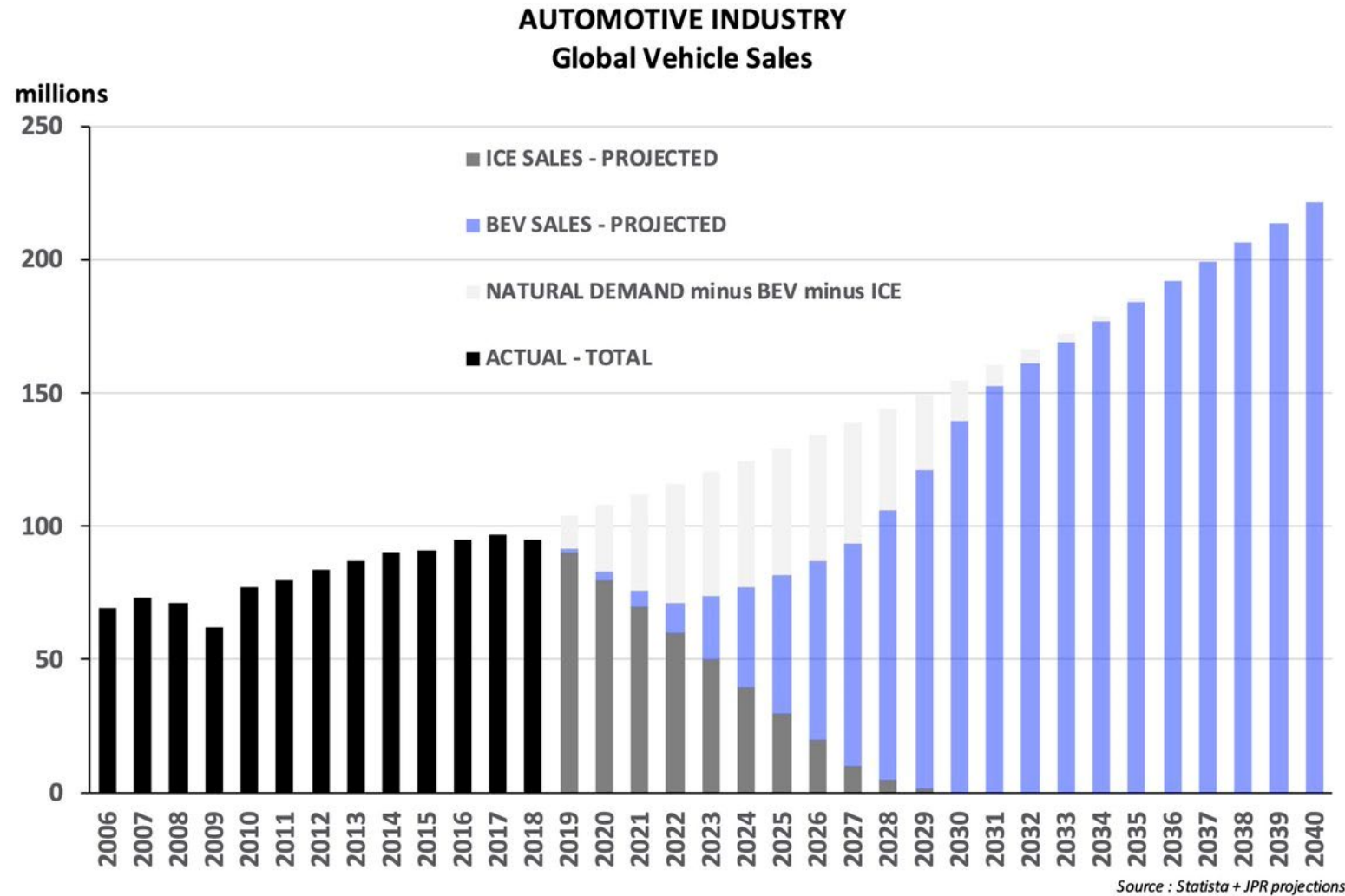
Region	Values	BEV & PHEV	BEV	PHEV	FHEV & MHEV	FHEV	MHEV	Total xEV	Light Vehicles	ICE only
Africa & ME	Jul '22	1 968	1 419	549	4 409	2 750	1 659	6 377	111 640	105 263
	Vs year ago	+40%	+120%	-28%	-31%	-43%	+6%	-18%	+6%	+8%
	YTD 2022	18 436	11 626	6 810	55 362	38 775	16 587	73 798	832 265	758 467
	Vs YTD 2021	+49%	+63%	+31%	+11%	+2%	+39%	+18%	+1%	-0%
Americas	Jul '22	91 880	74 242	17 638	127 990	76 990	51 000	219 870	1 600 793	1 380 928
	Vs year ago	+49%	+78%	-11%	-19%	-12%	-27%	+0%	-9%	-10%
	YTD 2022	588 117	464 259	123 858	998 498	563 571	434 927	1 586 615	10 936 899	9 350 284
	Vs YTD 2021	+50%	+64%	+13%	-5%	+1%	-11%	+10%	-14%	-17%
Asia-Pacific	Jul '22	561 423	421 703	139 720	306 186	196 251	109 935	867 609	3 560 485	2 692 876
	Vs year ago	+107%	+95%	+153%	+12%	+24%	-4%	+60%	+21%	+12%
	YTD 2022	3 189 751	2 469 441	720 310	2 010 475	1 252 192	758 283	5 200 226	22 415 060	17 214 834
	Vs YTD 2021	+110%	+99%	+159%	+3%	+20%	-16%	+50%	+2%	-7%
Europe	Jul '22	162 594	96 063	66 531	210 527	81 061	129 466	373 121	1 083 259	710 138
	Vs year ago	-4%	+19%	-25%	-4%	+11%	-11%	-4%	-18%	-23%
	YTD 2022	1 326 020	780 543	545 477	1 616 762	590 445	1 026 317	2 942 782	8 229 800	5 287 018
	Vs YTD 2021	+8%	+30%	-14%	+4%	+17%	-2%	+5%	-19%	-28%
Total Jul '22		817 865	593 427	224 438	649 112	357 052	292 060	1 466 977	6 356 182	4 889 205
Total Vs year ago		+62%	+75%	+36%	-1%	+11%	-12%	+27%	+4%	-1%
Total YTD 2022		5 122 324	3 725 869	1 396 455	4 681 097	2 444 983	2 236 114	9 803 421	42 414 024	32 610 603
Total Vs YTD 2021		+62%	+75%	+36%	+2%	+14%	-9%	+26%	-7%	-14%



Vehicle Category: Passenger Vehicles Sub-Region (All)

Country: (All)





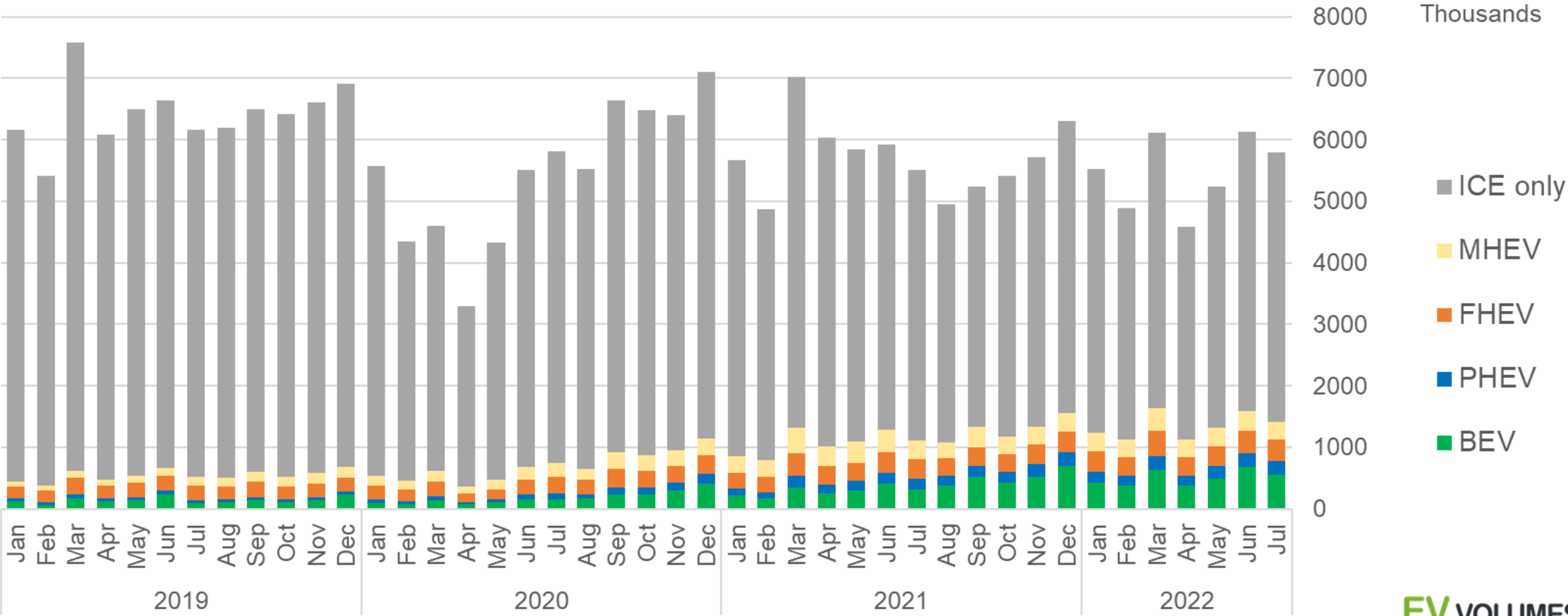
(this is not our forecast, it is an example of how markets work when new innovations are introduced, and an industry could enter the “Valley of death”)



Country: (All)

Sub-Region (All)

Vehicle Category: Passenger Vehicles

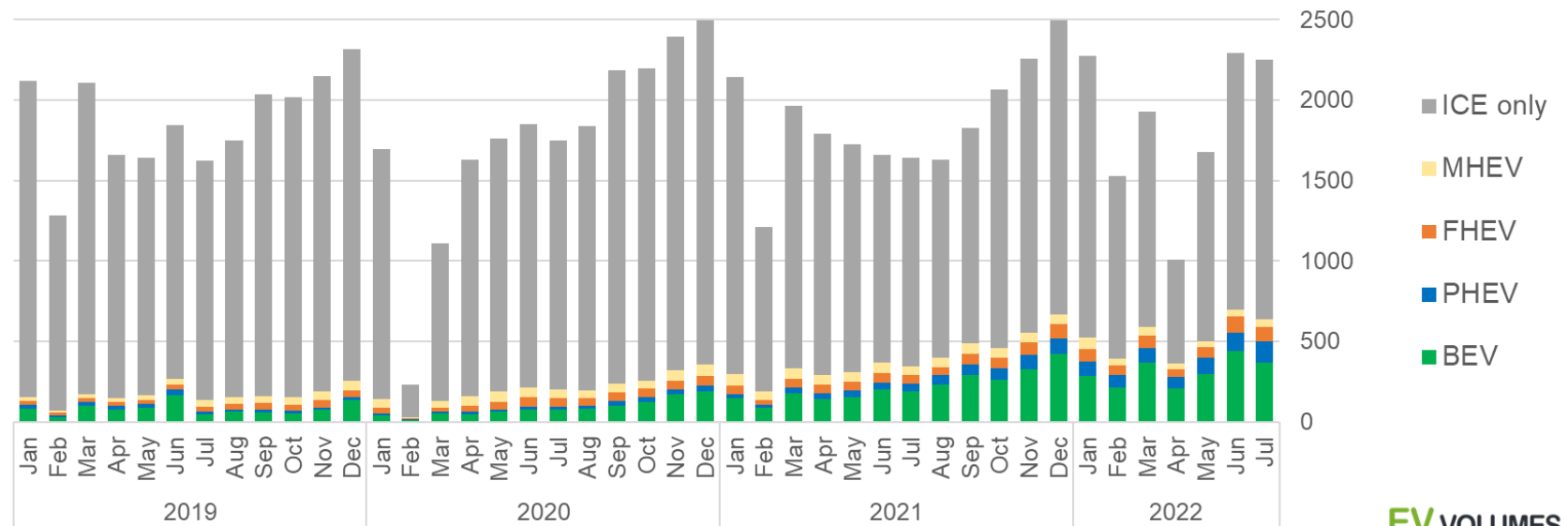


EV VOLUMES

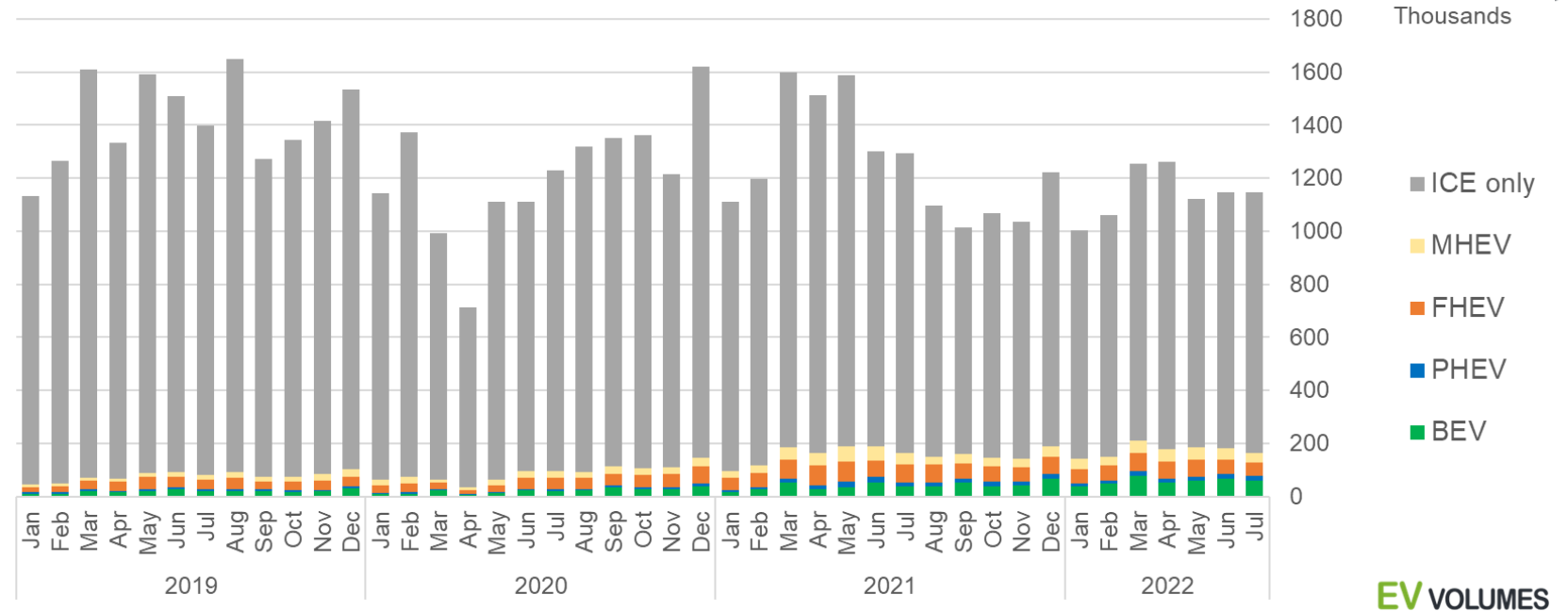
xEV & ICE Volume of PVs CN v USA



2022 Jan-Jul China
BEV Share: 17 %



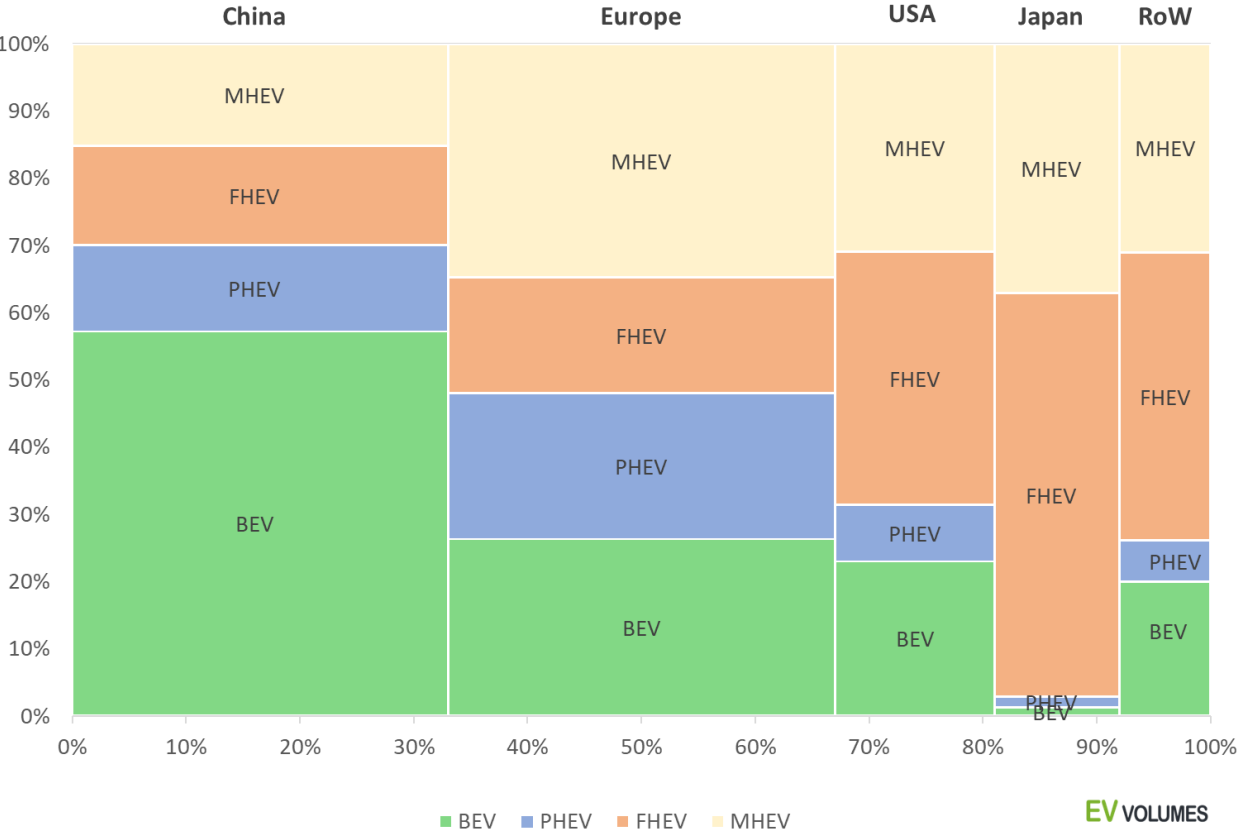
2022 Jan-Jul USA
BEV Share: 5 %



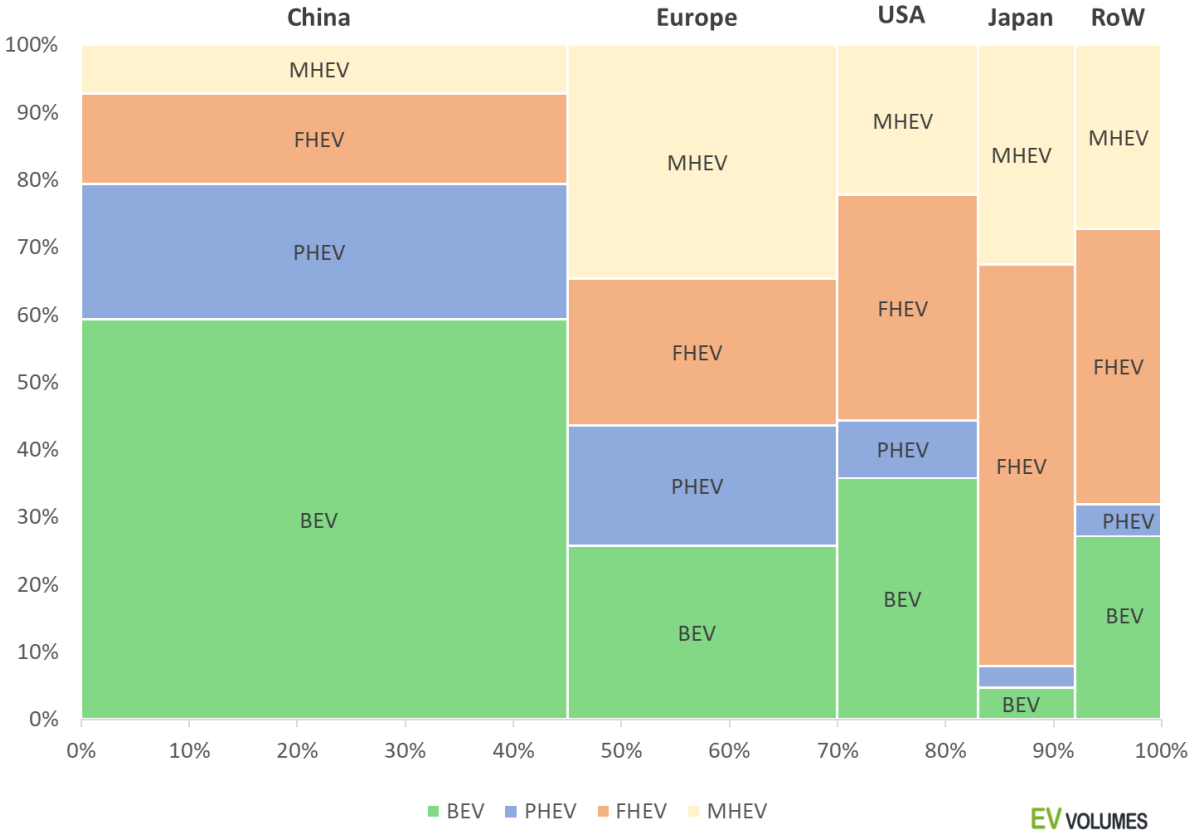
Summary xEV composition by region



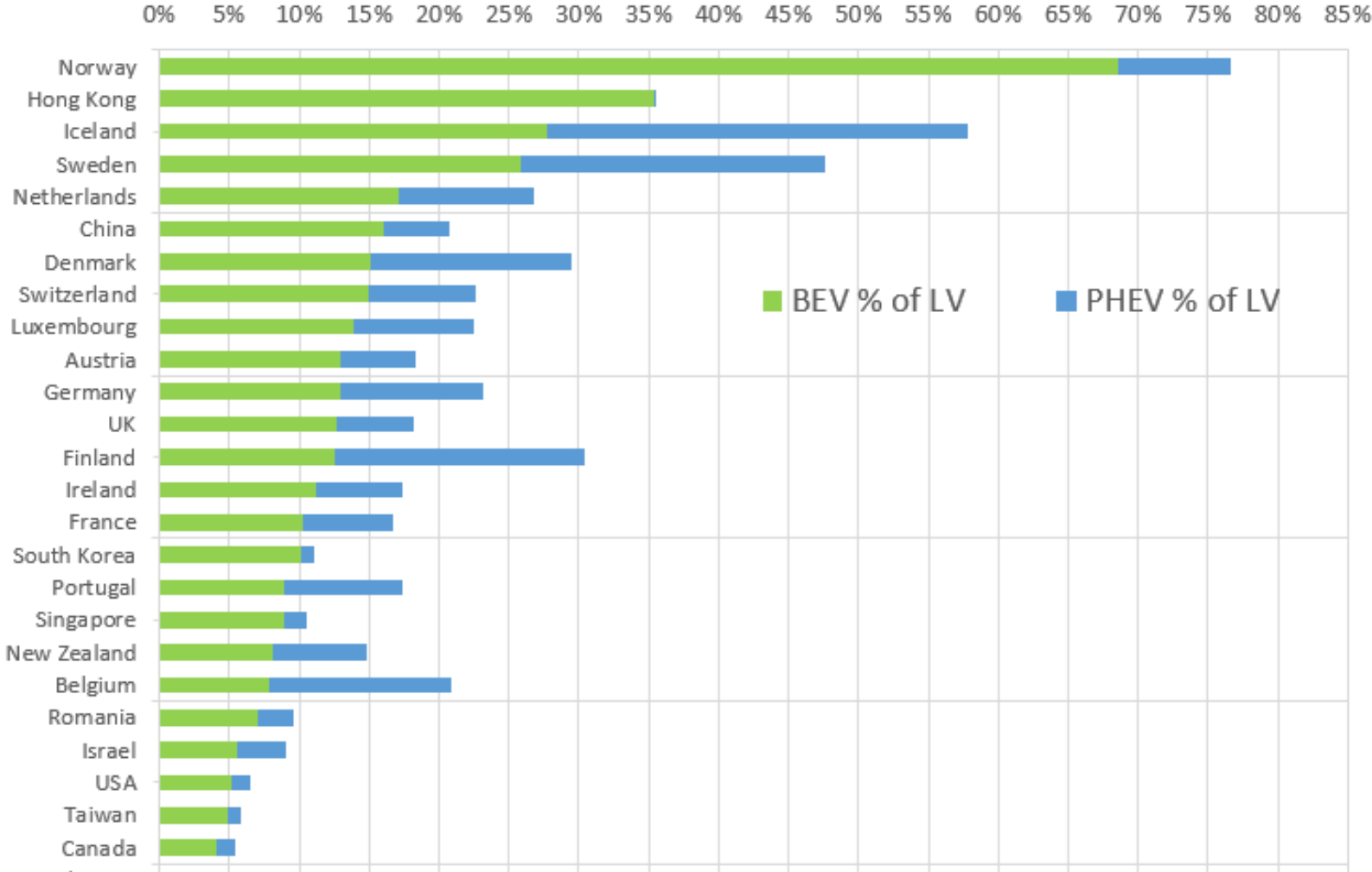
xEV Sales Composition by Region
2021 Full Year



xEV Sales Composition by Region
July 2022



Country Rankings of BEV & PHEV LV Jan-Jul 2022

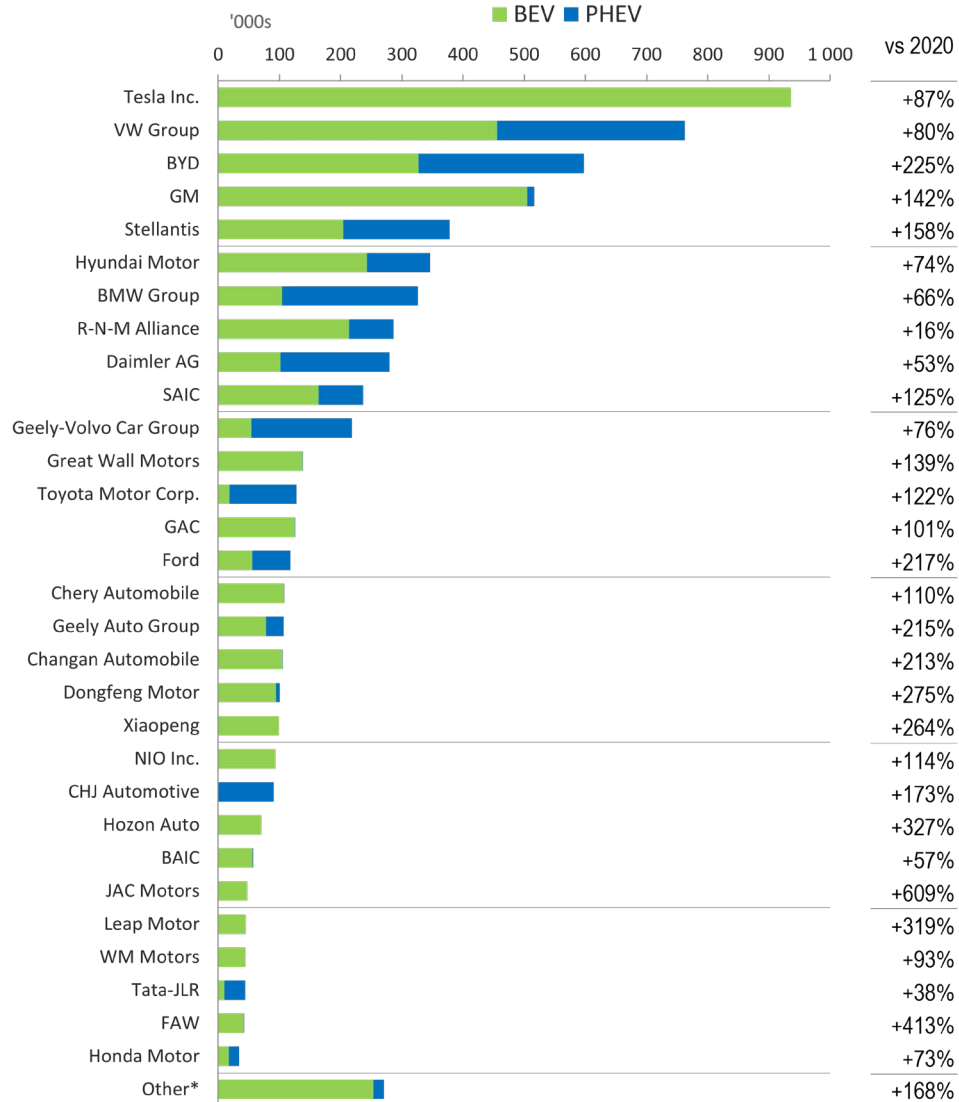


Global OEM Ranking and Top 10 EV Models FY 2021 vs 2020



GLOBAL EV SALES RANKING BY OEM / OEM GROUP FOR 2021

EV VOLUMES



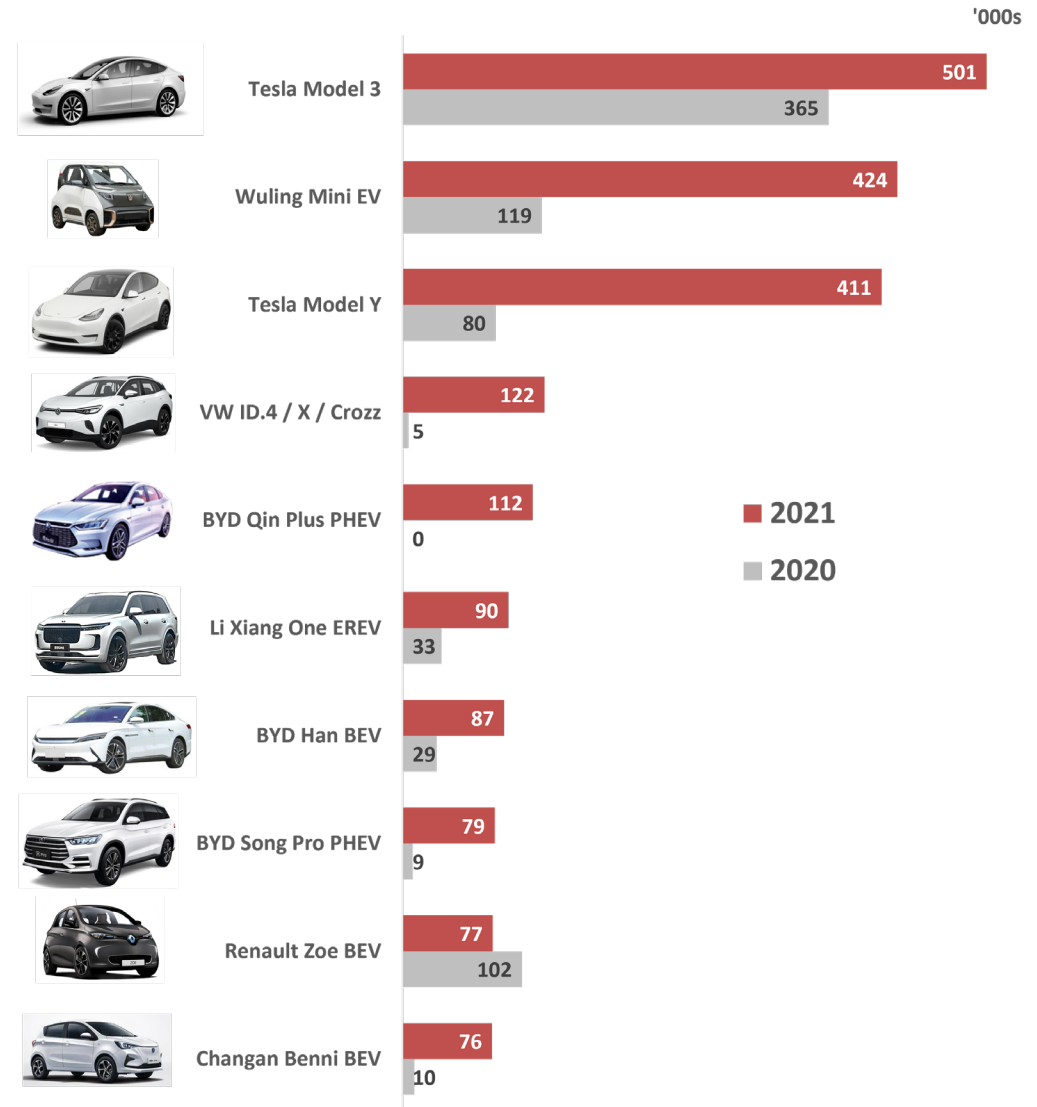
* Subaru, Suzuki, Mazda, Yema, Yudo, Yogomo, JMC, Jemmell, Seres, Yunque, Aiways, Karma, and 10 more

Source: Aggregated Sales / Registrations by country by EV-volumes.com

Light Vehicles

TOP-10 EV MODELS - GLOBAL DELIVERIES
2021 vs 2020

EV VOLUMES

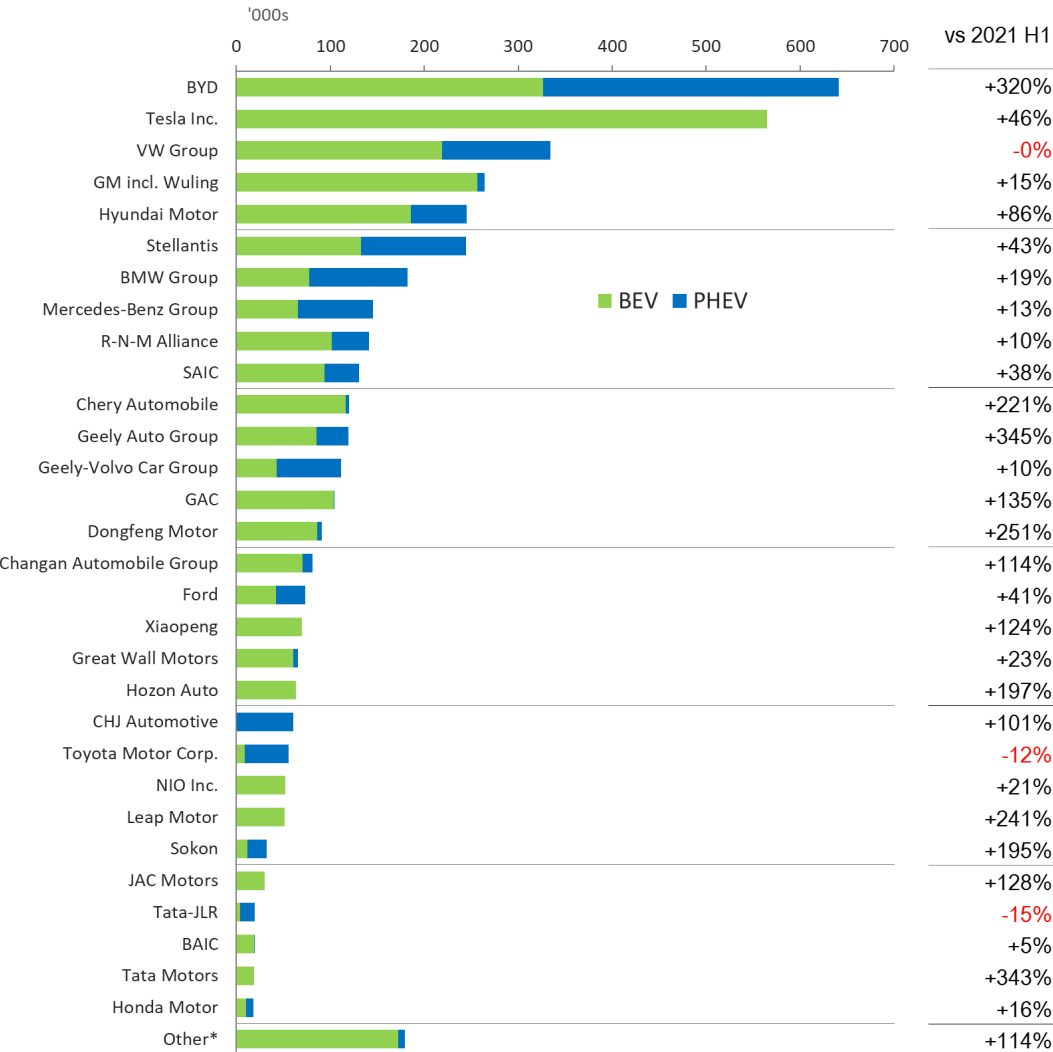


Global OEM Ranking and Top 10 EV Models H1 22 vs H1 21



GLOBAL EV SALES RANKING BY OEM / OEM GROUP FOR 2022 H1

EV VOLUMES



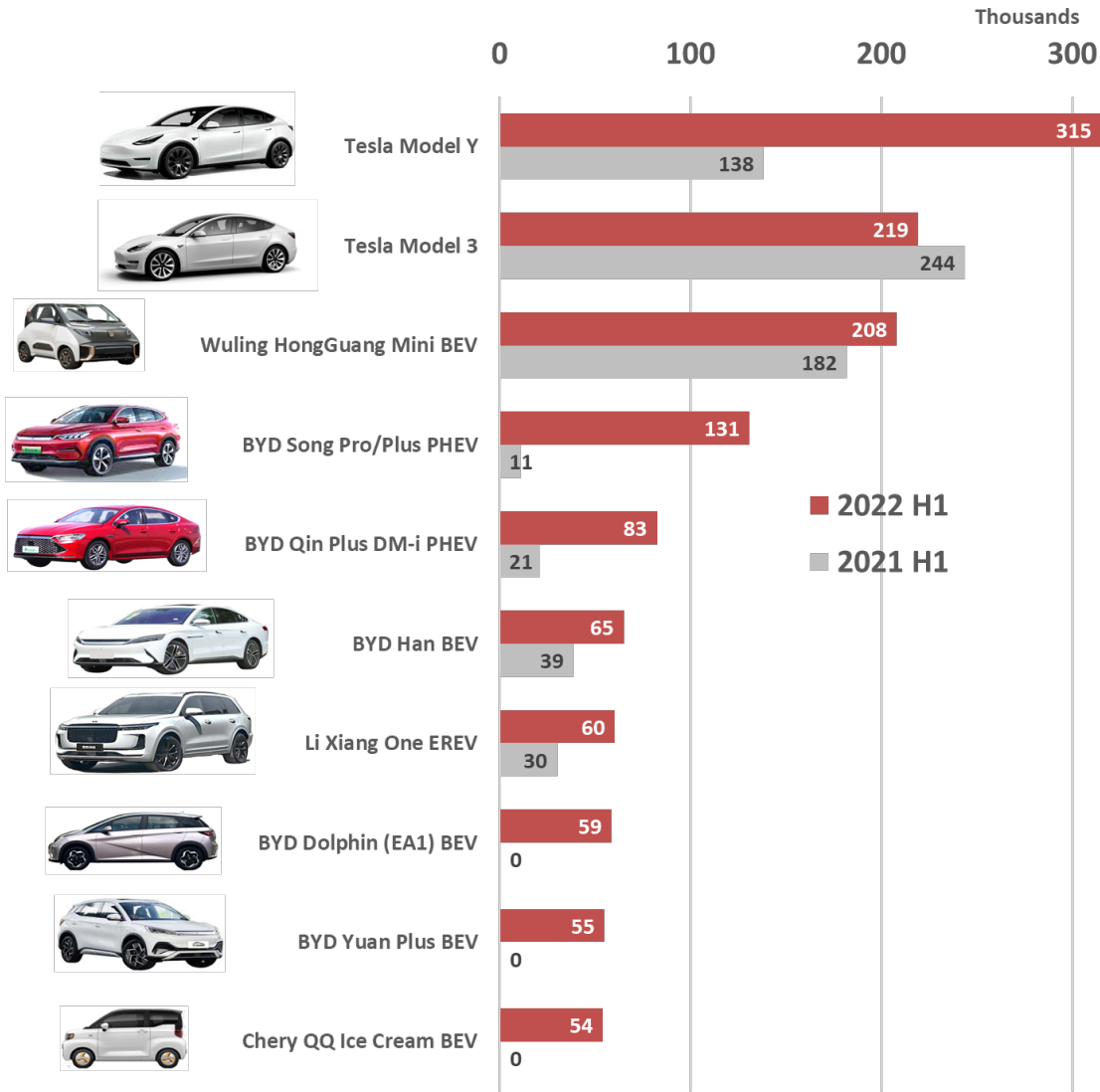
* Subaru, Suzuki, Mazda, Yema, Yudo, Yogomo, JMC, Jemmell, Seres, Yunque, Aiways, Karma, and 10 more

Source: EV-volumes - Aggregated Sales / Registrations by Country

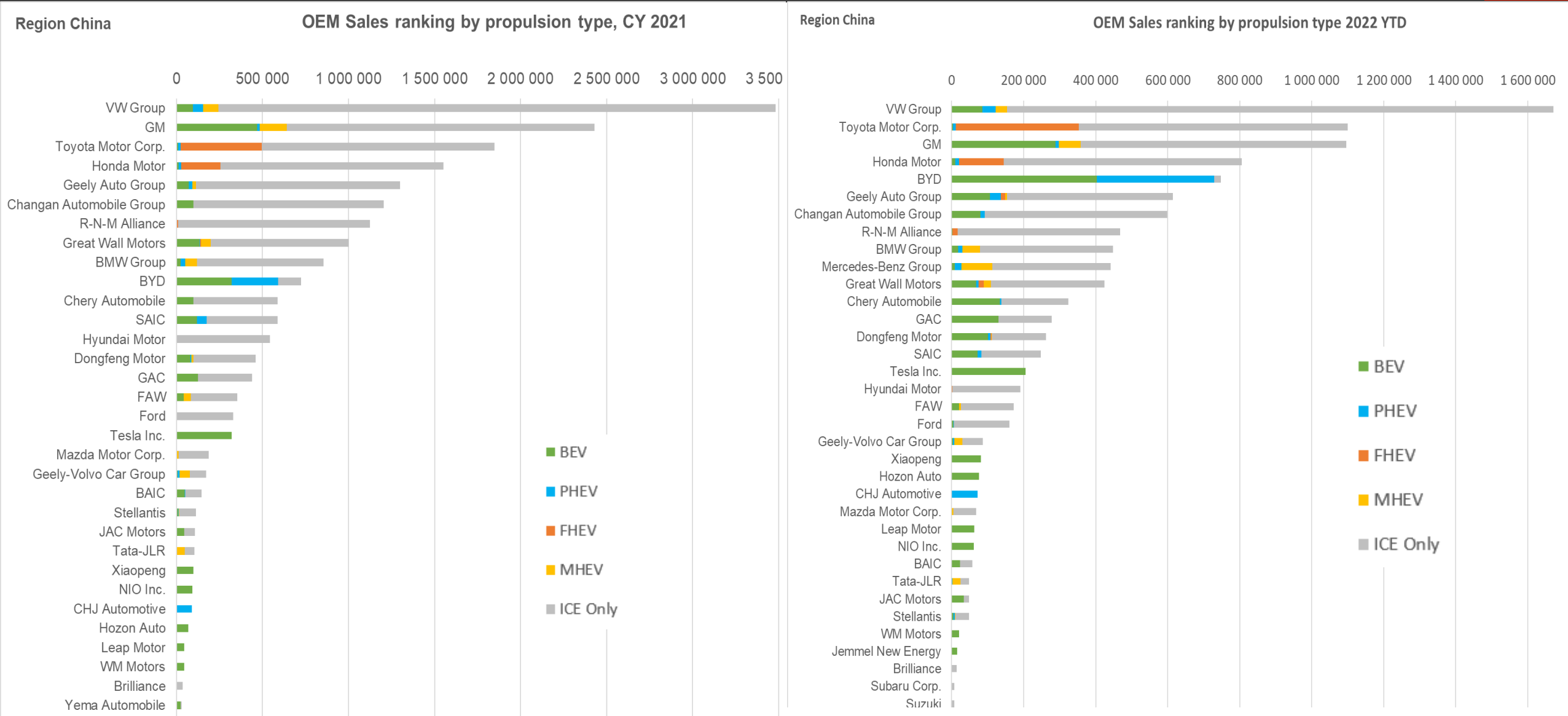
Light Vehicles

TOP-10 EV MODELS - GLOBAL DELIVERIES 2022 H1 vs 2021 H1

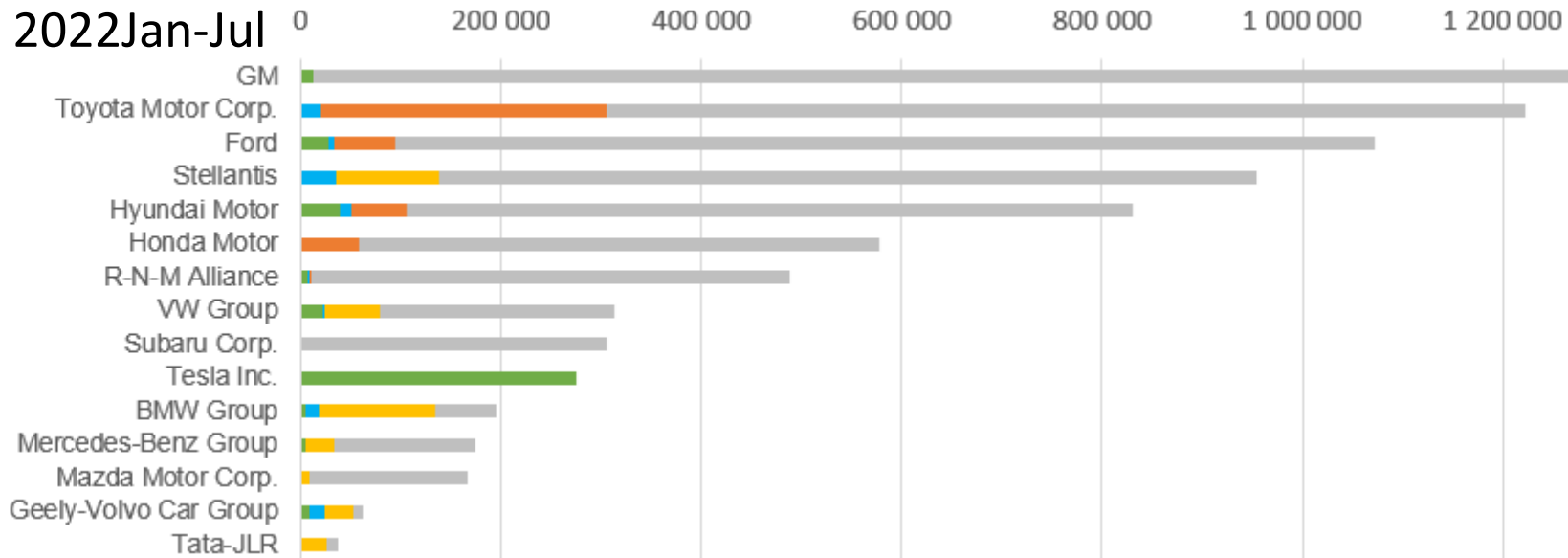
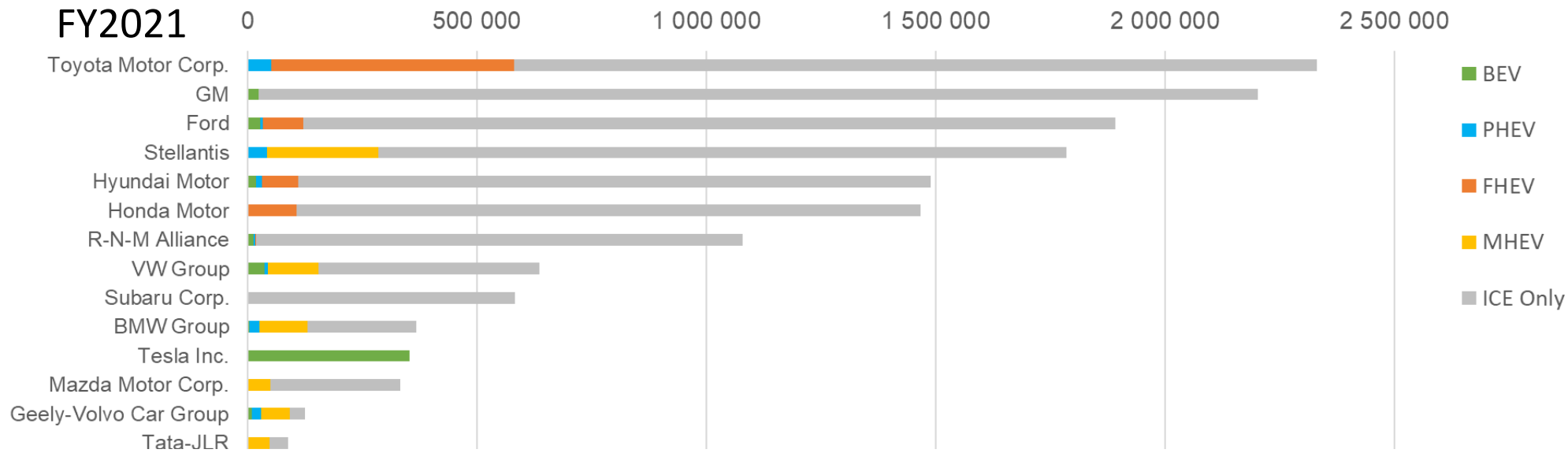
EV VOLUMES



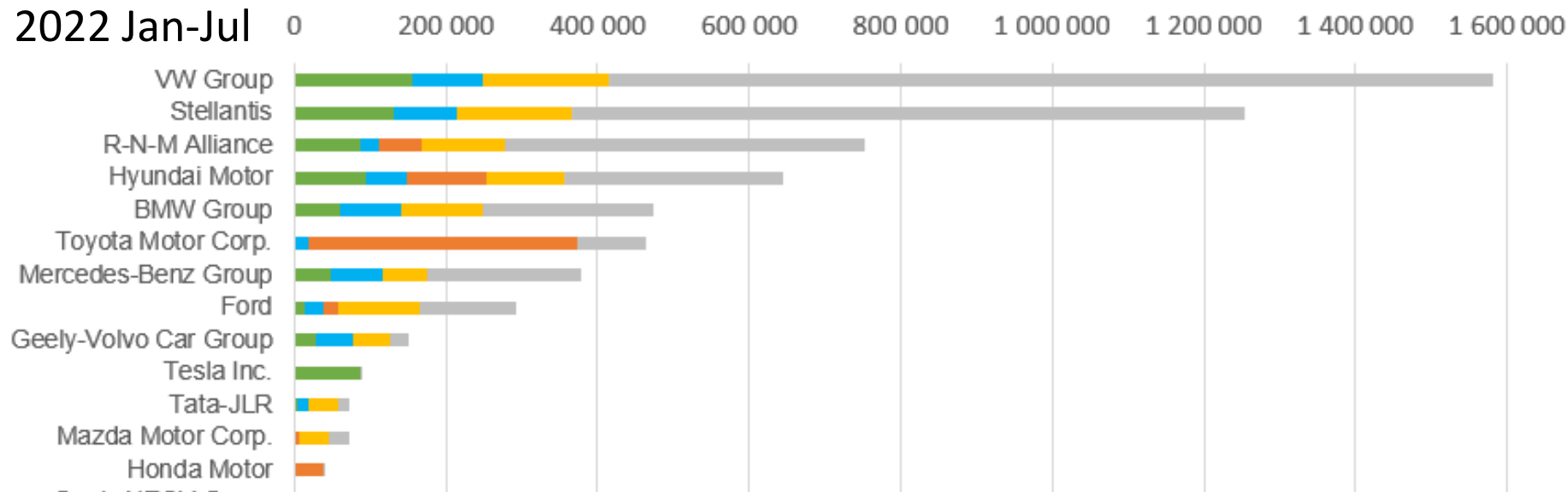
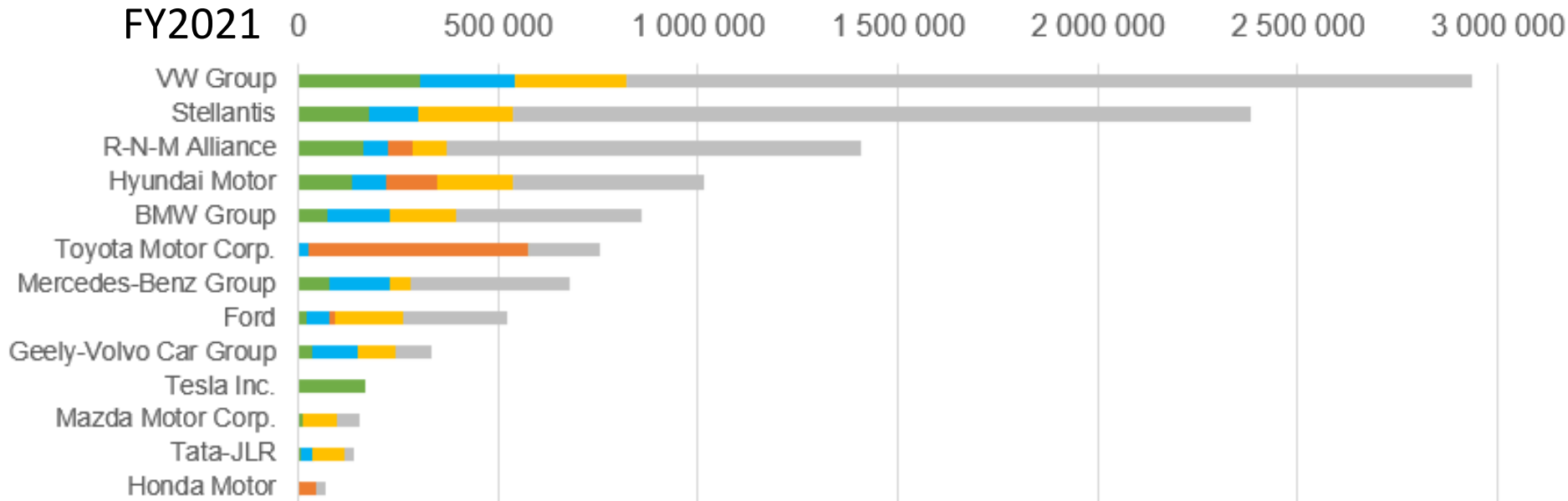
xEV Volume split by OEM in China 2021 & Jan-Jul 2022



xEV Volume split by OEM in USA 2021 & Jan-Jul 2022

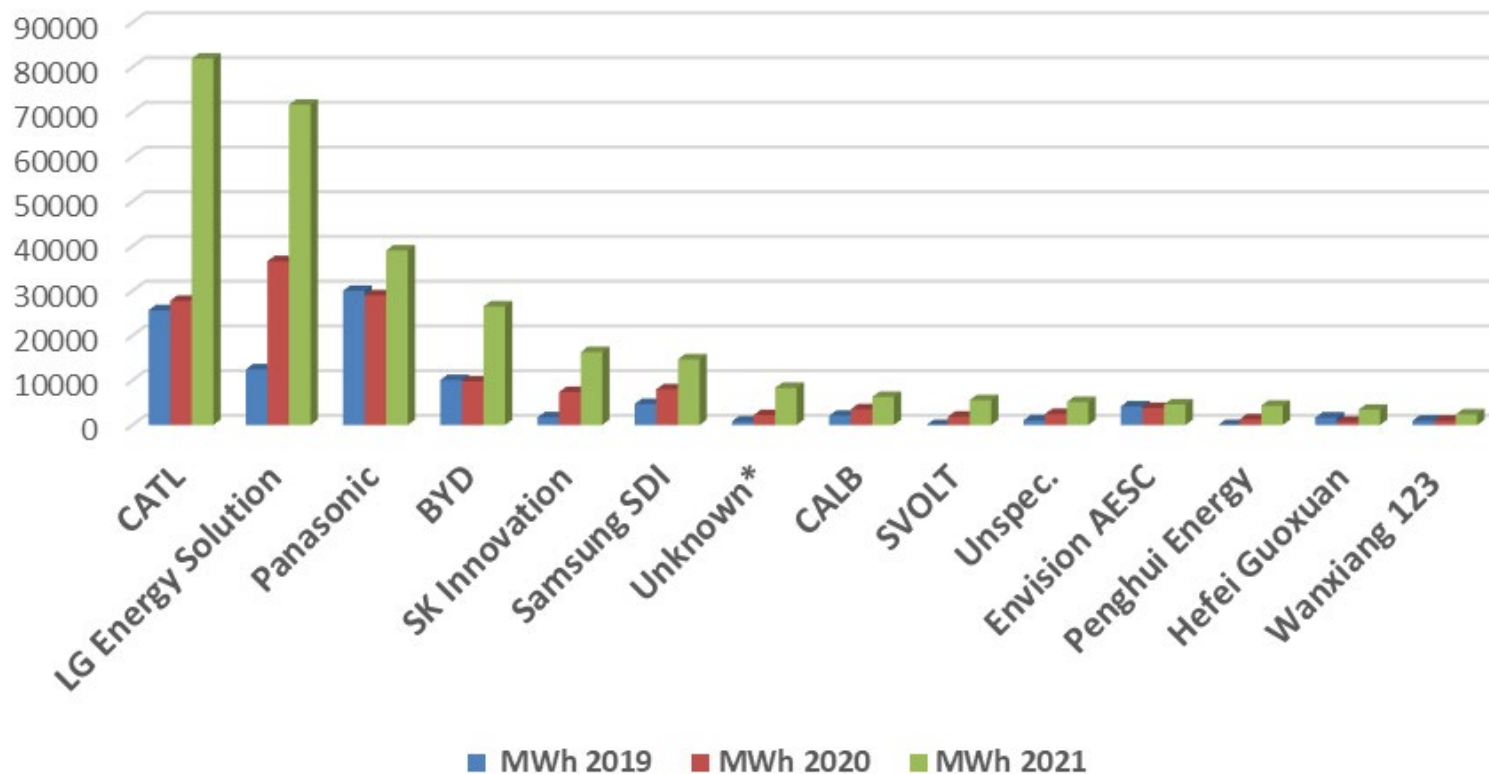


xEV Volume split by OEM in Europe 2021 & Jan-Jul 2022





MWh delivered by Battery Cell maker to Light Vehicles



- ❖ *Total Battery MWh shipments have increased from 100 GWh in 2019 to 140 GWh in 2020 and 296 GWh in 2021*
- ❖ *The winners were BYD, LG, CATL, Samsung, SKI, CALB*

2021 Launches

Regions	BEV	PHEV
Europe	67	32
N. America	39	25
China	52	24
Other	53	30
Total	108	49

Most significant BEVs:

- BMW i4 Sedan, iX SUV
- NG BJEV EU-Series
- NG BYD E5 BEV
- Mercedes EQE, EQS, EQB
- Ford Mach-E & Transit Van
- Rivian R1T, R1S & Delivery Van
- Tesla Model-Y MIC and MIG
- Tesla Model-3 MIG (2022)
- Tesla Cybertruck (Delayed to '23)
- Audi Q4 e-tron
- Nissan Ariya BEV
- VW ID.4 USA
- Skoda Enyaq BEV
- Ioniq 5 BEV / Kia EV6
- Mazda MX-30

Most significant PHEVs:

- BMW 2-Ser. Tourer
- NG Merc. C-Class
- Land Rover (USA intro)
- Mercedes GLB
- NG Volvo XC90
- Honda CR-V
- Hyundai Tucson
- VW Tiguan

2022 Launches

Regions	BEV	PHEV
Europe	47	16
N. America	45	10
China	50	11
Other	49	17
Total	90	21

Most significant BEVs:

- BMW i4 China & iX1 Global
- Mercedes EQS SUV
- Polestar 3
- Cadillac Lyriq
- Chevy SUV & GMC Hummer
- Tesla Cybertruck
- Ioniq 6 & Kia EV4
- Nissan Juke EV (?)
- Audi Q6 e-Tron
- Toyota BZ4X
- Subaru BEV
- Rivian Pickup and SUV
- Ford F150 Lightning
- VW ID5 & ID6

Most significant PHEVs:

- Kia Sportage PHEV
- New Mitsu Outlander
- Alfa Romeo Tonale
- Nissan X-Trail
- Lambo Urus
- Toyota & Lexus PHEVs
- NG MB C-Class PHEV

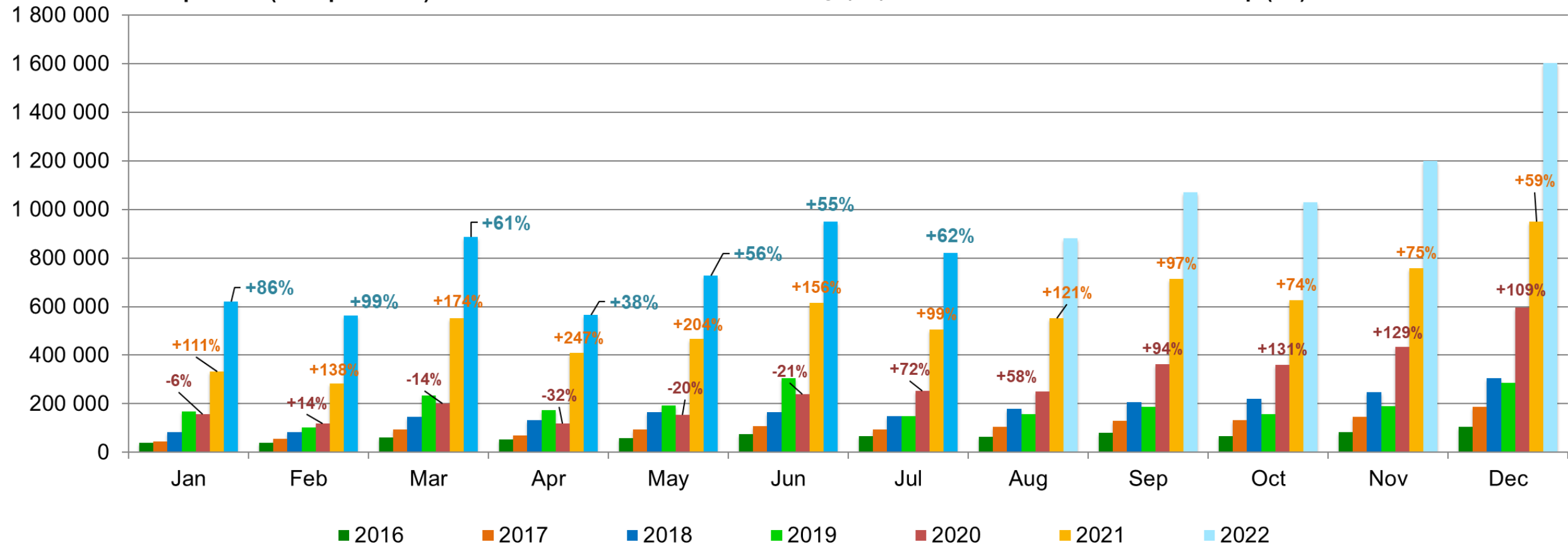


MONTHLY PLUG-IN VEHICLE SALES AND Y-O-Y GROWTH

Propulsion (Multiple Items)

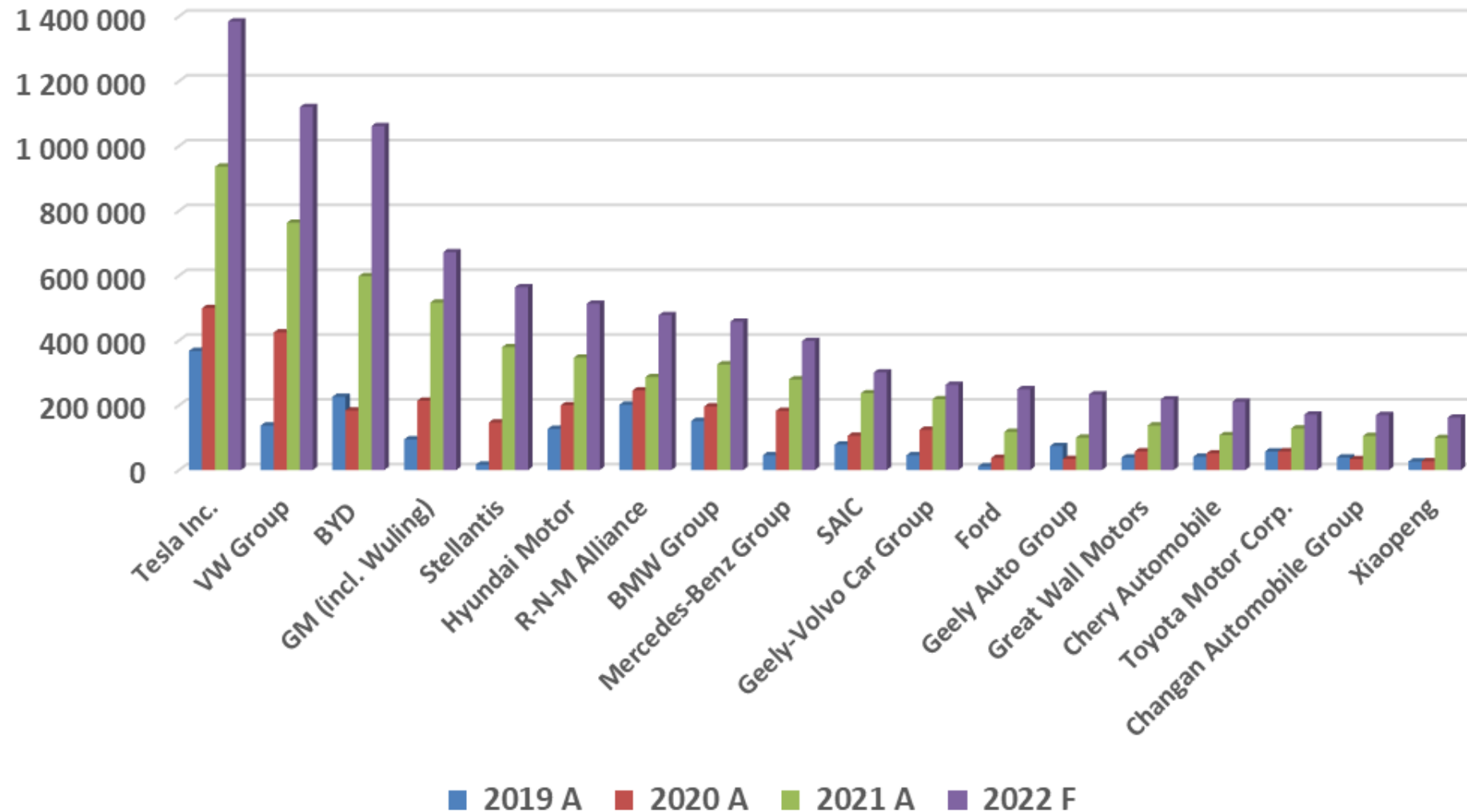
Sales Country (All)

OEM Group (All)





EV-volumes 2022 Sales Forecast by OEM Group (worldwide)



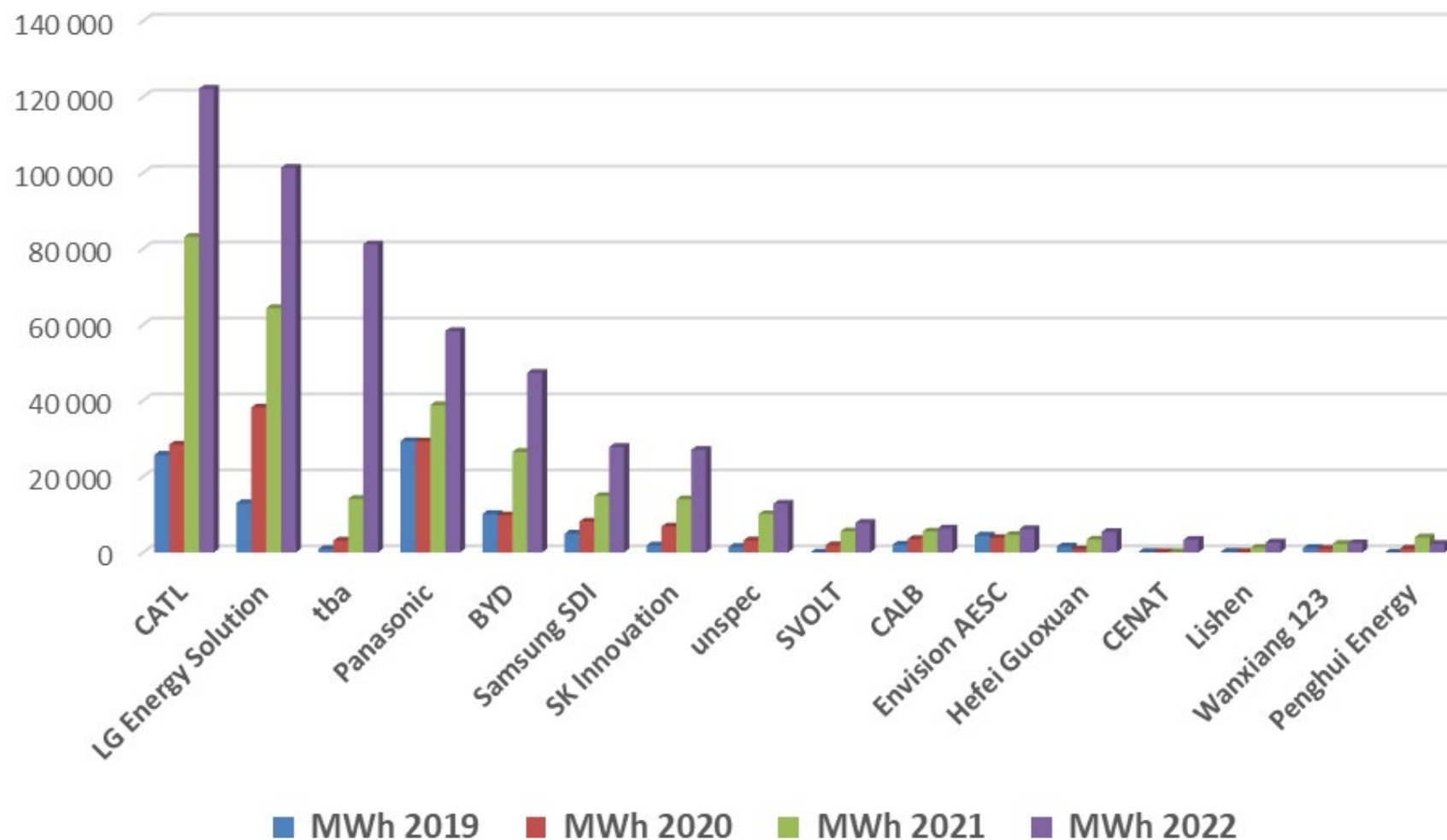
Forecasting 2022 – Methodology example



OEM	Model	Values															
		Battery kWh	Cell Supplier	Sales Region	2015 A	2016 A	2017 A	2018 A	2019 A	2020 A	2021 A	2022 F	2023 F	2024 F	2025 F	2026 F	
Tesla Inc.	Tesla Model S	100	Panasonic	Europe	16 809	12 387	15 514	16 654	8 439	5 678	140	7 581	10 357	5 064	0	0	
Tesla Inc.	Tesla Model S	100	Panasonic	N. America	26 015	30 362	28 735	25 649	14 314	14 297	22 882	35 537	31 631	18 237	0	0	
Tesla Inc.	Tesla Model S	100	Panasonic	Oth. AP & LA & AME	3 480	2 228	4 528	2 198	1 396	1 062	89	3 485	5 298	3 832	0	0	
Tesla Inc.	Tesla Model X	100	Panasonic	China	0	2 294	8 339	9 150	9 525	6 464	364	7 255	6 650	6 050	0	0	
Tesla Inc.	Tesla Model X	100	Panasonic	Europe	0	3 679	12 603	12 697	7 723	6 150	232	6 422	8 666	7 842	0	0	
Tesla Inc.	Tesla Model X	100	Panasonic	N. America	214	19 255	23 118	26 212	20 371	17 895	1 051	18 984	15 906	13 958	0	0	
Tesla Inc.	Tesla Model X	100	Panasonic	Oth. AP & LA & AME	0	28	2 736	1 473	1 585	2 290	107	2 568	3 960	3 688	0	0	
VW Group	VW ID.3 BEV	65	LG Energy Solution	Europe	0	0	0	0	115	56 963	69 585	84 568	102 372	105 647	115 141	113 476	
VW Group	VW ID.3 BEV	65	LG Energy Solution	Oth. AP & LA & AME	0	0	0	0	0	0	2	2 195	2 828	3 289	3 823	4 533	
VW Group	VW ID.3 BEV	70	CATL	China	0	0	0	0	0	0	6 741	33 254	33 461	37 577	44 096	53 037	
VW Group	VW ID.3 BEV	62	LG Energy Solution	N. America	0	0	0	0	0	0	0	0	0	0	0	0	
VW Group	VW ID.4 BEV	75	LG Energy Solution	Europe	0	0	0	0	0	4 808	55 023	75 220	90 990	97 546	111 718	111 460	
VW Group	VW ID.4 BEV	75	LG Energy Solution	Oth. AP & LA & AME	0	0	0	0	0	0	3	4 395	5 879	7 697	9 811	12 804	
VW Group	VW ID.4 BEV	75	SK Innovation	N. America	0	0	0	0	0	0	0	4 599	27 141	30 779	33 058	35 559	



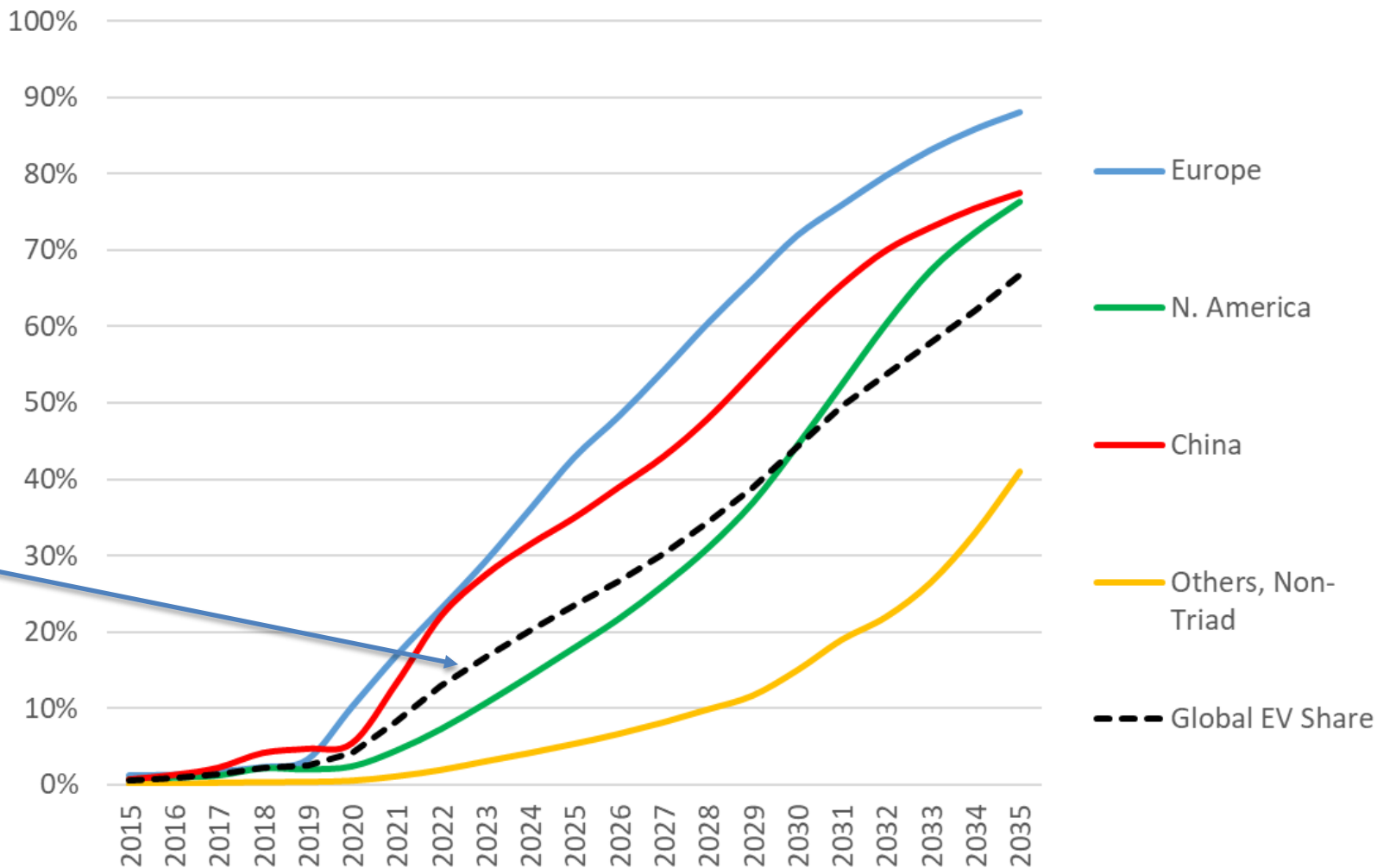
EV-volumes 2022 Forecast of Battery Suppliers to LV in MWh





EV VOLUMES

EV SHARES IN LIGHT VEHICLES BY REGION



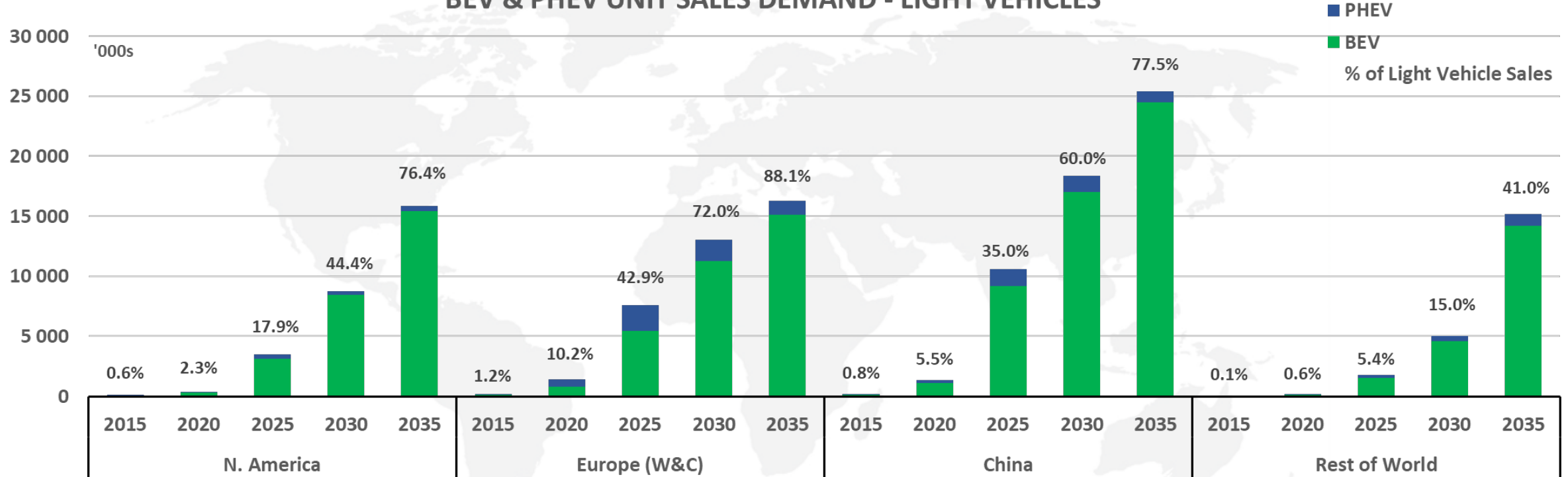
The exact EV share in 2022 is uncertain to estimate as the ICE market is on decline. We expect around **- 14 %.**

BEV & PHEV Demand Long Term



EV VOLUMES

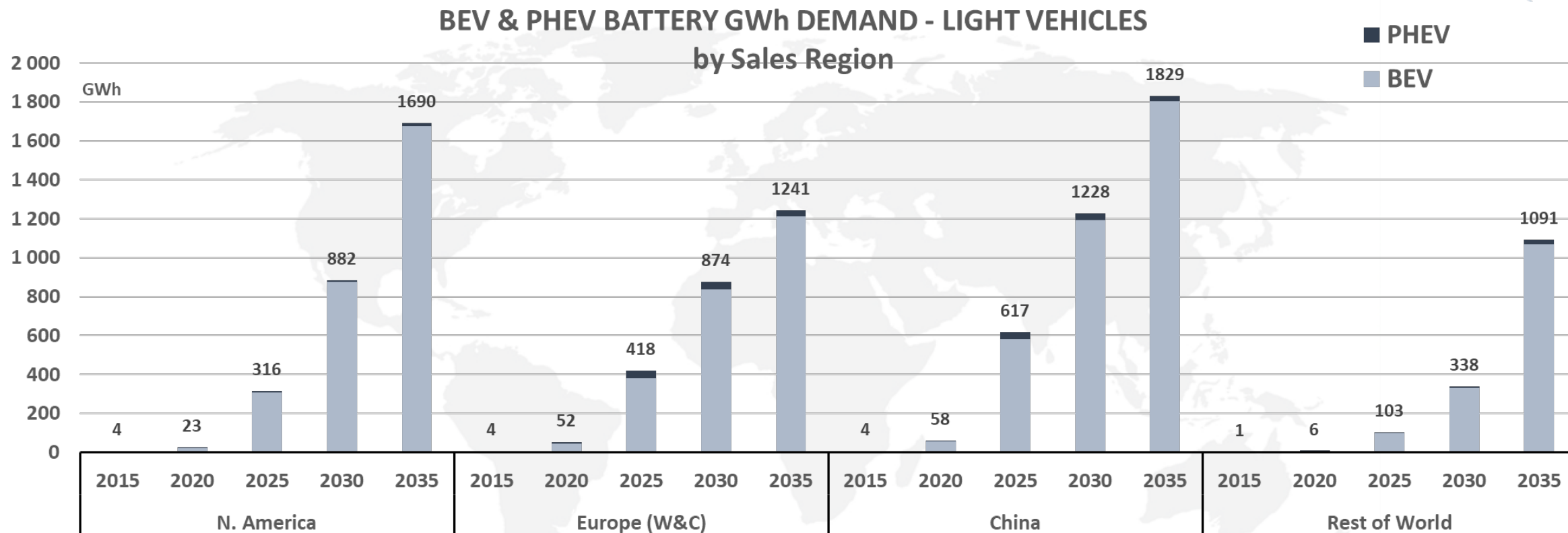
BEV & PHEV UNIT SALES DEMAND - LIGHT VEHICLES



Free Demand – Not Capacity Constrained

Global Unit Sales	2015	2020	2025	2030	2035
BEV+PHEV ('000s)	543	3 240	23 429	45 207	72 750
% BEV	60%	70%	82%	91%	95%
% of Market	0.6%	4.2%	23%	44%	67%

Based on EV-volumes Forecast ED: 16 March 2022



<u>Global GWh</u>	<u>2015</u>	<u>2020</u>	<u>2025</u>	<u>2030</u>	<u>2035</u>
BEV	11	125	1 369	3 231	5 760
PHEV	2	14	83	91	92
PEV total	13	139	1 453	3 322	5 852

Based on EV-volumes Forecast ED: 16 March 2022

EV-volumes is a global data and information service for the electric vehicle sector. We provide a range of unique, high quality tracking data sets for EV sales, market penetration, battery shipments, charging infrastructure, current and future product offerings around the world.

Our consultancy services combine the facts and figures of EV-volumes.com with our expertise in other areas of the automotive sector. We support planning activities with market studies, policy monitoring, detailed forecasts, reports and insights.

EV-volumes has become an acknowledged source in public media and is a frequent speaker on international conferences for future market trends in vehicle electrification.

EV-volumes has three founders, Roland Irle, Jose Pontes and Viktor Irle, who are all working in the company. Following years of research and data collection, the service went online in December 2015.

Our clients are metal/mineral miners and traders, investors, EV-charging providers, utilities, auto OEM, auto suppliers, incl. batteries, consulting houses and universities

The footprint is global: Europe 50 %, Americas 30 %, Asia-Pacific and others 20 %, in terms of turnover. We are based in Sweden and have dedicated associates in China, Japan, South Korea, France, Germany, UK and Portugal, plus a network of 50 contributors around the world. The company is independent and self-funded.

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